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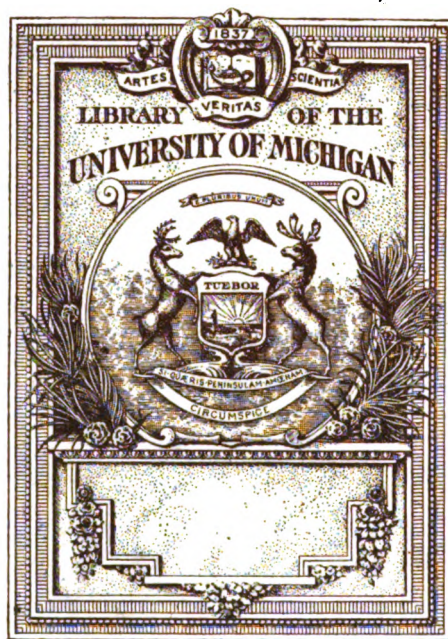
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JOURNAL

OF THE

TELEGRAPH.

A SEMI-MONTHLY RECORD OF THE PROGRESS OF THE TELEGRAPH,
AND OF ELECTRIC SCIENCE.

VOLUME I.

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PREFACE TO VOLUME II.

Although nearly the entire globe has been netted by the wires of the Telegraph, and the ocean beds are traversed by cables—these new highways of the world's thoughts, the marvel of their achievements in the service rendered to mankind, is still a subject of just-admiration and wonder. The Telegraph is the highest, richest, gift of modern science yet made to mankind. It must long remain a miracle which even its daily use, and our familiarity with its outside structure, will fail to dispossess of its charm and wonder. The character of its chief agent, its subtlety, its swiftness, its certainty, its connection with the sustentation of human life, indeed of all life and matter, its capacity of application to a thousand useful and remedial purposes, and the hope which its performances inspire of future possibilities, give to the electric telegraph a sacred affinity to the power which rules the universe of which electricity and magnetism may be the reins. This mighty electric agent reveals itself everywhere, in the earth, in the sky, in the water, flitting up mountain sides, and crashing among the forest trees, asleep in all forms of matter, sweeping up in brilliant flashes of light into the sky and illuminating with an added grandeur the "infinite meadows of heaven." This agent man has harnessed to do his bidding. It blasts rocks, it makes the sunbeam a painter, it dissolves the precious metals, it gilds our household jewels, it has become the police of empires, it is the right hand of war, it has become the hunter of thieves and the protector of our homes, it is the harbinger of union and universal peace.

The JOURNAL OF THE TELEGRAPH recognizes in the presence of such an agent upon the earth a call for its work. It commenced that work feebly, and in doubt of its own capacity to accomplish its self-appointed mission. It still feels far behind its subject, yet aims to be and determines to be serviceable in its illustration and purity. It recognizes the need of high character to fulfil the trust given to the Telegraph of transmitting the world's thoughts; the necessity of preserving it from governmental espionage and domination, of enlisting the purest and best men in its management and control; of accommodating its terms so as to lead to its enlarged employment by all classes; of stimulating invention to increase its effectiveness and enlarge satisfaction in its wondrous and beneficent work. This second volume, we think, bears some evidence of this recognition. We close the year's duties with gratitude and hope. We rejoice at all the progress in the earth's union by these cords of fire which has marked the year now expiring. We are grateful, also, for our own reception by the thousands to whom the JOURNAL comes. It is a stimulus to new efforts to do more and better in days to come. This is our design. We ask aid from all sources. Practical thoughts, correct information, genial personal items, fraternal communications, stimulants to honorable and effective labor, invention and its offspring, will be all welcome. With this invitation we kiss our hand to the closing and the opening year, bidding adieu to the one and welcome to the other.

JOURNAL OF THE TELEGRAPH.

NO. I.

NEW YORK, DECEMBER 2, 1867.

VOL. 1.

ELECTRICAL CONDITION OF THE GLOBE.

BY A. DE LA RIVE.

It is at present generally admitted that in the normal condition the atmosphere is charged with positive electricity, and that the electricity increases from the ground (where it is almost zero), to the greatest height which can be attained. The terrestrial globe, on the contrary, is charged with negative electricity, as is proved by a variety of observations, direct and indirect. It is, moreover, a consequence of the presence of positive electricity in the atmosphere, for one of the electricities cannot manifest itself in the free state without the appearance of an equal quantity of the other kind.

At the place where the atmospheric air and the solid or liquid surface of the terrestrial globe are in contact, there is a layer of air in the neutral state, the two electricities neutralizing each other there, seeing that the cause (probably subterranean) which discharges them necessarily acts without interruption. This neutralization is of course facilitated on plains above the sea by the moisture, always more or less considerable, with which the layers of air, in contact with the soil, are charged. This, however, is not the case on mountains, and especially on the higher peaks. The dryness of the air must render the combination of the two electricities more difficult, and enable the negative on the ground and the positive in the air to acquire a tolerably energetic degree of tension. This is shown on the one hand by the strong positive electricity which air has at these great heights, and on the other hand by the attraction which the mountains exert on the positive clouds of the atmosphere in virtue of their negative electricity.

Now, what would take place if a metal plate, sunk in the ground on the plain, were connected by means of a telegraphic wire with a similar plate immersed in the soil of a high place? If the negative electricity with which the two places are unequally charged, were in an entirely static condition, the metallic wire becoming an integral part of the conducting layer of air which separates them, no dynamic phenomena would be observed. But there is a continuous flow of the negative electricity of the soil towards the positive of the air which produces the neutral layer. It follows necessarily that there is a downward transport of negative electricity, or, what amounts to the same thing, an ascending current of positive electricity in the conducting wire which joins two places at different heights above the sea level.

This furnishes the explanation of a phenomenon frequently observed, and under conditions quite free from objection, by M. Matteucci. He observed that in every mixed circuit, consisting of a layer of earth and a metal wire, the ends of which are sunk in the ground, minute precautions being taken to avoid any thermal or chemical action, the wire is traversed by an electrical current whose direction is constant whenever the soils in which the ends are plunged are of unequal heights. The current ascends on the metal wire; its intensity increases with the length of

the wire and with the difference in level of the ends. M. Matteucci has convinced himself that at the higher station there were very intense indications of positive electricity, while these signs were feeble, or were entirely wanting at the lower station.

All this, then, agrees with the theory which I have laid down, but to confirm the exactitude of the considerations on which it is based, I have tried to reproduce the phenomenon observed by T. Matteucci by means of a laboratory experiment. With this view I placed on an insulating support a sphere of about 30 centimetres diameter, made of porous earthenware, or of wood covered with bibulous paper, so as to have, by wetting the surface, a moist conductor representing the earth. I fixed to the highest part of the sphere in contact with its moist surface a small metal disk. A second one was arranged in the same manner at a distance of from 50 to 90 degrees from the first. I then joined the two disks by the wire of a galvanometer. No current showed itself, either positively or negatively even when the insulated sphere was positively or negatively electrified. By means of an insulating rod I then suspended, at a distance of 2 to 3 centimetres above the sphere, a plate slightly concave on the lower side, and of such dimensions that it only covered a small portion of the sphere—that, namely, in the midst of which was the upper metal disc, and therefore not the portion in which the other disc was placed. The apparatus being thus arranged, I charged the sphere representing the earth with negative electricity from a machine, the positive electricity of which was led to the concave metallic surface representing the atmosphere. The galvanometer quickly indicated the existence of a current, the direction of which was from the lower to the upper disc. This current was perfectly regular, and lasted as long as the machine was at work.

M. Matteucci has also observed that during storms the oscillations of the needle of the galvanometer are sudden and frequent, while on calm and clear days the deflection of the needle remains almost constant. The slight current from south to north observed in wires placed horizontally in the direction of the meridian are probably due to the fact that the negative tension of the earth gradually increases from the equator to the poles. Positive electricity in great quantity is accumulated in the atmosphere near the poles by the trade winds. The discharges of contrary electricities in polar regions give rise to polar auroras and the powerful electrical currents which accompany them, and which circulate in the ground. These currents show themselves by their action on compass needles and through telegraph wires.

There are a great number of partial and local facts arising from unequal tension in the variably distributed electricity with which the globe and atmosphere are charged. The attraction of the clouds by mountains, and the phenomena of phosphorescence which they sometimes present, arise from the same cause, and many other natural phenomena—water-spouts for example—have the same origin.

THERE is a growing interest in electric developments in all the scientific circles of Europe.

Paris Exposition of 1867.

Automatic Telegraphs.

Siemens and Halske, Berlin, exhibit an automatic Morse telegraph, in which the signals are given by a contact lever, moved by an arm under which metallic types are drawn. This telegraph is a modification of the magneto-electric automatic telegraph shown by the same manufacturers in 1862. The use of magneto-electric currents was found to be attended with certain disadvantages which the galvanic current is free from. The types are arranged in a sort of composing-rule. They are of three kinds—dots, dashes, and spaces. Arrangements are also shown for composing and decomposing the dispatches. The composing apparatus is supplied with a keyboard. When a key is pressed down a corresponding type falls into a guide, from which it is struck into the rule, each time a letter is completely set. The distributing apparatus is supplied with three holes of different form, agreeing with the forms of the three sorts of types. A rod is forced along the rule, which pushes the types, step by step, before the three holes, behind which corresponding hammers strike them laterally. The first hole is small, and allows all the narrow or dot types to enter; the second hole is twice as broad, but has a projection at the bottom, over which only the space-types can pass; the third hole is complete, and suits the dash-types. A polarized direct working Morse apparatus is used for receiving the reversed currents sent by this apparatus. The positive currents lift the writing-beam and produce dots and dashes; the negative depress the beam and produce spaces.

Digney Brothers, Paris, exhibit also an automatic transmitting apparatus, intended, like the last, to dispense with the employment of the key. The message is punched out of a strip of paper, which is then passed, with a uniform velocity, between a rotating cylinder and two levers, attached to which are two light metal springs, whose oscillations between fixed screw-points effect the necessary contacts and determine the signals transmitted into the line. The holes are punched out in two rows—one for dots and the other for dashes. The punching is done by means of a key with three levers. The first lever punches out long rectangular holes for the dashes, the second lever only pushes the paper forward, and the third punches out square holes for dots. The paper is drawn forward whenever either of the levers is raised up, after being pressed down; this is done by two brass rollers, with roughened surfaces, on the axis of one of which is a ratchet caught by clicks attached to the levers at different distances from their centres of motion. When the middle lever is pressed down its click snaps over one tooth and draws the wheel round so far, when it rises again. When the dot lever is depressed its click snaps over two teeth, and, going back, draws the paper forward twice as far. The dash-lever draws it, in the same way, three times as far.

The transmission of the message is effected by means of a clock-work, not differing greatly from that of the usual Morse receivers. The prepared paper strip is drawn between two brass rollers. Be-

fore reaching them, however, it passes between a barrel, or anvil, and two light levers which set the contact-springs in motion; the latter being in the circuit of line and battery. As the paper passes through, one or the other of these levers falls through the holes and makes contact, the length of the contact being determined by the length of the hole.

By this system a speed of thirty-five words or 175 letters per minute is attainable—about double the speed with which an average telegraphist can work.

Correspondence.

On every hand we hear words of approval of the recent movement among the operators to establish a Life Insurance on a basis so simple and inexpensive as to be within the reach of all. All this is well enough, but its success depends entirely on the efforts of those who enroll themselves among its members to complete the requisite number so as to give it value. The scheme itself is simple and excellent. We do not grudge the labor it costs us, neither does its excellent secretary. But the officers of the Association cannot move about drumming up subscribers, although they do their share even in this service. Every one who joins is as much interested in its success as any other. There are no fat places, no perquisites, no favorites, nothing but a simple proposal to help each other at death. Nor has this scheme any antagonistic elements. It stands on its own merits. If it fails, there is nothing lost; if it succeeds, an easy provision has been made to bridge over the hour of darkness and sorrow. Its officers would be glad to receive a prompt response from all who design to connect themselves with it. See Advertisement.—Ed.

TRENTON, N. J., November 18, 1867.

D. R. Downer, Esq.:

DEAR SIR—Your circular to the operators informing us of the formation of a Mutual Life Insurance Association, composed of telegraphers, came duly to hand, and from the tenure of its contents I take the liberty to offer a few suggestions. I assure you that I heartily endorse your views mainly, but would advise you to curtail your field of operation to about two or three States for one organization, namely: New York, New Jersey, and Pennsylvania, or any States you may suggest that might suit better your association. My object in making this suggestion is to bring the limit of the number of members to a smaller compass. I think that you should limit your number of membership to from five to seven hundred, and look very particularly to what portion of our country you will admit in commencing your organization. The most healthy portion is the great object first in view. I feel sure you will be able to obtain a sufficient number of members in the States mentioned. In this State the statistics show that deaths average three per annum for every five hundred souls. This would show the rate of insurance to be very low, which is the object to be obtained. Again, if you admit members from all parts of the country, you will increase your risks three-fold, while you can command an organization quite sufficient near home.

My experience teaches me that such an organization should not exceed five hundred members, to become purely what its object is really intended for; and I think when you meet again and duly consider this matter, you will coincide with my views. I don't hesitate to say it is one of the best organizations in the world, and when properly limited is the cheapest insurance in existence. I propose to join your association, and shall send you my name with others in a few days.

When you are fully organized, you can advise Boston, Washington, and Chicago, &c., &c., to form similar organizations.

Yours, very truly,
JOHN A. WRIGHT.

RICHMOND, Va., November 18, 1867.

D. R. Downer, Esq., Secretary Telegraphers' Mutual Life Insurance Association:

DEAR SIR—I have received by mail your circular, or prospectus of the "Telegraphers' Mutual Life Insurance Association," and heartily endorse the scheme, if honestly and judiciously managed, it far exceeds any plan I have yet seen presented for the good of the fraternity.

The ultimate benefit to be derived from this wise foresight, is such as to commend it to the favorable consideration and prompt action of the considerate portion of telegraphers, particularly those who have families dependent upon them.

Enclosed find \$1.50. I desire to become a member of the association, and will thank you to send me a certificate of membership as indicated in the fifteenth article of the prospectus.

Very truly yours, J. R. DOWELL,
Sup. 1st Dis. W. U. Tel. Co.

Dial Telegraph.

Guillot and Gatget, Paris.

This is a magneto-electric dial-telegraph, the transmitter of which consists of four bobbins with soft iron cores fixed in the corners of a square upon the two poles of a permanent steel magnet, as in one of Professor Wheatstone's telegraphs. A soft-iron keeper, upon an axis which passes in the middle between the four bobbins, rotates over their poles and alternately closes the magnetic circuits of the opposite ones. The axis of the keeper carries a pinion which engages with a tooth-wheel on the arbour of the transmitting handle. The latter turns over an ordinary French dial-plate. The wire of the bobbins forms a single circuit, one end of which is to earth and the other connected with a metal spring which, when the handle is raised to turn it round, makes contact with a ring on the central arbour in permanent connection with the line. When the handle sinks into one of the notches of the dial-plate, this ring is depressed, breaking the circuit of the bobbins and making contact with the receiver. The soft-iron keeper is nearly broad enough to close the circuit of two poles, at the same instant that it leaves the circuit of the two neighboring ones. The purpose of this is, that the currents induced by the armature leaving and approaching may be combined to form a single current. On lines with little resistance this transmitter may work well, but, whilst neither the bobbins nor the magnets are moved, it cannot be expected to give intense currents.

The receiver used with this instrument is almost identical with that of Bregnet's step-by-step railway telegraph; only, to accommodate the reversed currents, the keeper is formed by a permanent magnet which plays between the poles of two electros, one on each side of it.

The Imperial Telegraph Commission, Vienna, amongst other apparatus for military purposes, shows an electro-magnetic dial instrument, constructed by Mr. Marcus, of Vienna. The transmitter is formed by a Stohrer's induction apparatus, in which two bobbins, upon the ends of a soft-iron armature, are rotated over the poles of a permanent magnet. The receiver consists of an electro-magnet between the poles of which a small permanent magnet oscillates and turns, by means of two pallets fixed upon it, a ratchet-wheel on the axis of the pointer.

The dial-plate of the transmitter is not supplied with holes, or notches, in which the handle can be arrested. In consequence of this want, it is almost impossible, when transmitting, with a uniform velocity, as is necessary in using magneto-electric apparatus, to arrest the handle exactly at any letter. This is evidently not an oversight, but is done purposely, on account of the weight and form of the rotating bobbins, which, when in motion, acquire a consider-

able force. Were they to be suddenly arrested by the handle catching against a notch, this force would be converted to the destruction of some part of the apparatus. With this slight drawback, this magneto-electric telegraph has considerable merits, its power being superior to many of the others exhibited.

The Postal Telegraph System.

A movement is being started in England to make the Electric Telegraph an adjunct to the postal system, by consolidating the various lines and putting them under the immediate control of the Government. By adopting this plan, it is supposed the expense of telegraphing can be materially reduced, and the use of the telegraph, as a means of communication, be rendered more generally available.

This scheme may do very well for a country where nearly all the more important operations of society are regulated by governmental machinery, and but little is left to be undertaken by private enterprise. But in this land of freedom and business competition, we shall probably do better, and achieve greater progress, by keeping the field of useful undertakings open to all new comers, and confining the functions of Government rigidly within their narrowest possible limits. It is the curse of Europe that she is governed too much; and it is policy for us to keep on the safe side, and avoid those centralizing tendencies, which are continually cropping out in schemes for the Government to do something for the people, which they are abundantly able to do for themselves.

But this is no way to develop the utilitarian genius of any people, who are thus left without motive to action. Governments may be paternal and beneficent, without entering into all the details of business or social intercourse. Men will never try to improve upon old methods nor originate new ones, if placed under legal guardianship and all their wants provided for. They had better run the risk of being governed too little, and be thrown entirely upon their own resources for postal facilities, than to be relieved of the responsibility of thinking and acting for themselves.

Hence, we trust there will be no attempt here to imitate this English plan for undertaking the Telegraph business of that country. If it is a legitimate business for the Government, it is equally legitimate for it to take charge of our railroads and run express, passenger and freight trains, to run factories and cotton plantations, or to build a mercantile marine and run steamship lines across the ocean for the accommodation of foreign commerce.

The true province of Government is to encourage, but not to supersede, private enterprise, in any and all departments of the domain of material industry. We believe that the monopoly of postal facilities is rather a stretch of its prerogatives and anticipate the time when these, as they now exist, will be surrendered to the hands of private carriers on the score of economy.—*Boston Commercial Bulletin*.

The Pope Safe—Civita Vecchia Being Fortified—The Pope to Have a Telegraph Cable to France.

FLORENCE, December 2, 1867.

The fortifications of Civita Vecchia are being strengthened and altered so that a garrison of Papal troops can hold the city as an open gate for the return of the French troops, should the safety of the Pope hereafter require it.

In addition to these precautions Civita Vecchia is to be placed in direct telegraphic communication with Toulon, and for this purpose a submarine cable has been ordered, which will be laid as soon as it reaches Toulon.

What would we, and the Pope, and the Emperor, and all our other friends do without the Telegraph!

The New York City Telegraph Company.

This company, who have been engaged during the past summer in constructing their lines throughout the city, opened them for business on the 25th of November. They have two wires, which are run on poles, covering almost every part of this city. The lines appear to be very well built throughout. The main office is with the Franklin Company, at 11 Broad street. City offices have already been opened at the following places: Courtland and West streets, Corn Exchange, 93 Wall street, Fulton Market, 40 Park Row, Grand street, between Norfolk and Suffolk, Avenue C and Sixth street, Broadway and Spring street, Grand and Mercer, Jefferson Market, Bible House, Spingler House; Third avenue and Twenty-fourth street, Eighth avenue and Twenty-ninth street, Sixth avenue and Thirty-fourth street, Broadway and Forty-first street. Several other offices will be opened in a short time.

The officers of the company are as follows: Wm. H. Mailler, President; W. T. Coffee, Secretary; M. V. B. Finck, General Superintendent, and F. G. Beach, Superintendent. M. B. Lillis has charge of the main office. The instruments used are main line sounders and registers, manufactured by S. F. Day & Co., of Ballston, Spa, N. Y., and are of excellent workmanship. The tariff on city messages is twenty cents. The line also takes business for all points on the Franklin, Atlantic and Pacific, and other opposition lines.—*Telegrapher.*

Ohio Railroads and Telegraphs.

The report of the Commissioner of Railroads and Telegraphs in Ohio has been submitted to Governor Cox, but cannot be printed until ordered by the Legislature, owing to an omission in the law. The Cincinnati *Commercial* gives some of the principal statistics of the report:—Total miles of railroad in the State, 3,780; total amount of capital stock of railroads, \$2,529,515 80; total amount of debt of railroads, \$72,120,382 89; total number of railroad employees in the state, 18,331. The Commissioner reports 1,211 animals killed by railroads during the year, and 106 persons killed, and 141 injured from the same cause.

Telegraphs in Turkey.

Correspondence of the N. Y. Tribune.

While they are wasting their blood and treasure in Crete they are doing one work of peace in Constantinople which will be of interest to Americans. Agathon Effendi, the Director General of Telegraphs in Turkey, went to the Exposition in Paris, and was so much impressed with the exceptional honors paid by the Emperor to our fellow-citizen, Mr. Hughes, that he at once invited him to come to Constantinople and introduce his system there. A new direct line was opened to Vienna, to be worked on the Hughes plan. The Servian Government at first objected to a direct line through Servia, but at last gave in, and the line has been opened. Mr. Hughes has been some weeks in this city, and has won golden opinions not only for his telegraph but for himself. His machine, as now perfected, is certainly one of the wonders of the age. The operators here declare that they can do as much work with it in two hours as with the old Morse instrument in eight hours. Mr. Hughes is still a young man, and it is to be hoped, that unlike most inventors, he may live to enjoy the fruits of his invention. The great practical inventions of this country seem to come from America—ether, the telegraph, the sewing machine, india rubber, the cotton gin, &c. Turkey is about the last country in Europe to appreciate and adopt them. But even Turkey is now, at last, beginning to realize the value of American inventions, and it is a fact by the way of which we may be proud, that Turkey has, for twenty-five years, depended on an American for all necessary inventions

in her machine shops. We have here a modest unassuming American named Hidden, who has been employed some thirty years in the Turkish mint. He is a mechanical genius of the highest order, and any where else would have made a fortune and a name, but here he has only saved untold sums for a Government that would have let him starve this year for want of his pay (two years unpaid), had not our Embassy interfered in his behalf, and after months of effort succeeded in squeezing out the money from the Porte.

A New Electro-Magnetic "Chronograph."

A late number of *The Cosmos* contains an article of considerable interest on the various applications of electro-magnetism by Professor Glæsener, of the University of Liege, in Belgium. Among them there is a "chronograph" for measurement of very minute particles of time, and which deserves some description as regards its application to artillery. Suppose it is required to measure the velocity of a cannon-ball. For this purpose let a series of targets, consisting of hoops intersected by wires, be placed at given distances. The wires of each hoop communicate with a separate electro-magnetic apparatus, by which an iron pencil-holder is kept in an unvarying position by attraction so long as the circuit is not interrupted. Opposite and close to this pencil-holder there is a cylinder turning on its axis at the rate of four revolutions in a second. Its surface, which is covered with paper, is divided into five hundred parts by lines drawn parallel to its axis, so each part represents one two-thousandth of a second. Its motion is effected by clock-work. Now, whenever the electric current is interrupted the pencil-holder ceases to be attracted, and falls on the surface of the cylinder, on which its pencil, therefore, describes a line. Whenever the circuit is completed the pencil-holder is re-attracted and leaves the paper. Let us now suppose a cannon-ball to be fired through all these targets, so placed, of course, as to lie in the path of the curve described by the missile. Each time it passes through one of the hoops it snaps asunder one of the wires; the circuit is consequently interrupted, the pencil-holder falls and marks the precise time of the passage. And so on, from target to target, each of which, as we have said, is connected with a separate apparatus. In this way, both the *spaces* and the *time* employed in going over it being determined, the *velocity*, which is the ratio of time to space, is determined also to a fraction of one two-thousandth part of a second!

On Going to College.

A College Professor chanced to meet the founder of Cornell University, when the following dialogue is said to have ensued:

Mr. C.—We expect to open the University on the 1st of September, 1868, with a Faculty costing us \$40,000 per year. That ought to give us success.

Prof.—Yes, Mr. Cornell, if you can get students. Our young men are not as desirous of College advantages as they might be.

Mr. C.—The trouble has been in the Colleges. They have not taught what young men have desired to know to prepare them for business. They have seen College men outstripped by men like myself, who had an education not much broader than that to be gained from Webster's Spelling-book.

Prof.—Precisely, Mr. Cornell, and they are just as likely to apply this fallacious reasoning to your College as they have been to apply it to Colleges of the present type—very likely to argue that what was good enough for Mr. Cornell is good enough for them. Young men will go to Colleges only as they are trained to appreciate the advantages which they furnish.—*Examiner and Chronicle.*

Miscellany.

A new mode of testing armor-plates for ships has been introduced and tried at Chatham dockyard, in which the detection of interior and unseen flaws is made by means of a magneto-electric current. The results are described as satisfactory and conclusive, whether in plates or bars, the smallest defects even having been discovered.

Telegrams which were received in this city from London, on Thanksgiving night, beat time and had 32 minutes to spare. A dispatch dated "London, Nov. 29" was received here at 28 minutes past 11 P.M. on the 28th. To-morrow the Cable Company will reduce their tariff. New lines are in operation on the Newfoundland coast, and it is expected that hereafter the cable will frequently beat time.

Mr. J. W. Stancliffe, for many years the efficient and accommodating superintendent of the Western Union Telegraph Company's lines in this vicinity, has resigned that position, and Mr. Gershom B. Hubbell has been appointed in his place. Mr. Stancliffe has been a faithful agent of the company for fifteen years, and retires with the universal good will and esteem of all whose business has made them acquainted with him.—*Hartford Press.*

Electrical Countries.

In a paper addressed to the Academy of Science, M. J. Fournet treats of a new and curious subject, viz., the electric state of certain regions. From the report of this paper, in "Galignani," it appears that in the mountains of the basin of the Rhone and their offshoots, there are some spots distinguished for their evolution of electricity, which is sometimes very remarkable; while others, though apparently identical in surface, are in a state of absolute electrical neutrality. Some very striking instances of this are quoted by M. Fournet. On the night of August 11, 1854, when Mr. Blackwell was on the Grand-Mulets, at an altitude of 3455 meters, the guide, F. Couttet, on leaving the hut, perceived the surrounding ridges apparently on fire. He immediately called to his companion to witness the scene, which was owing to a tempest. Their clothes were literally covered with electric sparks, and their fingers, when held up, were phosphorescent. At that very time Lyons was visited with a deluge of rain, and the whole day had been exceedingly stormy. In 1841, as the same guide was accompanying M. Chenal up Mount Blanc, they were overtaken by a violent storm, and found themselves enveloped, as it were, in thunder and lightning. All the stones and rocks around them emitted electric flames, and yet the summit of Mont Blanc, and the sky around it, was perfectly clear. In 1867, Saussure, Jalabert, and Pictet, were on the Breven at an altitude of 2520 meters. They soon experienced a strong pricking sensation at their fingers' ends on stretching them out. This sensation became stronger and stronger, and at length electric sparks could be drawn from Jalabert's hat band, which was of gold lace, and even from the knob of his cane. As the storm was raging above their heads they had to descend some twenty-five or thirty meters where the influence of this electricity was no longer felt. Another instance of this occurred on July 10, 1863, when Mr. Weston and several other tourists ascended the Jungfrau, and there the snow itself, which fell during the storm which overtook them, proved to be electric.

Granite found in Minnesota has been tested by the Government geologists, and pronounced to be equal, if not superior, to any in the United States, and fully equal to the Russian granite, known as the finest building material in Europe.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID,
145 Broadway, New York.

NEW YORK, DECEMBER 2, 1867.

Journal of the Telegraph.

With this issue the *Telegraphic Journal*, slightly changed in name, begins a new existence. Mr. Borst has ceased to be its editor. He has done bravely, and retires after sustaining his paper well and vigorously. It now comes into other hands, to be fed by a new nurse, and guided by a new protector. Time, which tries all things, will prove whether the change mars its prospects, or weakens its power.

The new editor has little to say for himself. He claims no special ability for the duty, and is without experience of editorial life. Yet he has seen something of the Telegraph, has followed its fortunes through many years, has had some share in its management and growth, has gloried in its capacity for usefulness, and desires the realization of all the good which, well directed, it can accomplish.

He recognizes the need of some one to conduct a journal which shall record faithfully and correctly the progress of a system which now touches civilization everywhere; to suggest or be the avenue for suggesting possible improvement; to disabuse the public mind of fancied wrongs; to stimulate all who perform its various labors to appreciation of their trust. These vast interests deserve that some one shall preserve their history, and give them a record for those who have nursed them to greatness. A continent pulsating with 200,000 miles of electric nerve may surely claim some modest mouth to speak for it, some one who shall watch its growth, and intelligently estimate its necessities.

Such a record this journal is designed to be. We accept the editorship hopefully. A quarter of a century spent in active supervision of the detail of telegraphic service has given some necessary qualifications for the task. It is undertaken as a duty and a delight. Around no man's heart and mind has the telegraph with all its grand capabilities more lovingly entwined itself. He believes it to be the harbinger of a common language and a united world. The earth will by it become a grand harp, on whose strings the fingers of human brotherhood and commerce will play until the race becomes a unit.

With his easy chair in the Executive rooms of the Western Union Telegraph Company, it will not be expected that he will say anything very disrespectful of its management. He will be entrusted with facts to communicate to those who are interested in its success, and the JOURNAL will be the medium of executive orders and information to all its offices. This secures at once a large circulation in every State of the Union. Every stockholder, and most of the employees will require it, rendering a circulation of

six to ten thousand more than probable. Nor need its circulation be limited to those interested in the Western Union Telegraph Company. Nothing will be published which any one interested in any Company may not read without offense. The JOURNAL will be kept free from all matter offensive to good taste and truth.

To every invention or means of telegraphic improvement, the JOURNAL will gladly lend its aid, and brief communications descriptive of any of these will be published. But offensive personalities, and communications of a general character will be declined.

So the Easy Chair has spoken. Twice each month we will meet you with whatever budget the weeks may provide. We hope the JOURNAL may be welcome and useful, and our interviews mutually pleasant.

JAMES D. REID.

Changing the Alphabet.

We have received a letter from Mr. Varley, whose name is so familiar in connection with the Atlantic cable and English telegraph lines, with the request that a copy be given to the *Telegrapher*, which has been done. We desire to draw to Mr. Varley's communication the attention of all superintendents and thoughtful men engaged in the work of transmission. The arrangement of figures strikes us as excellent. It will be noticed that every figure is composed of five parts. If there is one dot, there must be four dashes; two dots—three dashes, and so on. The general changes strike us as meritorious. Let them be carefully examined and fully canvassed. It is claimed that a lengthened use of this changed alphabet has proved its excellence. A few letters in our alphabet demand change. It seems time that these changes be made.

While thus referring to Mr. Varley's letter, we take occasion to say that Mr. V. with his genial face, is still with us, seemingly very happy, and no doubt, like his illustrious countryman, Dickens, preparing "notes for general circulation." At the request of the officers of the Western Union Telegraph Company, he is now engaged in an examination of the quality of their lines, and the insulation employed upon them so as to get the opinion of one who has had nothing to do with their provision, and who will report from actual tests. A little sensitiveness might have been expected on the part of experienced superintendents in thus placing the merits of American ingenuity in the hands of a comparative stranger and foreigner, but none has been shown. The cable has made us one family, and all are glad to see Mr. Varley at work, for which he has so much admitted capacity.

Western Union Telegraph Stock.

The money article of *The Tribune* of November 25th, says:

"Western Union rose to 34½, closing at 34½. It is understood that the floating debt has been paid, and that no dividend will be paid in January. Its receipts show a large increase, and are equal to regular dividends and payments to the sinking fund hereafter."

This statement is, of course, unofficial and the mere guess, so far as the January dividend is concerned, of *The Tribune's* money reporter. That question has yet to be discussed by the Board of Directors. In our next issue we may be able to give the result of their deliberations, and if no dividend is declared, the reason therefor. The statement respecting the general prosperity of the Company is correct. Everything indicates a steady and successful future.

The attention of office managers is directed to important modifications of the cable tariff to be found in the Executive Order on the next page.

To Correspondents.

Although the size of THE JOURNAL will not permit the publication of very copious correspondence yet we desire, as much publishable matter as possible. All incidents of a telegraphic character, in perplexities, its humors, its personal recollections suggestions of things which might or ought to be, its sad and sunny side, its men—dead, living, resigned or transferred—its poetry and prose, we shall be glad to receive. Especially will communications giving information of the progress of lines built by any Company or individual, or of regions which need the wires to connect its people with civilization, be welcome. We may have to *boil down* much that we receive, and lay aside others because of duplicated information or inappropriate matter. But we will treat all civilly, and even when basking, will do it tenderly.

To some experienced and educated men connected with the active duties of the management and supervision of lines, we look for aid in the discussion of the graver necessities of the business, and the appliances needed to increase the capacity of the lines and perfect the system. To all such we extend a cordial invitation to a share in our easy chair.

Government Telegraphs.

The Cable announced a week ago that the British Cabinet had resolved to take the telegraph lines of the Kingdom under its protection. No details, up to the date we write, have been received of the basis on which this arrangement was to be made, or what sudden reason had inspired the British Ministry to the decision. There are signs of commotion in English society which may make the management of Telegraph lines by Government desirable. Feudalism is by no means quelled. As it is put down by bayonets in Ireland, it grows throughout England. When the workingmen of England have so far lost the fear of Government as to hold indignation meetings in the rooms of its ministers in Downing Street, there seems the beginning of a popular assertion which may precipitate itself in acts of violence such as have characterized the wild protests of other days. These may not be the causes of this Government movement. It may be to popularize the telegraph and cheapen it. It may be at the appeal of weak lines which cannot pay expenses and so have besought the paternal care of the Government. Be it what it may, we desire no such care in America. Government has work and patronage enough. It may encourage great enterprises, as it has. It may legislate against corruptive elements, and preserve the public from private oppressions, but enterprise is for the people. Hands off.

Mr. Quincy is very eloquent in the Social Science Convention for an absorption of all railroads and telegraphs in Government hands. We are not ready for any such wiping out of that which keeps alive the national life, fires its enterprise and quickens its intellect. The future may demand all these. Let the future speak for itself.

International Ocean Telegraph Company.

The following named gentlemen were yesterday elected directors of the International Ocean Telegraph Company: W. F. Smith, J. A. Scrymser, A. Hamilton, W. P. Blodgett, C. Knapp, M. L. Delafield, D. H. Haight, O. K. King, T. B. Myers, H. K. Bull, and E. S. Sandford.

The Board of Directors meet for organization December 10.

The Board of Directors of the Western Union Telegraph Company hold their semi-annual meeting December 11, at their rooms, 145 Broadway, N. Y.

Western Union Telegraph Company.

EXECUTIVE OFFICE.
NEW YORK, November 29, 1867.
EXECUTIVE ORDER NO. 45.

ANSON STAGER,
THOS. T. ECKERT,
JOHN VAN HORNE, } *General Superintendents.*

Please promulgate the following general order by telegraph upon your Division.

On and after December 1st, proximo, you will observe the following:

1st. RATES OF TARIFF IN GOLD ON ATLANTIC CABLE BUSINESS.

On messages for Great Britain or Ireland you will charge for 10 words or less, \$25 00

For each added word, 2 50

And in addition thereto your present tariff to New York.

For example: The tariff from New Orleans to London on a message of ten words will be \$25, plus tariff from New Orleans to New York, \$8.25. Total, \$33.25, gold.

On a message of twelve words from Washington to London, \$30; plus tariff from Washington to New York, 87 cents. Total, \$30.87, gold.

You will send address, date, and signature free if they do not exceed five words or twenty-five letters. Any excess over five written words, or over twenty-five letters must be charged for. With this exception the rules for counting will be the same as heretofore.

You will henceforth state in check.

1st. The number of written words in entire message, including address, date, and signature.

2d. The number of written letters in entire message, including address, date, and signature.

3d. The number of words charged upon.

4th. The amount charged.

The body words need not be stated as heretofore.

No extra charge for code messages.

In cypher messages, by which are meant messages in numerals or letters not forming any known or dictionary words or names, you will count each numeral or letter as a single word.

When cypher is intermixed with plain words, the plain portion of the message will be charged at ordinary rates, and the remainder as cypher.

2d. ADDITIONAL RATES TO PLACES BEYOND GREAT BRITAIN AND IRELAND.

Messages to places beyond Great Britain and Ireland must be charged the following rates in addition to the rates above stated.

For 20 words or less, including address, date and signature:

Havre, Rotterdam, Amsterdam, Antwerp, Brussels, . . . \$ 1 00

Paris, Cherbourg and the Channel Islands, . . . 1 25

Berlin, Vienna, Frankfort, Hamburg, Brest, Bremen, . . . 1 50

Marsailles, Stockholm, Gottenburg, Copenhagen, . . . 2 25

St. Petersburg, Florence, Constantinople, Odessa, Christiansa, 2 50

Algiers, Madrid, 3 50

Lisbon, Oporto, Gibraltar, Corfu, 4 25

Tripoli, 7 50

Alexandria, 12 50

Cairo, 18 50

Suez, 15 68

TO OTHER PLACES IN FOLLOWING COUNTRIES.

Holland, Belgium, Switzerland, \$ 1 50

France, Prussia, Austria, German States, Denmark, . . . 1 75

Russia, Italy, Turkey, Sweden, Norway, Greece, . . . 3 00

Algeria, Spain, 3 75

Portugal, 5 00

Turkey in Asia, 6 13

India, China, 26 25

For each 10, or fraction of 10 words, above 20, charge one-half of the foregoing rates from Great Britain.

Determine the number of words by the printed rules for counting heretofore furnished.

Rules for checking and for cypher same as above stated for messages to Great Britain.

WILLIAM ORTON, *President.*

DECEMBER 4.

We are instructed by the Anglo-American Telegraph Company that from and after midnight, December 4, the address, date and signature of Atlantic cable messages will be sent free irrespective of the number of letters. Any excess above five (5) written words will be charged for. If less than five (5) words, no allowance will be made for the deficit. The Anglo-American Company reserve the right of requiring letters in future messages to be counted in cases where the privilege appears to be abused.

WILLIAM ORTON, *President.*

Telegraph Stamps.

From the Journal of the Society of Arts, it appears to be a matter of expectation in Paris that the Government, in whose hands is the regulation of the French system of Telegraphs designs to issue stamps for use in the payment of despatches, so as to promote public convenience in the use of the Telegraph. There can be no doubt of the correctness of this expectation, inasmuch as the stamps are already prepared, and specimens of them can be seen at the Champ de Mars. A message with one of these stamps affixed can be thrown into a box at a Telegraph Station provided for that purpose, or can be dropped into the Post Office in an envelope marked Telegraph Despatch—which is immediately sent to the Telegraph Station and placed upon the files.

The French Government have in contemplation other improvements in the Telegraph service the nature of which has not yet been made public. With ample jurisdiction, with abundant means, with no dividends to provide for, with no stockholders to interfere, every opportunity exists to carry out any plan of general convenience which may appear to be demanded by the people or the public policy. And with a territory so comparatively limited, of which Paris forms a natural centre, around which radiate the different lines like the diverging threads of a spider's web, every point of consequence connecting directly with the Central Imperial Office, jurisdiction is easy, the entire system simple, and transmission capable of the utmost promptitude.

The French Telegraph have, like our own, greatly advanced in public use. In 1852 the number of messages recorded is 48,103. In 1866—the record shows 2,842,554.

Stamps have been in use in England for some years.

Mr. Varley's Letter.

FIFTH AVENUE HOTEL,
NEW YORK, November, 11, 1867.

Editor Journal of the Telegraph:

SIR—It is not generally known in this country that one and the same telegraphic alphabet is used in Great Britain, France, Belgium, Holland, the German States, Italy, Spain, Portugal, Malta, Switzerland, Denmark, Norway, Sweden, Russia, Persia, Greece, Turkey, Africa, and India: also for the Mediterranean, Persian Gulf, and the Atlantic cables.

This alphabet was originated by the Germans, who have studied the subject with care, and so calculated their alphabet that these letters which occur most frequently in their language have the shortest signals, and the figures—the accuracy of whose transmission is of the utmost consequence—are so formed that the first half of the figure acts as a check upon the correctness of the other half and *vice versa*.

There are but two elements in the alphabet—the dot - and the dash —.

There are 32 letters in the alphabet, 30 of which are composed of not more than four elements, the remaining two of five.

The figures contain each five elements systematically arranged, the first half checking the second and so rendering them as free from ambiguity as they are easy of recollection by the mind.

In Europe the English and other operators have frequently to transmit messages in the German Dutch (Hollands), French, Danish, Italian, Spanish, Portuguese, Russian, Greek, and Hungarian tongues besides the English. As a rule they are unacquainted with these languages, yet they transmit the messages with, comparatively speaking, very few inaccuracies. This is mainly due to the simplicity and clearness of the International system.

When in 1854, 1855, England was connected by cable with Holland, Germany, &c., the "break" of alphabet was a serious inconvenience.

We found the German system of characters far superior to ours. It was already in general use on the continent of Europe and we adopted it.

The change was not attended with any serious difficulty. Every operator was supplied with an explanatory copy of the alphabet and signals. Two months were allowed for its study and a day named for the change. The two months passed away, the day arrived, but many were not ready for the change.

Another month was granted with a similar result. In fact there was on the part of many a decided opposition to the "foreign alphabet."

Gentle pressure was applied to the pocket in the form of a promised reduction of the salaries of those who, at the expiration of the third named period, should be found unable to make

the change, and when that day arrived every one was found prepared. The new alphabet came into operation simultaneously all over our system without any inconvenience.

This system has been brought by cable across the Atlantic Ocean to North America (Newfoundland). It will ere long reach the United States via Behring Straits, for beyond all manner of doubt Russia will sooner or later be joined to America by that route, and then the break of alphabet will be a serious inconvenience.

In this country it is an almost universal practice to send figures twice over to avoid error, first in cypher and then spelled out in full.

This is not done in Europe. At one time all figures (not spelled in full) were repeated back ("collated") to the original station. This has been discontinued for several years as unnecessary, because the figures contain their own check.

When preparing the alphabet for the Atlantic cables, I arranged it so that a motion of the reflected image to the left should correspond to the dot, the motion to the right to the dash. In every other respect it is the International alphabet. The dash has the same length as two dots separated by a space as in the letters i and t.

-- 1
— t

The spaces between the elements of a letter have each the length of a dot, thus:

----- v

The space between each letter of a word is equal to a dash.

c r u s h Crush

The space between the words in a message is equal to two dashes, viz:

a t r u t h l e

s s n a t i o n

c a n n o t e n

d u r e l o n g

a --- v ---

b --- w ---

c --- x ---

d --- y ---

e --- z ---

f --- ch ---

g --- k ---

h --- o ---

i --- ti ---

j --- de ---

k --- fi ---

l --- 1 ---

m --- 2 ---

n --- 3 ---

o --- 4 ---

p --- 5 ---

q --- 6 ---

r --- 7 ---

s --- 8 ---

t --- 9 ---

u --- 0 ---

Period (.)

Comma (,)

Query (?)

Exclamation (!)

Apostrophe (')

Hyphen (-)

Fresh paragraph

Inverted Commas

Parenthesis

Understand

Wait

Erase

Call Signal

End of Message

Cleared out all right—

("I don't understand") ?

There are two unauthorized or "operators" signals much used to replace the words "telegraph" and "wire reply" ("draht-antwort" in German messages).

Telegraph

Wire reply

draht-antwort }

The only use I have ever seen made of the ! is to enable operators to abuse each other by wire, *within the law*, half a dozen !!!!! being equivalent to ironical admiration of the operators stupidity.

I have omitted the colon and the semicolon, as they are never used on the telegraph.

The comma signal is always translated into a dash, thus:

Buy fifty midlands \ sell Erie at sixty \ wire reply —

The \ being equivalent to the , and clearer if less slightly.

The & ÷ ÷ are important in the German language.

The accented é is important in French to distinguish between the past participle and the present tense. The apostrophe is equally necessary in French, thus: C'est, l'intention, de l'Empereur.

The Spanish ñ I have never seen used.

The period (.) is generally written in three pairs, the mind counting 3 more easily than 6—thus: — — — — —

The erasure is frequently divided into 3 threes, and for the same reason, thus: — — — — — It is used as follows: Suppose the operator to have misspelled a word, he gives the nine dots (the erasure signal) goes back to the word before the error repeats it and continues.

Obediently Yours,

CROMWELL FLEETWOOD VARLEY.

Patents.

71,158.—ELECTRIC SWITCHES.—Samuel Gardiner, Jr., New York, N. Y.

I claim, 1. The shaft A and arm E, constituting an electric switch held to its bearing by a spring C, to insure effective metallic connection, substantially as described.

2. The cam-collar H, employed to withdraw the switch from its bearing in the act of rotation, as explained.

3. The conducting plate L, employed in combination with the rotary switch A E, and cam-collar H, to impart a given number of impulses by a simple rotation of the switch, as set forth.

4. The lighting key M, in combination with the gas-turning device A E C H L, for the purposes set forth.

5. The combination of the indicating dial J, and index K, with the rotary switch A E, as and for the purpose set forth.

71,005.—LIGHTING GAS BY ELECTRICITY.—John M. Higgins, (W. B. Culbertson, administrator,) of St. Louis, Missouri.

I claim, 1. The switch S, vibrated by the rotation of the wheel on the gas-cock, substantially as described.

2. The combination of the wheel D with cams *d d* and the vibrating switch S, as described.

3. The arrangement of the clock-gearing, the fan K, the wheel D, the escapement L I I', and the notched wheel Q, substantially as described.

4. The armature O, spring-catch o, and escapement L I I', arranged substantially as described.

Among the Newspapers.

Mr. Henry Sedley and Mr. Dorsey Gardner, editors of the *Round Table*, are to publish and edit the new eclectic weekly known as *The Week*.

Dr. William A. Hammond, editor of two medical journals and professor in Bellevue Hospital, is a frequent and able contributor to leading journals. He has been mentioned in connection with the editorship of Lippincott's proposed monthly.

Mr. Charles B. Seymour, of the *Times*, who has just returned from Paris, would do a good thing if he would write a book upon the American display at the Exposition. The accounts have been confused, and often unintelligible.

Mr. George Wakeman, of the *World*, is in the field as a lecturer. He is a capital writer.

Mr. William Winter continues as hard a newspaper worker as ever. He does a great deal of work for the *Weekly Review* for the *Tribune*—and good work it is.

The *Post* has a pretty strong quartette in Mr. Bryant, Mr. Godwin, Mr. Nordhoff and Mr. Maybrick.

The *Round Table* prints a supplement this week.

The *Iron Age*, *Tobacco Leaf* and *Dry Goods Reporter*, are three very profitable papers.

Mr. Mackey, proprietor of the *Dry Goods Reporter*, has fitted up a large room in his building on White-street, for a noonday prayer-meeting.

The *World* Publishing Company will issue a complete political almanac for 1868. It is nearly ready for publication.

Severe Storm at Cleveland.

CLEVELAND, O., Nov. 30.

A heavy storm of wind has been raging since midnight, and it is snowing and freezing. The bark *Potomac*, loaded with telegraph poles, got adrift and ran on the piles against the Marine Hospital at 9 A.M. The crew were saved. The vessel is pounding heavily against the piles and on the bottom. She will probably break up.

Chronicle of the Telegraph.

4th Sept., 1837.—U. S.—Prof. Morse showing his model of a telegraph.

5th Sept., 1858.—Valentia, Ireland—C. F. Varley arrives to test Atlantic cable, which is out of order.

6th Sept., 1858.—Valentia, Ireland—Varley finds by test bad leak in Atlantic cable, about 300 miles out.

8th Sept., 1857.—New York—S. C. Bishop patents his insulation for wire.

9th Sept., 1737.—Bologna, France—Prof. Galvani born.

10th Sept., 1838.—Paris, France—In presence of the French Academy of Science, Morse operates his telegraph.

12th Sept., 1862.—H. C. Bull, Frank Drummond, F. H. Lamb, C. W. Morse, W. H. Kerrer, operators, captured by rebels during rebellion. In May paroled at Richmond.

13th Sept., 1492—Christopher Columbus discovers his compass affected by magnetism.

Case of Conscience.

ALBANY, November 25, 1867.

O. H. PALMER, Esq.,

Secy. and Treas. W. U. Telegraph Co.:

DEAR SIR—I have received a letter, inclosing \$5, from a Telegraph operator, who a few years ago, while in charge of one of the offices of the American Telegraph Company, defrauded the Company of a small sum. He is endeavoring to live a better life, and wishing to make reparation, has requested that this money be forwarded to the rightful owners.

Very truly,

GEO. B. PRESCOTT, Supt.

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I have received for sale a few copies of a Group Photograph, size 18x24 inches, of English and American Telegraphic Engineers, Electricians, &c., from London. Among the group are MORSE, BONNELLI, FIELD, BRIGHT, COOKE, WHEATSTONE, CLARK, SAWARD, HENLEY, WHITEHOUSE, and others—29 portraits in all—giving the names, profession, and residence of each person. Price \$1 per copy. Address all orders, with money enclosed, to

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No. 458 Broadway New-York.

Miscellaneous Reading.**Rare Instance of Devoted Friendship.**

The following is from the Louisville (Ky.) *Courier* of the 25th inst.:

The four unfortunate Misses Morgan, who were burned to death by the dreadful accident on the railroad, near Cincinnati, on Thursday morning last, were ladies of education, refinement, goodness and respectability, and, as we have already stated, daughters of the late Mr. Benjamin Morgan, formerly of the firm of Price & Morgan, merchants in Philadelphia, and afterwards President of the Bank of Louisiana, at New Orleans, and interested in large sugar estates. At the time Messrs. Price & Morgan dissolved partnership they each possessed a handsome fortune, and they mutually agreed that in case of pecuniary misfortune or loss befalling either of them, the other, if still in good circumstances, was to share his property with the unfortunate one. Many years afterwards Mr. Chandler Price failed in Philadelphia, and Mr. Benjamin Morgan transferred to him a fine row of buildings on Tchoupitoulas street, New Orleans. Some years after, and about the time of Mr. Morgan's death, the latter became much embarrassed by endorsements for his acquaintances. Mr. Price having in the meantime accumulated another fortune, after the death of his old partner, re-conveyed the same valuable property on Tchoupitoulas street to Mr. Morgan's children. This is one of the rare instances, in this life, of faithful, honorable and undying friendship, and quite as extraordinary as that all four of the daughters should be killed at one fell swoop, a thousand miles from home.

Making Lightning.

A novel machine for generating electricity, worked by an eight-horse steam engine, was recently exhibited at a Scientific gathering in London.

"The electric action developed by this power, through the intervention of immense magnets and nearly twenty hundred weight of copper wire, was so tremendous as to burn bars of iron like sticks of wood, producing a light too vivid and intense to be looked upon. Electric beacon lights are likely soon to supersede all others, as the calcium and magnesium lights have already, to some extent, superseded oil. The one lately established at Cape Grisez, on the coast of France, flashes light across the British Channel and for some miles beyond the English shore-line. There are now three electric light-houses in Europe—two in France and one in England—and the supremacy of electricity over every other artificial illuminator seems in a fair way of being demonstrated beyond all cavil."

Atmosphere of Underground Railways.

The inquest on the body of a young woman who died suddenly while traveling on the London Underground Railway has resulted in a verdict of death from natural causes. The evidence of the scientific witnesses was conclusive as to the innocuous character of the atmosphere of the railway. Two independent analyses were made, and both agreed in the opinion that there were no impure gases which existed in sufficient quantities to affect the health even of passengers who were in a diseased condition of body.—*Artisan*.

There have been various speculations upon the possibility of the Suspension Bridge giving out some time away in the future. A few years since the idea was broached that the wires would granulate from constant vibration so that the cables would fall to pieces like ropes of sand. Now the stone in the towers is crumbling away from the action of the atmosphere and men are engaged cutting out the stone that is thus decaying, and supplying the place with Medina stone.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates, and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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Although issued from the executive rooms of the Western Union Telegraph Company, and liberally patronized by that Company, the discussion of all subjects of interest to the Telegraphic world will be left free in the Editor's hands, and treated upon their merits as these may commend themselves to him.

By the aid of a liberal supply of periodicals having to do with electrical science, and coming from different parts of the world, a valuable gleanings of matter interesting to all owning or using, or working or managing Telegraph Lines will be provided. In this the Journal will be much aided by correspondence from experts both at home and abroad, who will keep it fully posted on electric subjects.

What it will advocate, or what oppose, it is not necessary to say. Warmly attached to the business as one of the most useful agencies known to the world, its care and purity, and adaptation to the wants of civilization will be the pre-eminent design. All communities should feel that in the Telegraph they have a common interest, and that national greatness, universal peace, world-wide sympathy and social happiness is largely dependent on its use and possession. This feeling will be fostered as vigorously as it is felt.

To those holding stock in Telegraph Companies the JOURNAL should have value. It will not be an advertisement for everything which any Company does or designs, but it will convey from time to time exact and truthful information respecting its business and condition, which must make it acceptable to all in any way connected with its interests. Even to those who do not hold stock, and for mere purposes of information, the JOURNAL, furnished at so trifling a cost, should be an acceptable and essential part of their means of general information.

To managers and operators, and all engaged in the service, we can only say that our interests are the same, and no man feels the ties of brotherhood stronger than the Editor of this new medium of intercourse between us. We shall use our liberty freely and frankly and kindly, and shall be happy only as being the means of good and blessing to others. It is no part of our nature to abuse or destroy. But it may be our duty to speak positively of evils thoughtlessly engendered, with a view to the ultimate good of all. We shall claim liberty to discuss all things freely, yet hope never to say that word which shall needlessly cause offence. Those only who demand a monopoly of opinion will find the opportunity for dissatisfaction.

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Electrician to the Company.

JOURNAL OF THE TELEGRAPH.

NO. 2.

NEW YORK, DECEMBER 16, 1867.

VOL. I.

The Government and the Telegraphs.

[From the London Saturday Review.]

The official paragraph which announces the Government Bill for acquiring possession of the Telegraph system, leaves it a doubt whether the purchase is to be optional or compulsory. But if the Post-office is authorized to establish telegraph communication, the companies will have no practical choice in the matter. As the current of popular opinion has of late set strongly in favor of administrative centralization, there can be little doubt that Parliament will favor the withdrawal of the telegraphs from the control of private enterprise; and if the proposed terms of purchase are equitable, it will scarcely be worth the while of the shareholders to resist. The grant of full compensation is as expedient as it is just, for adventurers who try mechanical and commercial experiments for the public good are likely to be discouraged if the fruits of success are appropriated by the community. If the telegraph had proved a failure, Parliament would not have made good the loss, and it has no right to claim on behalf of the State the actual or proximate profits. The only legitimate gain to the revenue must arise from *unity of management*, and from the saving which may perhaps arise from the employment of Postmasters and the use of existing Post-offices.

It may be admitted that the telegraph companies have not troubled themselves to earn popularity by extending or improving public accommodation. With an obstinacy or obtuseness which will perhaps be inherited by their Post-office successors, they have steadily disregarded the essential consideration of speed in the transmission of messages. The boys who carry telegraphic despatches may be recognized by their loitering gait, and the clerks are apparently selected for their indifference to the urgency of customers. Still graver inconvenience is caused by the *want of reciprocal arrangements among different companies*. There is no telegraph office in the Kingdom which possesses an accurate list of all stations to which a message can be dispatched, although the clerks generally consent to receive the message and the payment, afterwards exercising a discretion as to the performance of the contract. In the hope that the Post-office will do the work better and cheaper, a majority of those who use the electric telegraph will almost certainly support the proposal of the Government. The capital invested in telegraphs is small in proportion to the extent of the undertaking, and the Government being comparatively indifferent to loss could at once ruin any recalcitrant company by a privileged competition.

The promoters of the scheme state with perfect truth that many towns and villages are at present without telegraphic communication, and the implied inference that the Post-office will supply the want represents, it be hoped, the serious intentions of the Department. Yet it will be strange if, in the administration of the telegraph system, the Post-office throws aside its habitual indifference to the efficiency of the public service in the rural districts. In all practicable cases the Government prefers mail carts to railways, and foot postmen to mail carts, nor is

any sight more common in a country village than the passage of a mail train on its way to a distant post town, from which a messenger walks back at his leisure with the post bags in the course of the day.

In one of the official articles on proposed assumption of the telegraphs, the writer incautiously dwelt on the convenience which would be derived from the transmission of telegraph dispatches by the letter carriers on their rounds. Only a Post-office functionary could have failed to perceive that the lazy boys who are to be superseded by the letter carrier are at least sent on special errands soon after the arrival of messages at the telegraph office. The periodical circulation of dispatches, which for the most part represent immediate urgency, would render telegraphs practically useless. A letter received at St. Martin le Grand at 3 P. M., is at present delivered in the Tyburnian district between 7 and 8, and according to the official plan, telegraph messages will hereafter be even more wantonly delayed. It is often worth while to save five hours out of six by sending a telegram, but few persons would care to send a message to London with the knowledge that it would reach its destination four hours after its arrival at the office.

If special messengers are employed, there will in that respect be no diminution of expenses, but the rent of offices will be saved, and in many instances the Postmasters or their assistants may conveniently undertake the duties of operators and clerks. The extension of the system of uniform charges from letters to messages will be perfectly reasonable. As Sir Rowland Hill has taught the present generation the habit, if not the art of writing, so cheapness and facility of telegraphic communication will perhaps lead to substitute messages for letters. As a message employs more labor for its transmission than a letter; the charge may properly be higher, but the companies have probably not yet lowered their tariff to the most profitable level.

It will not be necessary to secure to the Post-office the monopoly of telegraph dispatches, although the Department has the exclusive right of conveying letters. If private owners of a line can undersell the Government, their enterprise will prove that their charges are too high, and it is unlikely that such an enterprise would be attempted except as a corrective of notorious evils. The railways will find it necessary to maintain their telegraphs for the service of their lines, and there will be some difficulty in placing the same instruments in the hands of the Post-office for general use; but details of this kind can be arranged by competent persons when the principle of the transfer has once been admitted. There will be room for financial ingenuity in the necessary arrangement for charging the principal and interest of the purchase money on the profits of the undertaking. The net revenue of the Post-office is a tax levied at an arbitrary rate; nor is there any abstract reason against performing at cost price a service which requires little or no capital. The form of the impost is not likely to be changed. The telegraph wires must, in the first instance, bear the burden of the interest of the purchase money, and of a sinking fund for instalments of the principal. The Government will also expect to receive a per centage on the receipts as in the case of letters.

PARIS EXPOSITION OF 1867.

Telegraph Apparatus and Processes.

BY ROBERT SABINE, TELEGRAPH ENGINEER.

The telegraph apparatus shown in the Paris Exposition contains few novelties but indicates satisfactorily the quiet progress which has been made in this art-science in the five years which have elapsed since the last London Exhibition. Were it not for such exhibitions as these, the task of tracing the advancement made in telegraphy within certain periods would be an almost impossible one.

In 1851, Wheatstone's single needle instruments were used, almost exclusively, on the English lines, Morse's electro-magnetic recorders, upon the Swiss, Breguets dial telegraph upon the French railway, and Froment-Chappe's double pointer upon the French state lines. The great telegraph novelty, in 1851, was the copying system, of which specimens were shown by both Bain and Bakewell. The public attention was attracted to them in admiration of their performances whilst experience had not yet shown their impracticability. After the Exhibition, the idea of telegraph engineers became more generalised, and we find the fruits of this in the Paris Exhibition four years afterwards, where the Morse apparatus was shown in a state of transition from the degree of perfection which it has subsequently reached. In 1862 the honors were divided between the Morse and the dial telegraphs. The Morse, adopted almost by all the administrations of Europe, had offered inducements to the manufacturers to devote their energies to the perfection, such as we see it to-day from the workshops of Siemens and Digney. The dial telegraphs had received an impulse from the growing employment of private lines in the metropolis under the energetic influence of Professor Wheatstone.

PRINTING TELEGRAPHS.

In the Paris Exhibition of 1867 there is a significant inclination on the part of the French inventors to bring forward type-printing telegraphs. This is the result of the great success which has been attained by Mr. David Hughes' telegraph—the only instrument of similar importance which has not figured in previous exhibitions. This system, introduced from America, promises ere long to rival the Morse in the extent of its employment.

Every day we are advancing towards the possession of standards of merit. Telegraphy is growing, from stage to stage, more practical, because those inventions which do not come up to the established standard find their level sooner than they did before these standards existed. Thus the single needle telegraphs, which, during long years, held their own in England, have almost entirely died out. The infinite host of fantastical schemes of submarine cables and methods which we heard of in 1862 have been frightened with such a standard as the Hughes type-printer, the numerous inferior schemes which emulation has called or recalled into being in this Exhibition will, infallibly, in a short time retire into oblivion.

The writer proposes to classify the subject-matter

quent interruptions occasioned by the derangement of the latter."

On page 5 is Mr. Varley's letter, which struck me with no small surprise. From what I know of Mr. Varley, whose genius and acquirements command the highest respect, and whose disposition, I am persuaded, is to do strict justice, I have no doubt he will be pleased to be corrected in his statement of the origin of the code or telegraphic alphabet in universal use. Mr. Varley says: "*This alphabet was originated by the Germans!*" and he then gives the philosophy of its construction, as if this was their work. It is scarcely necessary for me to say to those familiar with the history of the telegraph in the United States, that this code, which has been adopted throughout the world, originated with Mr. Morse, and, indeed, is distinctly recognized on the European continent as the MORSE CODE. It is an essential part of the *Morse apparatus*, which is formally adopted for all the international lines, by the great International Telegraph Convention of 1865. Morse constructed this code on the very principles which Mr. Varley sets forth and erroneously ascribes to the Germans. This code is specified and illustrated in detail in Morse's first patents, many years before there was a recording telegraph practically established in Europe; consequently, before any such code was required there. Mr. Varley further says: "This system has been brought by cable across the Atlantic Ocean to North America." He seems not to have been aware that its first voyage across the Atlantic Ocean was not from Europe, but to Europe from America, some twenty-eight years before any cable was ready to use it.

In regard to this code, let me say that at the same time that I am preparing the "corrections of dates and events, etc.," I have also nearly ready to transmit to Congress a report on the telegraphic apparatus in the Exposition, to which duty of reporting I was assigned by the Board of Commissioners, as a Commissioner of the United States. In this report there is a chapter under the head of *Codes*, in which the subject is briefly discussed, and which I would transcribe but for want of time. On this code, however, I may say that Mr. Varley may have been led to believe that it was constructed in Germany because some modifications have been there made in it. The original Morse code contained five letters which, from their liability to be mistaken for others, required modification; these have been modified in the present code, and are improvements. Some five or six others have been changed, by transferring the combination forming them to other letters, but these changes are of doubtful advantage. The rest of the letters of the code are precisely as Morse originally conceived and devised them.

On page 6 you perpetrate one of the stereotyped errors of which I have spoken. The error is not in the fact, but, from its position, the *inference* is an error. The natural inference is that the model thus shown on Sept. 4, 1837, was the *first* exhibition of the telegraph; and it is stated in many publications that this is the actual date of the invention. Nothing can be further from the truth. This very model was first shown in operation in *November, 1835*. The exhibition in September, 1837, was a more public one, and the announcement in the newspapers of the day; while the first exhibition, not so public, was not noticed in the journals, has doubtless caused the error that this last was the date of the invention. The first exhibition of a telegraph instrument was November, 1835. I wish I could enlarge. I close abruptly to save the mail.

Truly your friend and servant,
J. D. Reid, Esq. SAMUEL F. B. MORSE.

We are glad to see the face of Richard Stevens again in his old haunts. He now prospers in California, and is in New York on furlough. Long life and success to him.

How to Find Crosses.

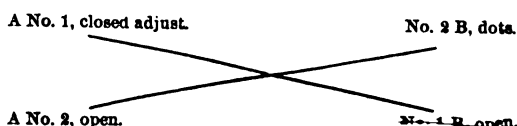
NASHVILLE, TENN., Feb. 15, 1868.

MR. EDITOR—You, in common with all well-informed practical Telegraphers who have given their business due attention, have no doubt suffered much vexation of spirit from the lack of knowledge of elementary principles and plain practical facts on the part of operators in small offices. Many of these are skilful manipulators, yet their ignorance is coupled with a false pride which resents instructions sadly needed. Many of these sensitive experts, and many others who are neither sensitive nor expert, may receive a few simple suggestions through your columns without offensive personality.

With this view, and upon the presumption that all operators, in common with the writer, are in need of instruction of this character, either on their own account or that of their co-laborers, I propose in this communication to point out the simplest and best mode of locating a "cross" on two or more wires, for I believe this to be one of the greatest annoyances Telegraphers have to contend with, and our daily experience teaches us that the manner of locating them is less understood than almost any other trouble that occurs in our daily duties.

If this should seem too simple a matter for publication in the JOURNAL, I will mention the suggestive fact, that only three out of twenty-three operators in a certain city office, can locate a "cross," or an ordinary ground escape.

The following diagram will fully explain to those who do not already know the best and simplest mode of locating a "cross." We will take lines No. 1 and 2 from A to B.



A discovers No. 1 and 2 crossed north, south, east or west, as the case may be. A tells B to open No. 1 and makes dots on No. 2. A will immediately open No. 2 and adjust on No. 1 for B's dots; if he hears B on No. 1, then the "cross" is located between them. If A gets no dots from B on No. 1, then it is evident that the "cross" is beyond. A will keep No. 1 or 2 open, and call the next office beyond B and test as before, and so with every office in the circuit until the trouble is located. The same rule of testing will apply to any number of mixed wires.

Before closing, I would advise all who have not already done so, to send to Ticknor & Fields, Boston, and procure a copy of Geo. B. Prescott's (late edition) "History, Theory and Practice of the Electric Telegraph," price \$2 50. To the practical Telegrapher, it is certainly the best work upon the subject that has yet made its appearance.

Yours truly,
CROSS.

An Improved Telegraph Key.

We are permitted to publish the following letter to Mr. Tree, and having seen the Key, to which allusion is made, feel very glad that the article of our esteemed correspondent "T," of Philadelphia, has met so ready a response. We shall give a description of the new Key whenever Mr. Benton gives us his consent to do so. We may say this much now. Mr. Benton's Key has no trunnions. The upper and lower bar and spring is a unit, and a guide prevents all oscillation except the legitimate movement in manipulating. The Circuit-Closer is not automatic, but arranged like a Railroad switch, to attract attention to its condition. When closed the contact is complete:

MACON, GA., FEB. 15, 1868.

J. B. Tree, Esq., 145 Broadway, New-York.
Presuming on your well known kindness to your

Operators, while Superintendent of the South Telegraph Co., I venture to address you, asking you kind consideration of my effort.

Acting on a suggestion of the JOURNAL OF THE TELEGRAPH, in an article headed "Telegraph Keys," I have made a Key, which, as near as I can see, corrects all the faults complained of in the article, and I send it to you, well knowing if there is any merit or originality in it you will credit it with it, and also be kind enough to point out its defects. Very respectfully yours, &c.,

WM. A. BENTON,
Asst. Opr. Macon, Ga. Office.

Still Another—A Self-Closing Key.

To the Editor of the Journal of the Telegraph:

SIR,—Having noticed in the columns of your journal two letters from correspondent "T," Philadelphia, on the subject of "Self circuit closing telegraph Keys," I take the liberty to reply to him through the JOURNAL. I have a self circuit closing key, of my own invention, in use, which has the same movement or motion of the present Morse lever key, but different in construction. It is without trunnions. The connections are sure. The manipulation is easily accomplished, without any inconvenience to the manipulator from the self-closer. Altogether I think it obviates all the objections referred to by correspondent "T."

WARREN, Mass., Feb. 21, 1868.

To the Editor of the Journal of the Telegraph:

What a history have we operators, commencing in those days of delicious ignorance when we were first instructed in the rudiments of the glorious Art.

With what a mysterious air would we open the local circuit (when our instructor was out) and inwardly congratulate ourselves on the terrible discovery we were making, or rather, on the main line, or still further on when we were learning to write, would open the circuit and writing "134"—"who is at the key?"—wonder why somebody didn't reply at once, and repeat their whole history from childhood up.

How I pitied that poor man, and what a lucid (!) explanation I gave him of the whole Art.

Telegraphing is not so pleasant now-a-days, for we are at a repeating-office, and every few minutes one or all of our instruments are ringing with our "call," and then with the slight variation of "three" or "city" we plod on from morning till night.

It is not altogether monotonous, however, for now and then we have pleasant chats with our friends far away, or sometimes after business hours at night indulge in a game of chess with some champion over the wire.

You do not hear often from our District, I fancy. Well, we (the employees) are the best contented possible, have a kind and efficient Superintendent, Mr. Jas. Compton, whom we take a pride in pleasing.

Of course we are laboring under the common annoyance of "Sunday Labor," but there is a petition going around which when completed and presented we hope will be favorably considered, for Telegraphers generally desire and need the rest afforded by the Sabbath as much as members of other professions, who are not confined by Sunday rules.

Having no suggestion to offer, telegraphically, I close, wishing the JOURNAL all possible success.

CANTON, MISS., 5th Dist. W. U. L.

NOTE—Nothing gives us so much pleasure as the evidence of mutual esteem between Superintendent and assistants. If James Compton is what he was, cheerful, frank and generous, his operators will respect and love him. In any reduction of Sunday labor, and in its extinction wherever possible, "D" may count on our aid. We were the first in America to oppose it, and we have not changed.—Ed.

Insurance.

To the Editor of the Journal of the Telegraph:

It may seem unnecessary that anything more be said in reference to the Telegrapher's Insurance Association, but I find there are so many outside of New-York that still seem to be in the dark respecting its plan and scope that a few lines by way of explanation may not be amiss.

The necessity of some kind of benevolent association among Telegraphers had long been felt, but it was exceedingly difficult to devise anything that would accomplish all that was desired. The Union had scarcely answered the requirements demanded of it—even its most sanguine friends did not claim as much—hence, when the suggestion was made, (and here let me say no hostility to the Union inspired it,) to form an Insurance Association, it met with great favor, and was at once carried into effect. The plan adopted was very simple. Each member was to pay one dollar to the family of any who might die. This was all. Expenses were not to be permitted, except such as were absolutely unavoidable for stationary and printing, and these were provided for by a small fee paid in at the time of joining. The officers were to serve without remuneration, and the whole amount of moneys paid in were to go to the fund, undiscounted. Now this association is in full and successful operation, some 225 persons, from all ranks in the business, have availed themselves of its provisions, and paid in their entrance money; but in order to make it sufficiently effective, at least five hundred ought to take out certificates or policies, then we would have a cash fund of \$500 always on hand to pay over in the event of a death. This amount will no doubt be obtained in a few months, but a growth of five or six a week, which may be taken as an average, is rather slow, when we think of the thousands engaged in the business. One object in my writing this communication is to make an appeal to the operators and others, to join hands with us in this good work. None will deny the wisdom of making provision against the day when death shall deprive beloved ones of the means of support, but they procrastinate. To such, I would urge immediate action, because their aid is needed to make this organization a success. We want them to join hands with us in aiding the desolate, and in our mission of kindness to the bereaved. Are we wanting in affection for our households? Shall we expose them to the degradation of a subscription paper? Then why delay in doing what we can so easily do to mitigate their woe, when the staff upon which they have leaned is broken, and they are left to struggle, unaided, with an unfeeling world.

The Executive Committee have deemed it wise to restrict the membership to certain geographical limits, but any effort to extend the membership in any but the extreme Southern States will be gladly encouraged. The advertisement of the association will be found in this paper, giving direction for making application.

D.

Apropos of the foregoing we subjoin a few words from an intelligent friend in Trenton:

TRENTON, N. J., Feb. 14, 1868.

D. R. Downer, Esq.,

DEAR SIR,—I herewith enclose you my name, with Charles McLaughlin's, for membership of the Telegrapher's Mutual Life Association, also the amount required for membership. I had hoped to have been able to send several names, having received the assurance from several that they would join the association, but men appear dilatory in such matters, while the bloom of health prevails. A brother Odd Fellow died and was buried last Sunday who had been exhorted to join the Funeral Aid Association, which has been formed in this County by the different Lodges, and I am indeed sorry he did not take the warning voice of his best friends.

He left a young widow with four small children to the cold charities of the world, which he might have provided for comfortably. But such will be the case with many of our young Telegraph friends, notwithstanding the timely warning you give them through that excellent medium, the JOURNAL OF THE TELEGRAPH. You can please mail my certificate, with McLaughlin's, should you deem us worthy of membership, to me, and oblige.

Very truly yours,

JOHN A. WRIGHT.

A Philadelphia Invention Successful in France.

The following, which is a translation, in substance from an article in the Paris *La Semaine Financiere*, of January 25th, will show that an invention of one of our own citizens, designed to perfect the insulation of electric telegraph lines, has been declared superior to all its competitors by a French Commission, which had before it insulators from nearly every State in Europe:

"*Electric Telegraphing*.—M. de Vougy, the Director General of Telegraphs, who is anxiously engaged in improving our telegraphic material, some time ago named a commission, specially charged with examining the various kinds of superior insulators, with the view of the adaptation of the best of these to the French telegraphs. This commission, furnished with instruments of great delicacy, for the purpose of measuring the amount of waste (or leakage of electricity) from these insulators, has established the great superiority of the insulators of Mr. David Brooks, of Philadelphia, over all other competitors, and has ordered a considerable quantity of them, in order to make an extensive trial of them throughout our telegraphic lines."

The Brooks insulator is composed of an iron hook, intended to hold the telegraph wire. This hook is cemented in a glass vase, of elongated form, contracted at the neck. The glass itself is cemented in a hollow-cast cylinder, and all parts of the apparatus, which are susceptible of absorbing paraffine, are saturated with it. The glass vase has also very decided qualities of repelling moisture, and contributes to render the insulator perfect. It is to the employment of paraffine, now known as the first of insulating bodies, that Mr. Brooks owes the success that he has obtained.

The French Government has sent to Mr. Brooks a beautiful and sensitively delicate differential galvanometer, (made by Ruhmkorff,) of 40,000 involutions, to test the insulators he is making for the French telegraph, and specimens of all the insulators from every part of Europe offered in competition before the French Commission.

SELF-BREAKING TELEGRAPH REPEATER.—J. H. Bunnell, N. Y. City.—This invention proposes to furnish an improved form of self-breaking telegraph repeaters, by which the operator is enabled to do away with extra local batteries, heretofore generally used in all practical forms of self-breaking repeaters, and by so doing away with extra local batteries and the many necessary connections resulting from their use, to greatly simplify the general adjustment and operation of the complete instrument.

Distances at which different Sounds are Audible.

	Fect.	Miles.
A full human voice speaking in the open air, calm,	460	.085
In an observable breeze, a powerful human voice, with the wind, can be heard,	15,840	3.
Report of a Musket	16,000	3.02
Drum	10,560	2.
Music, strong brass band	14,840	3.
Cannonading, very heavy	575,000	90.

In the Arctic, conversation has been maintained over water a distance of 6,696 feet.

Miscellany.

A GERMAN telegraph operator received information, last month, that he was one of the heirs of an East India millionaire recently deceased; whereupon he borrowed large sums of money, took his family to Vienna to live, and threw his thalers about in princely style. But in the height of his enjoyment the information came that it was all a mistake, and that he had no claim upon the inheritance. Maddened by the sudden overthrow of his hopes, the morning after the receipt of the fatal intelligence he strangled and shot his wife, beat out the brains of his infant, shot his two elder children, and emptied the last charge of his pistol into his own brain.

OUR old friend A. L. Whipple, of Albany, has been appointed Superintendent of the Fire Alarm Telegraph of that city. A very sensible appointment.

CYRUS W. FIELD, Esq., sailed for England on the *Java* which left New-York Feb. 19th. His two daughters accompanied him. Mr. Field goes to endeavor to induce the consummation of the arrangement between the old Atlantic Cable Co. and the Anglo-American Telegraph Co., of which we gave full details in the JOURNAL of Feb. 1.

MR. SAMUEL GARDINER has just placed his electro gas-lighting apparatus in the picture gallery of A. T. Stewart, Esq., it being a part of the magnificent mansion which he is soon to occupy on the Fifth avenue. The number of burners is 325. The room was instantaneously lighted on the evening of the 19th inst., and was decided by Mr. Stewart, Mr. Kellum, the architect, and others present, to be a perfect success. From the street, the view was magnificent, the reflected light being seen at the distance of several blocks. On turning the gas off and on, the effect was like that of repeated flashes of lightning. In the Gardiner machine each burner is lighted by means of a platinum wire, made red-hot by means of an electric current.

THE Portuguese Government has given Mr. Medlicott, a Lisbon merchant, and Mr. Rumball, of London, the right to form a Company which shall lay down a line from Falmouth, in England, to Oporto; thence to the Azores, and from thence across to the West Indies or to some part of this continent. The estimated cost of this proposed Portuguese line is £800,000.

House of Representatives.

FEBRUARY 14.—Mr. Myers, from the Committee on Patents, reported a bill authorizing the Commissioner of Patents to receive and entertain a renewed application of Charles Grafton Page, of Washington, for letters Patent for his induction apparatus and circuit breakers, known as the "Induction Coil," and if he be found the first inventor thereof, to issue a patent, reserving the right of persons now owning and using such apparatus.

After explanation by Mr. Myers, and the reading of the report, from which it appeared that the induction coil of Ruhmkorff, for which he was in 1864 awarded the French Imperial prize of 50,000 francs, was substantially the invention of Mr. Page, and was exhibited by him in 1839 and 1840, but not patented, because he was in the employment of the government.

The bill was passed.

Proof is being afforded by recent publications that to Professor Page we are indebted for what has been called the Foncalt circuit breaker, a spark arresting apparatus, which by European savans, is deemed essential to the working of large electro-static coils. We are delighted to see one whom we know to be so worthy, receiving the long delayed honor which his high character and genius deserve.

Journal of the Telegraph.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID,

145 Broadway, New York.

NEW YORK, MARCH 2, 1868.

Interpreting Telegraph Rules.

There is a law recognized among men and horses that, when passing up and down the pavement or the street in different directions, each takes the right and thus move forward. Some are always stupid enough to be dodging from one side to the other, treading on some man's toes, tearing some woman's dress, and getting kicked and sworn at generally, yet never learning the art of getting through peacefully and unharmed. A great many men have to learn that law is not always order, and that the yieldings and the softenings, and the self-abnegations we have evermore to practice in all life's duties, are the promptings of the highest wisdom and surest auxiliaries to success.

A curious example of the rigid duty men, in quite another sphere from that indicated above, yet as sublimely conscientious, occurred in the dining hall of the Burnett House, Cincinnati, at the time of the opening of that house, many years ago. Servants were needed and scarce. Raw hands had to be taken from the street and taught for the service. These were marshalled round the head steward to receive orders. One of these rules was pithily stated thus: "Soup first; nothing till after soup." One stout fellow caught the order as he would a charge to take an enemy's battery. "Zoop first; nothing till after zoop," he repeated, until he made it very clear to himself that the only way to roast-beef, or pudding, or charlotte russe was via "zoop." Thus primed, the door opened, and the guests, with their smiling faces and new clothes, marched in with gentle step to their seats. Each waiter had five chairs and their occupants to provide for. Our waiter had received four of his, each of whom passively accepted the initiatory rite of spoon victuals, and took their soup like Christian gentlemen. But after awhile came the fifth, a big, boney fellow, who threw himself into the vacant place as a hungry horse would snort into his stall and whinney for his oats. Quick as a flash the conscientious Patrick Malone was by his side with his plate of initiatory soup, and which he essayed to place before the raw-boned.

"Don't want any soup," growled Indiana.

Here was a go. "Zoop first; nothing till after zoop," thought Patrick. That was clear duty, and after a moment's consultation with himself, "zoop first" seemed clearly the higher law, and down again the plate of the timidest vermicelli was descending, when Indiana angrily exclaimed—

"I told you I didn't want soup—take it away and bring a big piece of beef."

Pat was puzzled for a moment—only one. He had been defied in the conscientious discharge of his duty. His indignant blood waxed warm, and when Indiana, with a round prairie oath, turned again on the descending soup, Patrick indignantly ejaculated: "Divil a bit o' mate will yez git to ate till ye ate yer zoop; its aginst the rules ov the house. Zoop first; nothing till after zoop."

In the management of telegraph lines there are necessarily many orders to be given. When these are issued, a reason usually accompanies them or is understood, which, to intelligent men, justifies the issue and secures obedience. Sometimes these are arbitrary, having reference to some fundamental necessity. Thus the strict privacy of messages de-

mands the most uncompromising enforcement. There stubborn virtue is heroic. But of some rules the intelligence of men must form a part, and so conjoin that the rule may remain intact and yet good sense prevail.

Take for example the following scene in a telegraph office, no matter where—say in Sitka—lest any one recognize the facts:

Mr. Brown—Can you send a message for me to Coventry?

Receiving Clerk—Yes, sir.

Mr. Brown—Send it immediately?

Clerk—Very soon, sir (said with due caution); takes message, counts words, takes ordinary tariff, times it, numbers it, says good morning to *Mr. Brown*—and, so far, all is lovely and polite.

Message was one of importance, would produce an answer if received, and an answer of a special kind. It read thus:

Charter none of the vessels named in your letter. Answer at once. JOHN BROWN.

After a reasonable time, answer came:

John Brown, Sitka:

Despatch received. Have chartered the Columbus. Will sail next Monday. JAMES SMITH.

Mr. Brown was perplexed. Something was clearly wrong. He had ordered *no* vessels to be chartered, and here is the Columbus coming, the very one, likely, he least wanted to see.

Mr. Brown put his hat on his head in a very summary manner and made for the telegraph office, arriving at the counter in such a state of wind-brokenness as to seriously interfere with his articulation.

Young man, you there (pointing animatedly to the clerk who had received his message, and who was then busy washing his round young face, before going to supper), I want to see the dispatch I left with you this morning.

Clerk—(Gurgling through the soap)—Yes, sir, in a moment.

Gets the message, looks scrutinizingly at *Mr. Brown*, to be sure he is the very *Brown*, hands him the message, carefully watching lest it be taken away contrary to rule.

Mr. Brown—This is all right, but see the answer I have received. There is an error somewhere, sir. I wish you to see if it went correct.

Clerk—We can make no inquiries unless you pay for repeating it. These are our orders.

Mr. Brown—(Excited)—You refuse to see if you committed a mistake when I show you that it is certain one has been made? You are willing to cause me loss, and disgrace your company, eh?

Clerk—You can send another message and make it all clear, or you can have this repeated by paying for it.

Mr. Brown—No, sir; I shall hold the company responsible. I show you that there is an error. You have the chance now before any damages are incurred to correct it. Will you correct it or no?

Clerk—Can't do it, sir. Against our rules.

And so *Mr. Brown*, stubborn and indignant, with a volley of oaths, and in a burning rage, sallies out, engages his passage in the night train for Coventry, arrives in time to prevent loss, and after two nights' travel, an immense loss of temper, and minus a good amount of pocket money, arrives at Sitka.

Now, *Mr. Clerk*, you are very honest, very; but, under such circumstances, you acted a very unintelligent part. No rule was ever made to injure the company making it. If you could not oblige the man, you should have felt the instinct of preservation to save the company. No rule preventing correction of such a case had any force.

And what caused all this? Simply the omission of a letter by which *none* was rendered *one*. A little sense, a little intelligent politeness would have saved all. Rules are to guard against loss, never to be used to cause or confirm them.

Official Statement of the Business of the Western Union Telegraph Company.

DECEMBER, 1867.

Receipts, \$576,135 19
Current Expenses, 379,291 35

Net Profit, \$196,843 84

This shows an excess of \$16,843.84 over the estimated amount shown in the statement of January 1

The receipts of January and February so far as known approximate those of the same months in 1867.

Charles E. Stewart, Esq., chairman of the board of the Anglo-American Telegraph Company, while presiding at a meeting of the Company in London, Wednesday, Feb. 19, was struck with apoplexy, and died in his chair in the presence of the board.

THE British and Irish Magnetic Telegraph Co. of Liverpool have declared a dividend for the past six months at the rate of 8 per cent per annum, reserving a fund of £22,416.

THE Electric and International Telegraph Co. of London have declared a dividend of 5 per cent for the past half year free of tax.

The ministerial plan for the assumption of the Telegraph lines of Great Britain was to have been made public within a week after the 17th of February, but which we have not yet received.

General T. T. Eckert is engaged in perfecting a new insulator adapted to the existing fixtures of the Eastern lines, but which has claims for much more extended use. We have not room to go into particulars now, but will describe it fully, if permitted, in our next issue.

The business of the Tariff Bureau has been assigned to the Engineers' Department, and all questions or information relating thereto, will be directed to Gen. M. Lefferts, Engineer. This department now comprises the commercial news, tariff, and general statistics, the last of which the company greatly needs, and in the collection and arrangement of which Gen. Lefferts has much skill and a lengthened experience.

The International Ocean Telegraph Company have declared a dividend of 7 per cent, on its preferred stock. All's well, and Gen. W. F. Smith, President.

We are under great obligations to Charles E. Pomeroy, of the Salt Lake office, for the interesting article on frictional electricity developed by winds on the western plains.

MR. A. S. HEWETT, Commissioner to the Paris Exposition, in an elaborate report shows that iron, by the fewer days labor required in preparing it in America, can be made cheaper than in either England, France, or Belgium.

All our readers will recollect the correspondence between Mr. C. K. Jones, of Fort Wayne, and Mr. Varley, the English electrician, respecting a mode of accelerating the speed of transmission by the Atlantic cable. On this and kindred subjects, Mr. Jones was somewhat of a monomaniac. They engrossed his entire being. A few days ago we received the melancholy intelligence that he had been taken to the insane asylum. It is thought that the revelation of the futility of the ideas he had cherished so long, on which he had lived and labored and hoped, took away from him the thread on which his brain-work hung, and left it void and broken. It is a sad case. We love the men with whom we toiled in earlier years. Jones was one of these, earnest, faithful true. It is mournful to think he lives, yet cannot receive the benefit of kind words from lips that would gladly utter them.

Frictional Electricity Excited by the Air.

A curious electrical phenomenon occurred several times upon the Overland Telegraph line, of which the following brief description is given:

It has happened three or four times within three years, that a strong, steady northwest wind blew from Fort Laramie, Dakota, to Omaha, Nebraska, a distance of six hundred miles. This current of wind arose during the forenoon, and increasing rapidly toward noon, attained its greatest velocity at 2 P. M., at which time a powerful current of electricity, excited by the friction of the air upon the wire, was observed to flow into the Omaha office, changing the circuit to so great an extent as to entirely suspend communication, and heating the relay magnet to a degree which rendered it necessary to cut it out from the circuit at the thumb screws.

The main battery being thrown out of the circuit, the key was opened, when a large and remarkably vivid spark, of an intensely brilliant purple hue, appeared at the platina points of the key. The point of a penknife blade, which was inserted in the spark, was instantly fused. The spark continued uninterruptedly for several minutes, when, it being feared that the platina points would be destroyed, the key was opened to one quarter of an inch play, notwithstanding which the spark increased proportionably in size and brilliancy, and remained unbroken. A bit of charcoal placed between the points of the key was almost instantly decarbonized and reduced to ashes. A small lump of blue vitriol was then introduced into the spark and was immediately ignited, exhibiting a bluish flame, but being reduced to ashes less quickly than the charcoal; a common lead pencil being interposed was instantaneously ignited and rapidly burned through, with a flame of a reddish tint.

The extraneous current was observed to flow in waves of fifteen minutes duration, leaving the circuit entirely open at the expiration of each wave, and resuming its intensity after a lapse of a few seconds. These intervals were accounted for on the supposition that corresponding lulls of the wind occurred at some point along the line.

Toward dusk, after the intensity of the current had decreased considerably, it was deemed safe to replace the relay in circuit, which being done, the line worked unexceptionably well to Fort Laramie without the aid of a main battery at either end.

This phenomenon is quite different to that of the *aurora borealis*, as the latter is nearly always fitful and irregular in its manifestations, while the former affords a comparatively steady current, by which the line can be readily worked without change of adjustment during the continuance of the wave.

This example of frictional electricity induced by the wind flowing parallel with a long stretch of line has probably never been witnessed elsewhere with the same degree of intensity, as there is no other line on this continent of an equal length which traverses such a level, unbroken geographical surface, over which the wind could have a sweep so continuous and uninterrupted.

Progress of Electrical Science in America.

At a scientific *soiree* recently held at the house of Hon. Peter Parker, in Washington, Prof. Page exhibited one of his small electro-static coils lighting up the Geissler vacuum tubes, by the motive force of one of the small thermo-electric batteries of Moses G. Farmer, of Salem, Mass. The illumination was continued through the entire evening; and the merit and elegance of the experiment for the parlor cannot be surpassed. By a single jet of gas the electric power is furnished with perfect constancy without the annoyance of noxious gases and corrosive acids. The members of the scientific club and many members of the American Academy of Sciences were present.—*New York Artisan*.

Our Advertisers.

Our circulation has largely increased during the past month, and as the JOURNAL takes hold of society, it will show itself to some extent in our advertisements. Of these already given to us, we have a word to say.

With one exception, all have been given to us unasked.

We owe an apology to our old friend Dr. BRADLEY, for sadly mangling his. In large type we gave the public to understand that he made his instruments of *Oxide* metal! And many wondered thereat. It should have read *OREIDE* metal, which is claimed to be richer and finer than brass. Dr. Bradley employs a large number of men, nine of whom devote themselves to making magnets of fine quality, ordered by operators who prefer those of his make, and who desire to own their own machinery. The doctor is driving a large and successful business and no one grudges him his well earned success.

The establishment of L. G. TILLOTSON & Co. is also crowded with work. Nearly one hundred sets of the new stock reporting machinery are being made by this house, besides the ordinary manufacture of telegraphic machinery in which it has dealt so largely and so long. Good work, promptly executed, at moderate rates, has made the house a strong and successful one.

No one needs to be told of the BISHOP GUTTA PERCHA COMPANY. Their manufactures are known everywhere as the finest and best. Cables, all kinds of chemical vessels, insulated office wire, artificial flowers, &c., are provided in the highest style of excellence and in the greatest variety.

We have to add to these the advertisement of CHARLES WILLIAMS, JR., of Boston, Mass., whose work we hear highly spoken of, and in that busy centre of living men and much work, supplies much of the telegraphic machinery of New England.

And here are the CHESTERS, the genteel, the gentlemanly, the polite Chesters, into whose workshop we have been stumbling for the last twenty years. Alike in Philadelphia as CHESTER, PATRICK & Co., and in New York as C. J. & N. CHESTER, they thrive, improve, turn out the finest work, and aid inventors by their own clear brains.

We have received from Mr. W. R. Allison, the proprietor of the Brooks Insulator, the advertisement which appears on our last page, and to which we call attention. A highly flattering testimonial has been given by the French Telegraph Directory, which will be found elsewhere. To the use of paraffine these insulators undoubtedly owe their reputation.

One more. JOHN POLHEMUS is our printer. His office is at 102 NASSAU ST. Prompt and truthful he performs his work with the utmost skilfulness and despatch. In a few hours, the longest legal documents are delivered correct and complete. There is no man who deserves a larger patronage. His foreman is a lightning express, and the youngest imp is as smart as a Wheeler & Wilson.

Gentlemen, go on and prosper. You have our paternal benediction.

Pacific Division—W. Union Telegraph Co.

George H. Mumford, *General Agent*.

James Gamble, *General Superintendent*.

Residence, San Francisco, Cal.

ASSISTANTS.**District Superintendents.**

F. H. Lamb—Lines in Vancouver's Island and British Columbia. Residence, Victoria.

R. R. Haines—Lines in Washington Territory. Residence, Seattle.

E. A. Whittlesey—From Oroville, California, through Oregon to Portland. Residence, Yreka.

John W. Gamble—Virginia, Nevada, to Salt Lake. Residence, Ruby Valley.

Frank Bell—Lines across the Sierra Nevada. Residence, Strawberry.

State of California and all others not apportioned to Assistants, under care of the General Superintendent.

TARIFF BUREAU.**Semi-Monthly Circular.**

WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
February 23, 1888.

To ALL OFFICES ON W. U. LINES:

Please note the following changes in your Tariff Books which have occurred since the 15th February, the date of the last Tariff Order:

OFFICES OPENED.

Tully, N. Y.—Tariff from New York 75 and 5. Check direct.
Jacksonport, Ark.—Tariff from Louisville, Ky., 275-19
" Washington, D. C., 400-28
Inka, Miss.—" Louisville, Ky., 150-11
" Washington, 275-19
Christiana, Tenn.—" Louisville, 125-09
" Washington, 225-16
Blue Mountain, Ala.—" Louisville, 250-18
" Washington, 250-18
Feb. 1, at Harmony, Ind.—Tariff same as Brazil, Ind.
Feb. 8, at Marion, Ind.—" Kokomo, Ind.
Feb. 22, Cleves, Ohio—" Delhi, O.

OFFICES OPENED ON OTHER LINES.

Tyler, Texas—Tariff from Marshall, Texas, 125-10. Check Marshall.
At Delaware, Io.—Tariff from Chicago 85 and 4.
At Kellogg, Io.—Tariff from Chicago 100 and 5.
At Farmington, Ill.—Tariff from Chicago 75 and 4.
At Manchester, Ill.—Tariff from St. Louis 60 and 3, from Chicago 90 and 5.
At Braidwood, Ill.—Tariff from St. Louis 80 and 5, from Chicago 45 and 3.

OFFICES CLOSED.

Theresa, N. Y., Newport, N. Y.
Fort Mitchell, Neb., Elizabethtown, O., Stewart's Grove, Ill.

GENERAL INFORMATION.

Business for Navy Yard, near Norfolk, Va., must be checked against Portsmouth, Va., instead of Norfolk, as has heretofore been the practice.

CHANGE OF TARIFF.

	To	Total.	P. O. Lines.
Tariff from the following offices on the line of the Pennsylvania R. R. to Kittanning and other places via Pittsburgh:	Kittanning, Pa.	40 3	25 2
	Brady's Bend, Pa.	50 4	25 2
	Franklin, Pa.	55 4	25 2
	Sligo, Pa.	55 4	25 2
	Curlsville, Pa.	55 4	25 2
	Clarion	55 4	25 2
	Oil City	55 4	25 2
	Rouseville	60 4	25 2
	Pithole	60 4	25 2
	Tarr Farm	60 4	25 2
	Storey Farm	60 4	25 2
	Petrol Center	60 4	25 2
	Oleopolis	60 4	25 2
	Boyd Farm	60 4	25 2
	Pioneer Farm	60 4	25 2
From	Miller Farm	60 4	25 2
	Shaeffer Farm	60 4	25 2
	Titusville	60 5	25 2

WILLIAM ORTON,
President.

Mr. VARLEY, the distinguished English electrician, to whom we are much indebted for repeated valuable communications, leaves for England during the present week. We shall miss his pleasant face and genial company, but shall hope to hear often from him after his return to his accustomed duties on the "tight little isle."

We wish Mr. Varley a fine voyage and a happy return to his family and friends.

MARRIED.

At Old Town, Prince George Co., Va., January 14, 1888, by Rev. Thomas Mulrey, Richard O'Brien, Assistant Superintendent Western Union Telegraph Company, Easton, Pa., to Miss S. H. Marks, of Prince George Co., Va.

On 28th January, 1888, at Martinsburg, West Virginia, by the Rev. J. J. Kain, Joseph A. Englerth, of the Western Union Telegraph office Martinsburg, West Va., to Miss Mary C. Canfield, of Steuben County, N. Y.

FRUIT AND ORNAMENTAL TREES.

GRAPE VINES, &c., FOR SPRING 1888.

The Largest Stock in the Country. For sale in large or small quantities. A descriptive and illustrated priced catalogue of Fruits, and of Ornamental Trees and Plants, sent pre-paid for 10 cents each. Wholesale Catalogue Free.

ELLWANGER & BARRY,
Mt. Hope Nurseries, Rochester, N. Y.

How Faraday Chose Poverty.

In a recent lecture at the Royal Institution in London, Professor Tyndale gave some interesting facts respecting the late Professor Faraday. At one period of his life the question was brought before Faraday whether he should choose wealth or science, and he determined to reject the seductions of riches, and to devote himself to science, with its comparative poverty. After the discovery of magneto-electricity numerous offers were made to him by which he might have acquired a large fortune. In 1832-33, he did gain, from the direction of his professional knowledge, commercially, upwards of £1,000 per annum; and Professor Tyndall said that he might readily have made £5,000 a year, but Faraday afterwards confined his attention almost exclusively to scientific investigations, his income from commercial applications being limited to such small sums as £25 or £100 per annum. During the last ten years of his life he received nothing from that source, and though he might have acquired a fortune of £150,000, he died a poor man.

In 1835 Sir Robert Peel proposed to grant him a pension, and the offer was renewed by Lord Melbourne, who sent for Faraday to speak to him about it, but not being accustomed to deal with so unsophisticated a person, who paid little regard to money, Lord Melbourne made some remark which gave offence to Faraday, who withdrew. A lady, who was a mutual friend of the minister and of the philosopher, endeavored to reconcile them, but Faraday told her that he would only consent to see Lord Melbourne again on one condition, with which he could not expect him to comply, and that was, that he should make an apology. In a few days, however, the apology came.

Faraday, entertaining the notion that there was Irish blood in his veins, and, as Professor Tyndall observed, there was an enthusiasm about him which appeared to countenance such an opinion, but in other qualities he was not Irish. One of these was his love of order. All the experiments he made in the laboratory of the Royal Institution were numbered, and they were often referred to in succeeding experiments; he also kept a private record of his experiments, the last one being numbered 16,541.

Professor Tyndall concluded by giving an affecting account of Faraday during his illness, and read two letters which he had written, in one of which, dated in the autumn of 1865, he alluded to his loss of memory, and of his not being able to recollect at the end of one line what he had written in the line before.

The Alpine Horn.

The Alpine horn is an instrument made of the bark of a cherry-tree, and like a speaking trumpet, is used to convey sounds to a great distance. I have heard, when the last rays of the sun gild the summit of the Alps, the shepherd who inhabits the highest peak of these mountains take his horn and cry with a loud voice, "Praise ye the Lord." As soon as the neighboring shepherds hear him, they repeat these words. The sounds are prolonged many minutes, while the echoes of the mountain and grottoes of the rock repeat the name of God. Imagination cannot picture anything more solemn or sublime than such a scene. During the silence that succeeds, the shepherds bend their knees and pray in the open air, then repair to their huts to rest. The sunlight gilding the tops of those stupendous mountains upon which the vault of heaven seems to rest, the magnificent scenery around, and the voice of the shepherd sounding from rock to rock the praise of the Almighty, fill the mind of every traveler with enthusiasm and awe.

It is just as hard to make one's self a poet
As for a sheep to make itself a goat.

Electric Safety Lamp.

The danger of explosion in coal mines from the careless use of Sir Humphry Davy's safety lamp has been frequently demonstrated. It is proposed to obviate this danger by the introduction of a lamp composed of Geissler tubes properly protected by wire and driven by a small Ruhmkorff coil and battery carried in a knapsack on the back of the workman. These tubes have the air pumped out of them and the light comes from a constant stream of electricity passing from one end to the other. If the glass breaks, no fire can be communicated to the outer gases, as the connection with the battery is broken at the same instant and no spark can pass. This kind of a lantern could be used by travellers for reading at night on the railroad, as the whole apparatus can be carried in a carpet bag and can be easily suspended from a hook.—*Am. Journal of Mining.*

The Time will Come.

"The time will come!" the weary heart,
Worn by its conflict with the world,
Sighs, as though longing to depart
For realms where Sorrow's wings are furled.
Where Falsehood can not enter in,
Where love and friendship ne'er grow cold,
But perfect truth and beauty win
Each heart within their tender fold.
To meet again the loved and lost,
To hear those tones Death bade be dumb,
We pray—though here so tempest-tost—
"The time will come—the time will come!"

The Government and the Telegraph.

The fact that the proposal to take the telegraph system out of the hands of the people of England came from the Cabinet, shows that it is a Government measure, rendered desirable by the present condition of society, and not a desire of the people. The general sentiment is against it. All feel, except those who are outside of the pale of the popular sympathies, that it is a dangerous addition to power already centralized enough.

Upon this subject the *Engineer*, a paper of a high order of excellence, remarks as follows:

"With our railway system has sprung up that system of electric telegraphy which has been so generally adopted and usefully employed throughout the country. This branch of engineering has reached a high degree of excellence. We rejoiced with those who successfully linked the old and new worlds. We felt thankful that their skill, industry, perseverance and enterprise had been rewarded with the success that marks the event as an era in history. The present period is a critical one for those who have devoted their attention to the telegraphic system of this country, for it is not impossible that Parliament in the ensuing session may be asked to adjudicate upon a measure by which the telegraph system of the country may be handed over to the Post-office authorities. We cannot but see that the proposed measure is one of those steps tending to centralize power in the hands of Government, and it may have the effect of stopping the efforts of private enterprise. It may tend to cramp the spirit of the enterprise of the country, and should be carefully watched by those interested in the development of all public works."

In Canada, also, the same scheme is proposed and met by a like resistance. No people accustomed to liberty can regard the measure with favor, or long tolerate it if successful. To Americans it would be exceedingly repulsive. We have no fear of its adoption, although for the present, apparently, sustained by one or two men of ability and prestige. An intelligent man cannot be found, who, upon a full exposition of the whole case, the spirit of our system of government, the impatience of the people under espionage of any kind, and the general necessities of the business, will not admit the impolicy and im-

practicability of the scheme. It has supporters only among those whose noses have been unjointed by existing lines, or who think every thing European superior to our own.

Western Union Telegraph Company.**BOARD OF DIRECTORS.**

Moses Taylor, New York.	O. H. Palmer, New York.
E. D. Morgan, New York.	Hiram Sibley, Rochester, N. Y.
W. E. Dodge, New York.	D. A. Watson, Rochester, N. Y.
Francis Morris, New York.	Isaac Butts, Rochester, N. Y.
C. Livingston, New York.	B. R. McAlpine, Rochester, N. Y.
E. S. Sanford, New York.	G. H. Mumford, Rochester, N. Y.
W. Orton, New York.	E. Cornell, Ithaca, N. Y.
N. Green, Louisville.	J. H. Wade, Cleveland, O.
D. N. Barney, New York.	G. Walker, Springfield, Mass.
W. G. Hunt, New York.	R. S. Burrows, Albion, N. Y.
Geo. Jones, New York.	Alfred Gaither, Cincinnati, O.
John J. Cisco, New York.	John Butterfield, Utica, N. Y.

Le Grand Lockwood, New York.

OFFICERS.

William Orton, President.

Hiram Sibley,

N. Green,

B. R. McAlpine,

Vice-Presidents.

O. H. Palmer, Secretary and Treasurer.

W. H. Abel, Assistant Secretary and Auditor.

R. H. Rochester, Assistant Treasurer.

Marshall Lufferts, Engineer.

CENTRAL DIVISION.

Anson Stager, General Superintendent.

Residence, Cleveland, Ohio.

ASSISTANTS.

Superintendents of Districts.

SUPPLY DEPARTMENT.

William Hunter, Superintendent of Supplies and General Purchasing Agent, New York.

A. H. Watson, Storekeeper, New York.

H. L. Melton, Supply Agent, Cleveland, O., and Chicago, Ill.

George H. Smith, Superintendent of Free and Check Department, 145 Broadway, New York.

W. L. Gross, Superintendent of Tariff Department.

District	Superintendent	Residence
District 5—E. F. Wright	-	Indianapolis, Ind.
" 6—T. B. A. David	-	Pittsburg, Pa.
" 7—George T. Williams	-	Cincinnati, O.
" 8—John F. Wallick	-	Indianapolis, Ind.
" 9—R. C. Clowry	-	St. Louis, Mo.
" 11—W. B. Hibbard	-	Omaha, Neb.
" 12—J. J. S. Wilson	-	Quincy, Ill.
" 13—E. D. L. Sweet	-	Chicago, Ill.

EASTERN DIVISION.

Thos. T. Eckert, General Superintendent.

Residence, New York City.

ASSISTANTS.

District Superintendents.

District	Superintendent	Residence
District 1—Jerse Hoyt	-	New Glasgow, N. S.
" 2—Robert T. Clinch	-	St. John, N. B.
" 3—James S. Bedlow	-	Portland, Me.
" 4—George W. Gates	-	White River Junction, Vt.
" 5—Charles F. Wood	-	Boston, Mass.
" 6—George B. Prescott	-	Albany, N. Y.
" 7—S. B. Gifford	-	Syracuse, N. Y.
" 8—D. H. Bates	-	Philadelphia, Penn.
Metropolitan District—J. C. Hinchman	-	New York City.
B. & O. Railway District—A. G. Davis	-	Baltimore Md.
Erie Railway District—W. J. Holmes	-	New York.

SOUTHERN DIVISION.

John Van Horne, General Superintendent.

Residence, Memphis, Tenn.

ASSISTANTS.

Superintendents of Districts.

District	Superintendent	Residence
District 1—J. R. Dowell	-	Richmond, Va.
" 2—J. W. Kates	-	Lynchburg, Va.
" 3—J. A. Brenner	-	Augusta, Ga.
" 4—C. G. Merriweather	-	Mobile, Ala.
" 5—James Compton	-	Jackson, Miss.
" 6—James Coleman	-	Memphis, Tenn.
" 7—Thomas Johnston	-	Corinth, Miss.
" 8—Geo. W. Trabue	-	Nashville, Tenn.
" 9—L. C. Baker	-	Little Rock, Ark.
" 10—G. M. Baker	-	Shreveport, La.
" 11—D. P. Shepard	-	Houston, Texas.
" 12—D. Flanery	-	New Orleans, La.

MACHINE SHOPS.

George M. Phelps, Superintendent, Williamsburg, N. Y.

George W. Shawk, Superintendent, Cleveland, O.

Robert Henning, Superintendent, Ottawa, Ill.

W. H. Johnson, Superintendent, Louisville, Ky.

Violation of the Telegraph Law—Arrest of an Operator.

On the 11th of February we received a private dispatch from our special correspondent in Washington, stating the rumor that the Secretary of the Treasury had ordered the sale of ten millions dollars of gold, and that impeachment was considered dead. This despatch came over the wires of the Franklin Telegraph Company, and was received by us before two o'clock. Shortly afterwards our book-keeper, Mr. John Butcher, received the following note:

"MR. BUTCHER—My dear Sir: Please learn if the enclosed is true. It is quite important to me, and will oblige your old friend.
JOHN SAMMOND."

The enclosure alluded to was as follows:

"EVENING POST will contain despatches stating that the Secretary of the Treasury has ordered the sale of ten million dollars gold: also that impeachment is dead."

Mr. Butcher handed over the note and enclosure to another person, who found that such despatches had been received and were then in press. The question then arose, "How did this man know what was to appear in the EVENING POST before it was published?" and on taking our despatch and the memorandum referred to, to the office of the Telegraph Company, they were at once identified as the handwriting of one of the telegraph operators named Roche. We thereupon addressed a protest to the president of the telegraph company, who was absent from the city at the time, detailing the fact that our private despatches were appropriated by others in passing through his office, and on its receipt he ordered the arrest of Roche.

At the examination of Roche at the Tombs on Saturday last, it appeared that the same information as that conveyed in our despatches was telegraphed to four banking houses in this city on the same day, and the affidavit on which he was arrested charges that Roche surreptitiously conveyed the substance of those despatches to Mr. John Sammond, a gold broker in Broad street.

A messenger was sent to Mr. Sammond's office to summon him, but he could not be found.—*Evening Post.*

Since the above was published Mr. Sammond has acknowledged the reception of the message, and Roche has been held to bail to wait the action of the Grand Jury. Why was not the broker treated in the same way, for thus debauching Telegraph employees? Were that done, and a few street-brokers made to smell the Tombs for a month or two for such offences, it would aid the public morals.

Chamber of Commerce, San Francisco.

At the banquet given recently on the occasion of the opening of the new building for the Chamber of Commerce, San Francisco. The following toast was given:

"The Magnetic Telegraph—The nervous system of commerce animated by the lightning, which obeys the human will and flashes the intelligence of merchants between the trade marts of the world."

"G. H. MUMFORD, of the Western Union Telegraph Company, responded, and among other remarks, said: 'The one thing, above all others, which the Telegraph represents, is the unity of that body whose nerves it supplies. Your interests are hemmed in by no city limits, or State lines, or national boundaries, but are wide as the whole earth, co-extensive with the whole human race. And the Telegraph is the visible sign and bond of that union—the wedding-ring with which commerce has encircled the earth.'"

During the festivities of the evening, which were of the most sumptuous character, the President read a message of congratulation from Hon. W. E. Dodge, President of the New York Chamber of Commerce, and regretting that until the Pacific Railroad united the Eastern and Western gates of Commerce, their invitation to join them could not be accepted.

Offices not receiving the JOURNAL, should immediately notify their Superintendent.

Telegraphers' Mutual Life Insurance Association.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage, and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-900th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

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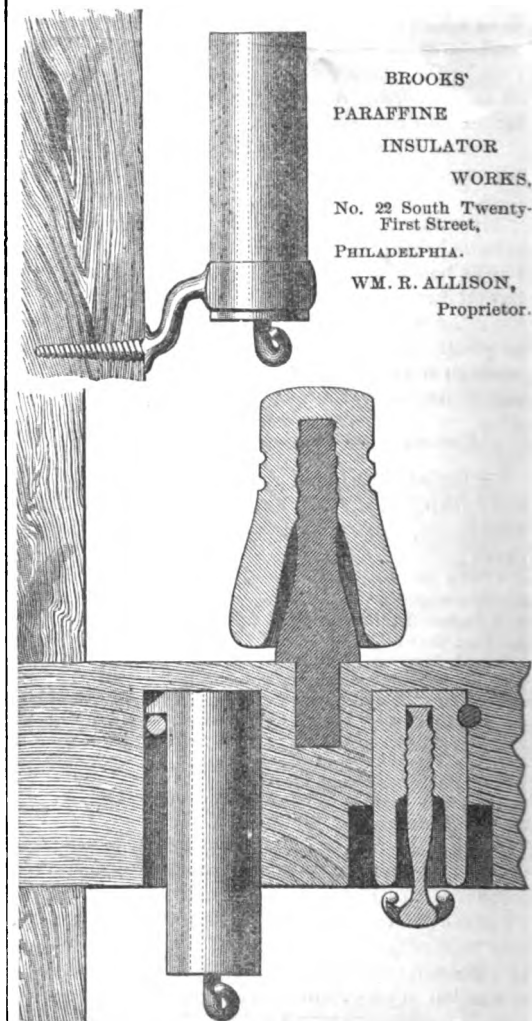
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JOURNAL OF THE TELEGRAPH.

NO. 8.

NEW YORK, MARCH 16, 1868.

VOL. I.

TESTS OF SPEED.

Transmission of Dispatches by the Morse Telegraphic Apparatus.

OFFICE OF THE W. U. TEL. CO.,
CLEVELAND, O., Feb. 26, 1868.

Hon. Wm. Orton, President W. U. Tel. Co., N. Y.:

DEAR SIR—In compliance with Executive Circular No. 4, the accompanying documents, showing the results of several "Speed Tests" made in this Division, are very respectfully submitted.

Doc. C. gives two experiments not embraced in the Table of Results, as follows:

Fifty-nine words were transmitted from Chicago, through a direct circuit of 1,650 miles, to Salt Lake in two minutes.

One hundred and fifty-four words were transmitted from Chicago to Salt Lake, through two Repeaters, a distance of 1,650 miles in three minutes and five seconds.

TABLE OF RESULTS.

Designation.	No. of words each message.	Total No. of words.	Time in transmission.	Average words per minute.
Doc. A.	40	800	30min.	26%
Doc. B.	40	800	25 "	32
Doc. C.	60	1200	36%	33
" "	24	480	14 "	34 2-7
" Report		965	26 "	37 1-9
" "		2631	60 "	43 5-6
Doc. D.		2530	60 "	42 1-6

Very respectfully,

ANSON STAGER,
Genl. Supt. Central Division.

"Doc. A."

TEST OF SPEED MADE UPON THE LINES OF THE
WESTERN UNION TELEGRAPH COMPANY AT
ST. LOUIS, MO., JAN. 18, 1868.

No. of messages, 40; time, 30 minutes; average 26½ words per minute.

John H. Dwight, of the City and County of Leavenworth, in the State of Kansas, being by me first duly sworn deposes and says, that he is Manager of the Western Union Telegraph Office located in the said city of Leavenworth; that the enclosed copies of telegraph dispatches, numbering from one (1) to forty (40) inclusive, were received by me by telegraph with the Morse apparatus from St. Louis, Missouri, passing through a Hick's repeater at Kansas City, in the said State of Missouri, in the space of thirty (30) minutes; that the distance from St. Louis to Leavenworth by the line on which said dispatches passed is, to the best of my knowledge and belief, three hundred and ten (310) miles; that the transmitting operator is John H. French, chief operator of the said Western Union line at St. Louis, Missouri.

JOHN H. DWIGHT,
Manager W. U. Tel. Office.

Sworn and subscribed to before me this 15th day of January, A. D. 1868,

C. D. ROYS, Notary Public.

"Doc. B."

TEST OF SPEED MADE UPON THE LINES OF THE W. U.
TEL. CO., AT CLEVELAND, O., JAN. 28, 1868.

No. of messages, 40; time, 25 minutes; average, 32 words per minute.

The State of Ohio, County of Cuyahoga, ss.
United States of America.

I, Charles F. Stumm, Telegraph Operator, Cleveland, Ohio, do hereby make affidavit that the annexed telegraphic messages, being forty in number, were transmitted by me on the twenty-seventh day of January, 1868, from Cleveland, Ohio, through a single circuit of 135 miles in length, using the Morse apparatus, in the space of twenty-five minutes; and that the manuscript herewith is that of the receiving operator, L. A. Somers, the said Somers taking the messages by sound, and transcribing them from the instrument as here shown.

CHARLES F. STUMM.

I, Samuel B. Roberts, was present, and witnessed the transmission of the messages here referred to, and certify that the above statement of C. F. Stumm is correct.

SAMUEL B. ROBERTS.

STATE OF OHIO, CUYAHOGA COUNTY, ss.

Before me, James M. Jones, a Notary Public in and for the State and County aforesaid, personally appeared the above named Charles F. Stumm and Samuel B. Roberts, the signers of the foregoing statements, and severally made solemn oath, that each and every of said statements are true.

Sworn to before me by said Charles F. Stumm and said Samuel B. Roberts, this 28th day of January, A. D., 1868, at Cleveland, in the State and County aforesaid. Witness my hand and official seal.

JAMES M. JONES,

Notary Public of said County and State.

"Doc. C."

TESTS OF SPEED MADE UPON THE LINES OF THE W. U.
TEL. CO., BETWEEN CHICAGO, SALT LAKE,
MILWAUKIE AND ST. PAUL, FEB., 1868.

No. of messages, 60; time, 36½ minutes; average, 33 words.

No. of Messages, 24; time, 14 minutes; average, 34 2-7 words.

No. of words of Press Report, 965; time in transmission, 26 minutes; average words per minute, 37 1-9.

No. of words of Press Report, 2631; time in transmission, 60 minutes; average words per minute, 43 5-6.

Gen. Anson Stager, General Supt. Western Union Telegraph Co., Cleveland, Ohio:

DEAR SIR—In accordance with instructions the following tests of speed in sending and receiving, using the Morse apparatus, have been made:

January 30, sixty (60) messages of 20 words each were sent from Chicago to Salt Lake with two (2) repeaters in circuit in thirty-six and one half (36½) minutes.

On the same night, by the same operators, fifty-nine (59) words were recorded in two (2) minutes without repeaters; distance 1,650.

February 1, twenty-four (24) messages of twenty (20) words each, were sent from Chicago and recorded at Omaha in fourteen (14) minutes in one continuous circuit; distance, 500.

February 14, one hundred and fifty-four (154) words were sent through two repeaters, Chicago to Salt Lake, in three minutes and five seconds, a verbatim copy of which was repeated back to Chicago office.

All the above tests between Chicago and Salt Lake were made by Mr. Valiquet, of Chicago, sender, and A. B. Hilliker, of Salt Lake, receiver.

In the absence of a copy of the business sent to Salt Lake, I would state that I have no doubt as to the copy taken being plain and legible, for during the celebrated Burch divorce trial the same operator received 2,621 words of a law speech in one hour, which was delivered to and published by the Chicago Tribune.

February 14, a report of nine hundred and sixty-five (965) words was sent through two repeaters from Salt Lake to Chicago by Mr. Sabin, and received by Mr. Kent of Chicago office. The copy made herewith enclosed, in twenty-six (26) minutes, which is a remarkable test for a distance of 1,650 miles of line, through two repeaters in the mildest of what is termed our January thaw.

I also enclosed tests made between Milwaukee and St. Paul on a continuous circuit four hundred and fifty (450) miles in length, by E. M. Shape of the Western Union Company, at Milwaukee, sender, and E. Curry, St. Paul, of the North Western Company, receiver, copies of which are herewith enclosed.

The first test in an hour, 2,280 words; second, 2,490 words; and the third, 2,631. The copies of the St. Paul and last Salt Lake tests, which are enclosed, you will observe are plain and well written. Two copies being taken in each case, one of each I herewith enclose.

I hereby make affidavit that the above statement in regard to trials of speed between Chicago and Salt Lake and Chicago and Omaha, using the Morse apparatus, has been examined by the persons who made and witnessed the trials, and that they whose names are signed below have certified under oath to the truth of this statement. And further, that the tests made and witnessed between Milwaukee and St. Paul as set forth in this statement, and an affidavit which is herewith attached, is true to the best of my knowledge and belief.

E. D. SWEET,

Supt. 13th Dis. W. U. Tel. Co.

H. C. Maynard, Night Manager; W. A. French; F. S. Kent, operator; Thos. L. A. Valiquet, operator. Sworn to and subscribed before me this 20th day of February, A. D. 1868,

CHARLES L. BOYD,
Notary Public.

State of Wisconsin, Milwaukee County, ss.:

We hereby make affidavit that the annexed printed matter containing twenty-six hundred and thirty-one (2631) words was transmitted by telegraph from this city to St. Paul, Minn., a distance of 450 miles (by line), through one continuous circuit, using the Morse apparatus, by G. M. Shape, operator, on the 8th day of February, 1868, in the space of sixty minutes, and there received from the sound of the instrument by E. Curry, operator; and further, that the manuscript herewith, to the best of our knowledge and belief, is the original as transcribed from

the instrument at the time, by the said E. Curry, operator.

H. WELLER, *Manager*.

G. E. HINMAN, *Operator*.

Subscribed and sworn to before me this 21st day of Feb., A. D. 1868,

C. A. LOVELAND,

Notary Public, Mil. Co., Wis.

"Doc. D."

TEST OF SPEED MADE UPON THE LINES OF THE W. U. TEL. CO., BETWEEN CLEVELAND, O., AND NEW YORK, JAN. 29, 1868.

Press report; number of words, 2530; time, sixty minutes; Average, 42 1-6 words per minute.

*The State of Ohio, Cuyahoga County, ss.
United States of America.*

I, Charles F. Stumm, Chief Operator Western Union Telegraph Office, Cleveland, O., do hereby make affidavit that the annexed twenty-five hundred and thirty words of Press Report was received by operator L. A. Somers, at this office from New York City, by the Morse apparatus, by sound, in the space of sixty minutes, between the hours of nine o'clock, fifteen minutes, and ten o'clock fifteen minutes, A. M., on the 29th day of January, 1868; and that the copy herewith is the original as transcribed by him from the sound instrument; and that the length of the circuit through which this report was transmitted from New York to Cleveland, O., using one repeater, is six hundred and thirty-one miles; and that the name of the operator transmitting from New York, is said to be R. J. Hutchison.

CHARLES F. STUMM,
Chief Operator.

We, P. Bruner, J. P. McKinstry, and F. A. Stumm, being present and witnessing the receiving of the report above referred to, do make affidavit that the circumstances thereof, as set forth in the affidavit of Charles F. Stumm, are true and correctly stated.

P. BRUNER,
J. P. MCKINSTRY,
F. A. STUMM.

*The State of Ohio, Cuyahoga County, ss.
In the United States of America.*

Before me personally appeared the within named Charles F. Stumm, P. Bruner, J. P. McKinstry, and F. A. Stumm, all signers of the foregoing statements in regard to the reception by telegraph, of twenty-five hundred and thirty words by sound by operator L. A. Somers, in one hour, at Cleveland, O., on the 29th day of January, 1868, and made solemn oath severally, that the statement aforesaid, signed by them, is true in all respects as they and each of them personally know.

Sworn to by each of the aforesaid parties, and by them and each of them subscribed in my presence, at Cleveland, in the County of Cuyahoga, State of Ohio, and United States of America, this 30th day of January, A. D., 1868. Witness my hand and official seal.

JAMES M. JONES,
Notary Public of said County and State.

Correspondence.

Batteries and their Composition.

JAMESTOWN, Pa., February 2, 1868.

To the Editor Journal of the Telegraph:

SIR—The soundness of Mr. Varley's letters, and particularly of that one on page 2, No. 6 of the JOURNAL, on "Batteries and their Composition," leads me, and I presume others who take an interest in the *Science* of our profession, to desire that gentleman to give us more of the food with which he is so abundantly stored.

In all books that I have seen, it is given as a rule that the *quantity* of a battery is in proportion to the size of the zinc; in some the difference in *intensity* of the different batteries is not accounted for; while others attribute it to the resistance in the porous cup. Can a porous cup effect the intensity, or by its resistance do more than reduce the quantity the same as a

small wire or other imperfect conductor would do?

Would it not be more correct to say the *quantity* is in proportion to the amount of zinc oxydized; or rather would it not be still nearer the truth to say, the *intensity* of a battery is in proportion to the affinity of the elements that form the compound which is decomposed to furnish oxygen, and the *quantity* is in proportion to the amount of that compound decomposed, the zinc only serving as a material or agent to excite the decomposition?

To illustrate—take zinc as a standard for the positive plate, and use for the negative plate any metal which is passive to the solution or material in which it is placed. Is not the *intensity* of the Smee's battery equal to the affinity of oxygen for zinc, less the affinity of oxygen for hydrogen, and the *quantity* in proportion to the amount of water decomposed. In the Daniels battery is not the *intensity* equal to the affinity of oxygen for zinc, less the affinity of oxygen for copper, and the *quantity* in proportion to the amount of sulphate of copper decomposed?

In the Grove battery is not the *intensity* equal to the affinity of oxygen for zinc, less the affinity of oxygen for nitrogen, and the *quantity* in proportion to the amount of nitric acid decomposed?

In the materials mentioned, the affinity for oxygen decreases in the following order:

Zinc, hydrogen, copper, nitrogen and that compound—nitric acid—which holds its oxygen with the lightest affinity, gives us the greatest intensity.

To carry this principle further, what would be the result of combining the virtues of nitric acid and sulphate of copper by using nitrate of copper (No 5. C 4. O.)? This compound has one equivalent of oxygen more, and decomposes more easily than before mentioned. To carry it still further, suppose, instead of using nitric acid, we substitute chloric acid (ClO₅) a compound which decomposes still more easily, and both elements of which have a very strong affinity for zinc and hydrogen, what would be the result? Is there not a general law which governs all Voltaic or Galvanic batteries, and is not the Daniel's battery (pardon me if I differ with Mr. Varley in this connection) subject to that law?

When Prof. Daniel put the negative plate in a solution of sulphate of copper, was it not in a material "which has a great affinity for hydrogen?" Was not that material *passive* to the copper plate? Did he "not get the sum instead of the difference of the forces" so far as the negative plate was concerned, and only the difference between the affinities? Did Prof. Grove accomplish more than this? If we replace the *copper* plate in the Daniels battery by one of *platinum* will we increase the current?

Several other questions present themselves, but I will reserve them for a future communication.

INVENTUS.

Mr. Varley's Reply.

DEAR MR. REID:—Referring to the letter you have shown me, signed "*Inventus*," I make it a rule never to pay any attention to anonymous communications. As, however, the letter comes to me from you, I will consider it as yours and answer it.

The writer is perfectly correct in his supposition that the "*intensity*" (potential energy) of the battery is uninfluenced by the resistance of the porous cup. The *quantity* is exactly proportional to the amount of zinc dissolved, provided there be no local action—which latter is all waste. The amount of zinc dissolved, and consequently the "*quantity*" of the current is proportional to the potential energy, divided by the resistance of the whole circuit.

This, algebraically expressed, is $Q = \frac{E}{R + r}$ when Q equals the quantity of the current.

E, the electro-motive force, *alias* Intensity, *alias* Potential energy. R, the resistance of the battery itself. r, the resistance of the rest of the circuit.

Suppose now, R to be very great, Q will be very small.

The value of E is constant only in the Thermoelectric pile, and for the following reason:

Let us examine the Grove battery. While the battery is at rest, the positive element, or zinc, is in contact with sulphuric acid and water. The Negative, or platinum plate, is in contact with nitric acid. On closing the circuit, hydrogen is evolved on the surface of the platinum, which, combining with the oxygen of the nitric acid, produces a film of water partially separating the platinum from the nitric acid, and therefore a somewhat similar result is obtained to that of using dilute nitric acid. The amount of water produced varies with the amount of work the battery is performing.

COMMON SINGLE FLUID BATTERY.

The intensity of the battery is the result of the difference of affinities of the two metals for oxygen: for instance, if zinc and iron, as a battery, be accurately measured, and then iron and copper, and lastly, zinc and copper, it will be found that the intensity of the zinc-iron element, added to that of the iron-copper element, is equal to that of the zinc-copper element. This, however, is only true so long as the battery is connected with a very great resistance, and is therefore, *working* very slowly.

If a zinc-copper battery, charged with dilute sulphuric-acid, be attached to a very big resistance, its intensity will be found almost equal to the Daniels' battery. Let this battery work hard, and the hydrogen which is deposited upon the negative plate has to be taken from a state of combination or nascent state, and evolved in the form of gas; this is a work of labor, and the electric intensity is greatly reduced by this expenditure of force. This is best illustrated by using mercury as a negative metal.

As its affinity for oxygen is less than that of copper, the intensity of the zinc-mercury battery at the first moment is considerably greater. Owing to the smoothness of the surface of mercury, and possibly other causes, the hydrogen cannot assume the gaseous form and escape from it so easily as from a rough or platinized surface, and the result is that the mercury becomes, under its influence, as positive as the zinc, and consequently no further current is evolved.

THE EFFECT OF NITRATE OF COPPER IN PLACE OF SULPHATE OF COPPER IN THE DANIELS' BATTERY.

The action of the battery is in this case to decompose the oxide of copper, and not the nitric acid, which latter is transferred to the zinc, forming nitrate of zinc. There is no increase of power from its use.

THE USE OF CHLORIC ACID.

If my memory serves me right, it forms a battery a trifle less powerful than nitric acid. I have tried it as well as per chloric acid, per manganic acid and several other highly oxygenated compounds. They are all nearly in value to that of nitric acid, some a little greater, but the total difference is very small.

THE EFFECT OF PLATINUM INSTEAD OF COPPER IN THE DANIELS' BATTERY.

If the platinum plate be immersed in sulphate of copper no increase of power will result. If a solution, say of chloride of platinum, be used instead of sulphate of copper, a great increase of power will result. But chloride of platinum is too expensive for economical use.

The last question but one—viz: "Is there not an affinity between hydrogen and sulphate of copper?"

This question does not arise in the Daniels' Battery; in the Smee's Battery the water is decomposed to oxidize the zinc; in the Daniels' Battery the sulphuric acid and oxygen of the sulphate of oxide of copper are transferred to the metallic zinc, forming sulphate of oxide of zinc, and it is the difference of the affinities of the zinc and copper for the oxygen and sulphuric acid which determines the potential energies of the Daniels' Battery.

Copper has a very decided affinity for oxygen, but zinc a greater.

C. F. VARLEY.

Insurance.

NEW YORK, March 9, 1868.

To the Editor Journal of the Telegraph:

Being one of the pioneers who organized the Telegraphers' Mutual Life Insurance Association, I desire to address a few words to the insured, and to those out of the pale of the association. I fear telegraphers are not coming forward as they should do to sustain this undertaking. Too much apathy is shown to the duty they owe to themselves, their family, to an aged parent, or perhaps to a dear sister depending upon their labor. The outlay and liability are small, very small in proportion to the good which may result. Will not the telegraphic fraternity, proverbial for their generosity, step forward, put their shoulders to the wheel, resolving to be more generous to themselves, to their own? What matter if you are insured elsewhere, give your co-laborers your influence and assistance by strengthening and sustaining the association.

To the already insured I would say, use each your individual exertion to add at least one other subscriber, thus benefiting both parties. You all know some friend in the business with whom a little persuasion would accomplish the desired object. Be true to him and yourself, and let us at no distant day be able to proclaim that all good telegraphers are within reach of the benefits accruing from the Telegraphers' Mutual Life Insurance Association. Its objects are well known. Its managers are of too well known wisdom and integrity to require vouchers. Come one! Come all!! Life is short at the longest. Let us all prepare to rob death of one of its chief terrors, that of leaving the dear ones in this cold and selfish world unprovided for. Prepare for his coming before whom the prayers of the loving ones at home availeth not, who demands his prey and is no respecter of persons.

MR. T. P. SCULLY, of 145 Broadway, has accepted a position of trust and honor in the service of the Panama Railroad Company, at Panama. We are sorry to lose him. Mr. Scully is a gentleman of unusual refinement and address, one of a class we trust yet to see multiplied in the service. He was one of the originators of the Telegraphers' Life Insurance Association, a few warm words for the success of which will be found above.

VALENTIA STATION, Ireland, Feb. 19, 1868.

James D. Reid, Esq., 145 Broadway, N. Y.:

DEAR SIR—I have received and with much interest perused your JOURNAL OF THE TELEGRAPH of the 1st February, 1868. It is just the sort of thing that is required amongst the telegraphic staff of the world; and, doubtless, if it becomes known throughout Europe, it will be patronized rather largely on this side the Atlantic.

There have been several attempts at something of the kind, but they have died a "natural death" either from their attempting too much for the money, or the support they received not covering the working expenses.

The operation recorded upon your fifth page of the number above referred to was most marvellous and must astonish the world. One little correction is, however, required, *i. e.*, the time we keep here is, for sake of uniformity, London time (or Greenwich mean time) for Valentia you must make an allowance of some 41 minutes—about which Dr. Gould can give you more information than I can—so that 7:21 our London time would be 6:40 our Valentia time.

Please send me two copies of back and future numbers, and also a copy of Professor J. E. Smith's Manual of Telegraphy advertised in the JOURNAL, and say how and how much I must remit you therefor. Wishing you every success,

I am, dear sir,

Yours, very truly,

JAMES GRAVES, *Supt.*

THE following "Personals, &c.," came too late for last issue:

PHILADELPHIA, February 27th, 1868.

J. D. REID, Esq.:

DEAR SIR—The afternoon train from Baltimore run off the track near Perrymansville, Md., on Friday last, February 14th, and demolished two (2) poles holding ten (10) wires belonging to the Western Union Telegraph Company, without causing a "cross" or breaking a wire. It is not often a case of this kind occurs, and it is to be hoped that other railroads will imitate the example of the P. W. & B. R. R., and thus avoid interruptions to the lines.

H. L. Cooper has resigned his position as operator at the Pennsylvania Railroad Company's West Philadelphia office, and has accepted a situation in the Pacific and Atlantic Company's main office, Third street, Philadelphia.

William Richards, manager of the Downingtown, Pa., office, has resigned. He has accepted the position of cashier in the new banking house of Kames & Smith, Downingtown, Pa.

George L. Shiver leaves the Bankers' & Brokers' office on March 1st, in consequence of a reduction of the force.

William E. Tinney leaves the Western Union Company's "C. P." office, Philadelphia, March 1st, in consequence of a reduction of the force. Mr. Tinney goes to the Western Union Company's Washington, D. C., office.

John Wintrup has resigned his position as operator in the Western Union Company's Philadelphia office. Mr. Wintrup leaves the employ of the Western Union Company for the purpose of engaging in business. The tribute we would pay Mr. W. has been justly earned by long and faithful services rendered the company. Your correspondent has had the pleasure of many years acquaintance and friendship with him, and the regrets are sincere at the dissolution of our business relations. Mr. Wintrup occupied the very responsible position of government operator at Wilmington and Newcastle, Del., in which position he received the official endorsement of his faithfulness and attention to the laborious duties devolving upon him. Success attend him in his new sphere. The writer feels confident that if he exercises but a tithe of his accustomed energies he cannot fail.

William C. Carson, receiving clerk Western Union office, Philadelphia, has resigned. Mr. Carson will engage in other business with his father. H. C. R.

PROF. S. F. B. MORSE has been elected one of the vice-presidents of the Yale Alumni Association of this city.

ALEXANDER BAIN was born in the north of Scotland, and served his apprenticeship as a watch and clock maker. About 1837 he came to London. It was at this time, while attending a lecture on electricity, his attention was drawn to its application to moving clocks and his electric telegraph.

AN operator asks: "What causes the roaring of wires at office windows?" Simply vibration by the wind, similar to the sounds produced upon an Eolian harp.

THE Washington chief of police telegraphed, March 5th, to Isaac E. Beecher and Nelson Drake, of Palmyra, N. Y., that Isaac Montrose, of that city, was dead, and asking directions respecting his burial. The message found both Beecher and Drake in their graves, and was answered by an executor.

THE other day a friend of a once resident of Penn Yan telegraphed him to look after a man who threatened to take advantage of the bankrupt law unless certain terms were accepted. The following answer was received:

New York office:

Message to — can't be delivered. Man has been dead six months. Can't reach him by this line.

In Memoriam.

"Here may thy storm-betted vessel safely ride;
This is the port of rest from troublous toyle,
The world's sweet inn from paine and
wearisome turnoyle."—*Spenser's Fairy Queen.*

CINCINNATI, O., March 1, 1868.

At a meeting called together by the telegraph operators of this city, Sunday morning, March 1st, 1868, to take action on the death of their brother operatives, Harry J. Keable and A. W. Raleigh, the following was transacted:

C. Mattoon was chosen chairman, and, on motion of Mr. E. C. Armstrong, Mr. C. L. Snyder as secretary.

The chairman appointed the following committees to draft resolutions:

Messrs. S. P. Peabody, M. B. Graham and C. M. Knox on the death of Mr. Keable; Messrs. M. C. Bristol, W. T. King and G. K. Smith on the death of Mr. Raleigh.

The following resolutions were presented by the respective committees, which were read and unanimously adopted:

Whereas, It has pleased the Almighty, in His Divine Providence, to remove from our midst our brother operator, Harry J. Keable.

Resolved, That, while we humbly bow to the Divine decree, we can but deeply mourn the loss to his associates of a genial companion and a warm-hearted friend, and, to his employers, of an operator of much more than ordinary ability.

Resolved, That we hereby extend to the relatives and many friends of our deceased brother our earnest sympathy in this their deep affliction.

Resolved, That a copy of this preamble and resolutions be forwarded to the family of the deceased, to the papers of his native place, and to the JOURNAL OF THE TELEGRAPH and Telegrapher of New York city for publication.

S. P. PEABODY,
M. B. GRAHAM,
C. M. KNOX, } Committee.

Whereas, It has pleased the Almighty to take from our midst our brother operator and esteemed friend A. W. Raleigh, and, while we bow with humble submission to the Supreme will,

Resolved, In his decease we lose an endeared associate, a credit to the fraternity, and an ornament to society.

Resolved, That we cannot too highly commend his religious and upright character, whereby he endeavored to fit himself for that "house not made with hands, eternal in the heavens."

Resolved, That we tender to his bereaved relatives and friends our sincere sympathy in their great loss, and that we send them a copy of these resolutions in token thereof.

M. C. BRISTOL,
W. T. KING,
GEO. K. SMITH, } Committee.

Understanding that the body of Mr. Raleigh would pass through the city on Monday morning to the final resting place, at Hamilton, Ohio, on motion of Mr. Armstrong, the chairman appointed a committee of four (Messrs. Mattoon, Hartman, King and Armstrong) to escort the body from the Little Miami to the Cincinnati, Hamilton and Dayton railroad depot.

After some minor transactions the meeting adjourned.

C. L. SNYDER, *Secretary.*

Mr. Keable died in Toronto, Canada, on the 16th of February. He was for some time employed in the Western Union office in Cincinnati, as night report operator, and, as such, very few, if any, could excel him. He was also engaged in the same capacity in the Western Union office in Louisville, Ky.

Mr. Raleigh died at Wilmington, Ohio, on the 27th of February. He also was for some time engaged in the Western Union office, Cincinnati, but more lately in Buffalo, N. Y., office. Both the deceased were worthy men who commanded the esteem of their associates, and we join in sympathy with them in their loss. We cannot too much commend the brotherly expression of grief and condolence which these resolutions evince. It is well perhaps to

"Weep not for him who dieth
For he hath ceased from tears"

But to the bereaved, to every friendly heart, to that love to be remembered which speaks audibly in every true man, these memorials are full of comfort and satisfaction.

FRUIT AND ORNAMENTAL TREES,

GRAPE VINES, &c., FOR SPRING 1868.

The Largest Stock in the Country. For sale in large or small quantities. A descriptive and illustrated priced catalogue of Fruits, and one of Ornamental Trees and Plants, sent pre-paid for 10 cents each. Wholesale Catalogue Free.

ELLWANGER & BARRY,
Mt. Hope Nurseries, Rochester, N. Y.

Journal of the Telegraph.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID,
145 Broadway, New York.

NEW YORK, MARCH 16, 1868.

Mr. Varley's Report.

It is not generally known that, soon after his arrival in New York, Mr. Varley, whose name has now become somewhat familiar in our columns, commenced an exhaustive examination of the structures, insulation, machinery, and modes of working of American lines. To this he has devoted a large share of the last three months, and has attested his diligence by a mass of statistical information—tests, diagrams, and recommendations occupying about 125 foolscap pages of well condensed manuscript. These pages are now before us, and we propose to give in successive numbers, extracts from this report for the benefit of, and to supply subjects of discussion to our large and increasing family. No more exhaustive report has ever been written, and our only regret will be that we will be unable to present it, with all its tests and formulas, so as to give a perfect idea of the amount of labor which has been spent upon it, the detail which characterizes it, and the scientific precision with which processes and results are stated. Yet all these will, to some extent, be made apparent.

Desiring and designing this JOURNAL to be a means of useful information to all who labor with us, we present one of the modes by which Mr. Varley proposes to avoid "cross currents," and which he states he has successfully used on the lines in England, Scotland and Holland.

The sketch shows the mode of affixing an escape wire, which is designed also to act as a lightning rod.

"Any current escaping from *a* along the wet arm *e*, on arriving at *f* finds a good easy channel down the wire *w* to the ground.

"Any electricity which may pass *f*, is arrested at *g*, *h* or *i*, and taken away before disturbing the working of *b*, *c* and *d* by getting into these circuits.

"The question which is likely to be asked is, 'if such wires be attached to the poles when the insulation is imperfect, will not nearly all the current escape to the ground?'

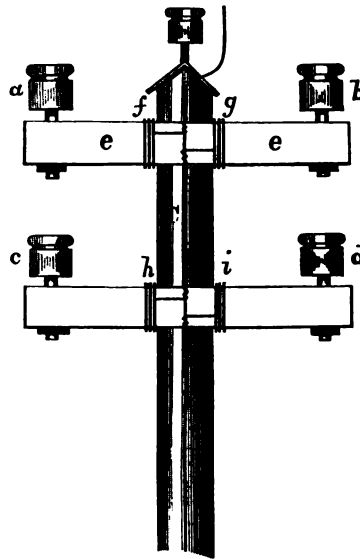
"To answer this question it becomes necessary to know the resistance (actually) of the following parts relatively to each other, or rather the ratio of $a + e$ to C , viz.: the resistance of half the arm = e , the average resistance of the insulators a and e in their present condition, and C the resistance of the pole."

Here follows a series of tests giving the value of $(a + e)$ and C , but they require so many diagrams to illustrate them, that we must postpone any attempt to do so. We give simply the result.

"Were conductors attached to the poles and arms, the insulation would decrease as 106.7 to 100, or as 7 to 6. This would have weakened the signal current on the wire on which the test was made from 30 per cent. to 27, a difference of 3 per cent., but would have removed mixing or disturbing cross currents from the other wires, amounting to 18 per cent., and which actually reduced the 30 per cent. down to 12.

The result, briefly stated is, that instead of a signal current varying from 12 to 30, caused so to be by the mixing of the currents of the wires, the use of an

escape wire would diminish the strength of the current 3 per cent., but give an unvarying signal current of the strength of 27.



When it is remembered that the current of wires on the same poles flow in a like direction, and hence have an antagonistic polarity when escaping or mixing at the arms or fixtures which support them, and that an escape wire between them gives these otherwise antagonistic polarities an unobstructed conductor to the earth, the slight diminution of strength claimed, viz., 3 per cent. will be regarded as remarkable. And yet Mr. Varley's experience in the use of the relieving wire is such, that in his Resume, he recommends as the very first thing to be done, to have these applied.

More Wires for Cuba!

Gen W. F. Smith, President of the International Ocean Telegraph Company, left New York for England on Wednesday last, March 11, by the Cunard steamer Australasia, in company with our friend Mr. Varley, whose departure had been delayed by a multitude of social engagements.

Gen. Smith goes to London to procure a second cable to connect us with the saccharine plantations of Cuba, the intercourse with that sunny isle having so much increased as already to demand additional means of communication. When connection with Jamaica, St. Thomas and Panama are secured via this young and successful company's lines it will become one of the most important avenues of communication, and its property become increasingly valuable.

Meanwhile, direct wires are being provided from New York to Lake City in Florida, the connecting point of the lines of the Western Union Telegraph Company, so as to provide all possible means for the prompt and satisfactory dispatch of Cuban business, and the correspondence so soon to be opened beyond.

Length of Western Union Company's Lines.

A very vague and incorrect idea prevails of the extent of the property of the Western Union Telegraph Company, which we may dissipate by the following illustration.

Suppose a terminal pole were stuck through the Herald Buildings in the City of New York, and the lines of the Western Union Co. extended therefrom in a direct line to San Francisco, Canton, Calcutta, Persian Gulf, French coast, and thence via Atlantic Ocean to New York, they would go twice round the world and leave enough of a residue to so encircle the marble building, corner of Broadway and Ann street, that its astonished occupants would be in a deeper darkness about the Western Union Company than ever before.

Western Union Telegraph Company.

JANUARY STATEMENT.

Receipts	- - - -	\$539,794 00
Expenses	- - - -	366,446 02
Balance	- - - -	\$173,347 98

Direct Line to India.

A company has been recently organized in London to build a telegraph line to the English possessions in India, with a capital of £450,000. The Electric and International Telegraph Company provide this company with two wires, as a part of the connection with the island of Norderney, on the North German coast. From thence to the eastern boundary of Prussia the Prussian Government agrees to build a double line of telegraph from Norderney to Thorn for the exclusive use of this company, letting it to them on a royalty per message. The Russian and Persian Governments give concessions for the extension of the line, via Warsaw and Tiflis, to Teheran, where the connection will be made with existing East India lines. This line will be finished in 1869, and give instant connection with the English possessions in India and the commercial posts of China, via the Atlantic cable.

PROFESSOR MORSE is now in Paris and leaves May 7th for New York. The recent trials of speed by the Morse apparatus have given him great pleasure, and have aided to increase the respect for him entertained in Europe. The Baron von Philipsborn, Chief Director of the Prussian Telegraphs, recently introduced Mr. Morse to a Postal Convention in Berlin as the "Father of the Telegraph." During that interview the Baron claimed that the success of Prussia in the war against Austria was largely due to the use of the telegraph. He also stated as follows: "We have a great variety of attempted improvements on your original invention, and it is marvellous how little it has been improved. The cry comes from all quarters of our Dominion, *send us the Morse.*" We need not say that in all these honors we take great pride and record them with the most lively satisfaction.

Mr. Morse, however, turns from his own offspring to a generous acknowledgement of the labors of others, referring to the instruments of Hughes, Casselli, and especially of Siemens, and still more recently of Mr. Henry Cook, the successor of the talented Bonelli recently deceased, characterizing them as admirable for their consummate ingenuity and well deserving attention as interesting modifications of his own. Experience alone can determine how far these can be introduced with advantage. We entertain the belief that ultimately the telegraph system to be speedy and correct, must be largely or wholly automatic.

"When sorrows come, they come not single spies,
But in battalions."

We have recorded two deaths and the friendly rites connected therewith, and now there comes another:

After a brief illness, Mr. F. V. Barber of the New York office of the Associated Press, died March 2, at his residence at Stapleton, Staten Island, aged 38. Mr. Barber belonged to the old corps of telegraph men, one by one of whom are annually disappearing in death, or in connection with new pursuits. He was at one time manager of the Bain line office at Troy, and was widely known and beloved. Simple in his habits, expert in the duties confided to him, gentle and genial in his nature, warm in his sympathies, we feel his loss and mourn his departure. In this we are joined by all who knew him.

Several interesting communications are postponed for want of room.

Telegraph Banquet in London.

The circumstances which led to the banquet of the telegraph companies at the Palace Hotel, London, on Tuesday, March 10th, are not of general public significance in themselves, but are much so in their undoubted influence in the future management of international correspondence. No details have yet reached us, but we presume the banquet means that the Old Cable Company and the Anglo-American Company are united, and that all interests are now represented by a common Board of Control.

To many minds these amalgamations simply indicate a grasping after extended authority—the organization of monopoly. But experience teaches another lesson. The more unified the control and the larger the area of jurisdiction, the simpler and the cheaper, and the more effective are the possibilities of the system.

In the present case it is but the massing of two divisions of the same interest—one company having simply completed the work of the other, and now merging as at first contemplated. But it brings with it peaceful and healthful administration to a business which eminently demands them both.

The sentiments exchanged between London, New York, Washington and Havana, all transmitted and received while the guests sat at their congratulatory feast, is one of the evidences of the progress of science and the interesting character of the times in which we live. The ends of the earth are being rapidly brought together. We must soon have a common language to express a common sympathy and life.

Telegraphic Congratulations.

The following telegrams were received about two o'clock, P. M., and the replies forwarded during the progress of the banquet, the lines from Nova Scotia to Havana being connected, Havana sending direct to Plaister Cove:

PALACE HOTEL, LONDON, March 10, 7 P. M.

To the President of the United States:

The guests assembled at the telegraph banquet send their assembled greetings to the President of the United States, and trust that the telegraphic union between England and America may never be interrupted nor their friendship broken.

(Signed) C. W. FIELD.

PALACE HOTEL, LONDON, March 10, P. M.

W. H. Seward, Secretary of State:

The principal gentlemen in England that have been connected with establishing telegraphic communication between this country and America, now assembled around this table, send their kind regards to the Secretary of State, and remember with pleasure the interest he has always taken in telegraphic communication across the Atlantic.

CYRUS W. FIELD.

WASHINGTON, March 10, 3.30 P. M.

To Cyrus W. Field, Esq., Palace Hotel, London:

I congratulate the telegraphic builders that, instead of building a bridge for the tramp of hostile armies across the Atlantic, they have stretched a wire beneath it, which effectually exchanges friendly sentiments, sympathy and affections.

WILLIAM H. SEWARD.

WASHINGTON, March 10, 3.30 P. M.

Cyrus W. Field, Palace Hotel, London:

Express my congratulations to the Telegraph Festival Assembly. I wish them all possible success—that their wires may be multiplied through many seas, and their stakes extended around the world.

ANDREW JOHNSON.

PALACE HOTEL, LONDON, Tuesday, March 10, 7.15 P. M.
Peter Cooper, Esq., President, New York:

The gentlemen now sitting around this table rejoice with you and the other directors of the New York, Newfoundland and London Telegraph Company, in the complete success of telegraphic communication between Europe and America, which was inaugurated thirteen years ago this date. Pray that it may continue to be a blessing to those two great kindred nations living on opposite sides of the Atlantic.

C. W. FIELD.

NEW YORK, Tuesday 2.35 P. M.

Cyrus W. Field, at the banquet, London:

Yours received two twenty-seven P. M.

The directors of the New York, Newfoundland and London Telegraph Company desire to join in the general joy produced by the harmonious action of the Atlantic and Anglo-American

companies, which promises so much benefit not only to the shareholders but to the world at large.

The co-operation of the Newfoundland Company can be confidently counted on in the measures which are now possible, and hence certain for the extension and cheapening of telegraphic facilities whereby the commerce of the world will be enlarged, and the bonds of peace between the nations be strengthened and confirmed.

PETER COOPER, President.

FIFTH AVENUE HOTEL, March 10, 1868.

To Mr. C. W. Field, Palace Hotel, London:

New York, Tuesday, 2.30 P. M. Yours received. All well. Tell your guests that if they will cross the ocean we will give them a welcome as hearty, "if possible," as our English friends have given to you.

MARY S. FIELD.

PALACE HOTEL, LONDON, March 10, 7.30 P. M.
Hon. Wm. Orton, President Western Union Telegraph Company, New York:

There is now assembled around this board many of the principal telegraph men of England, and they present their compliments to you and the directors of the Western Union Telegraph Company, and trust that the telegraphic union between the old and new world may never be broken and the cordial relations now existing between the telegraph companies on both sides of the Atlantic may never be interrupted.

C. W. FIELD.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
March 10, 1868.

Cyrus W. Field:

For the Western Union Telegraph Company's Directors and myself, accept and convey to your assembled guests reciprocal assurances of personal and business friendship. Those who do you honor on this occasion are not alone those who sit at your table. The latter are but the representatives of the countless host who, throughout the world within the influence of the press and the telegraph, sit daily at a feast of reason ever satisfying, but never satisfied, with whom your name shall be a household word for centuries to come.

(Signed)

WILLIAM ORTON.

Cyrus W. Field, London:

I leave to-morrow to get a second cable from Florida to Cuba. The Central American Company is organized. Gen. Sanford and our Vice-President in Havana can speak for themselves. Present the compliments of this company to their telegraphic brethren in England.

W. F. SMITH, President.

Cyrus W. Field, London:

We are about to drop a line to South America and hope the response will soon be vibrating over the Atlantic cable.

EDWARD S. SANFORD,

President Central American Tel. Co.

LONDON, 7.25 P. M., March 10.

Lieut. Gen. Francisco Lersundi, Captain-General of Cuba:

We rejoice with you that Cuba has been brought in telegraphic communication with the old world, and trust that your beautiful island will be soon connected with the Isthmus of Panama.

C. W. FIELD.

HAVANA, 5.24 P. M.

Cyrus W. Field, London:

Veo con placer y entusiasmo los adelantos que la ciencia logra cada instante y espero con ansiedad el día que usted me anuncie hallarase tambien unidos por el telégrafo con el resto del continente Americano par Panama pues sera un motivo mas de prosperidad para esta Isla.

LERSUNDI, Tarde Marzo Diez Cuatro y ocho.

During these salutations the operators had their own complimentary speeches—Nova Scotia sending the congratulations of the icebergs to the Cuban orange blossoms. Mr. Garcia, operator at Havana, seemed much rejoiced at his sudden introduction to his companions.

It was thought there was a *very large battery* on at the London terminus, and it has been suggested there may have been a small sustainer at Washington. In New York never a cup. It was very dry.

By Atlantic Telegraph.

LONDON, March 10.—A satisfactory arrangement has been effected between the Anglo-American and Atlantic Telegraph Companies, which, it is believed, will remove all the differences between them which have heretofore hampered the management of Atlantic Cable affairs. The details of the arrangement have not transpired.

BRIGHAM YOUNG is making telegraph operators out of the surplus wives of Utah.

OVER three hundred millions of matches are made and used daily in the United States, or about nine to each person of the population.

TARIFF BUREAU.**Semi-Monthly Circular.**

WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
March 15, 1868.

TO ALL OFFICES ON W. U. LINES:

Please note the following changes in your Tariff Books, which have occurred since the 28th February, the date of the last Tariff Order:

OFFICES OPENED.

Berkshire, N. Y., tariff same as Dryden, N. Y.
Charleston, Tenn., tariff same as Cleveland, Tenn.
Chessoning, Mich., tariff same as Owasso, Mich.
E. Liverpool, Ohio, tariff same as Wellsville, Ohio.
Freeland, Mich., 10 cents more than to Saginaw Mich.
Hydeville, Vt., same as Fair Haven, Vt.
Jacobs Creek, Pa., same as Laytons, Pa.
Linwood, Del. Co., Pa., same as Chester, Pa.
Midland, Mich., 10 cents more than to Saginaw, Mich.
Penobscuis, N. B., same as Anagance, N. B.
Piketon, O., same as Waverly, O.
St. Stephens, N. B., same as Calais, Me.
West Springfield, Mass., same as Westfield, Mass.
Altoona, Pa.
All offices beyond Pittsburg to add 30 and 8 to their present rates to these points to obtain the rate to Altoona; but the rate for other offices between Philadelphia and Pittsburg will remain as at present.

OFFICES OPENED ON OTHER LINES.

Cumberland, C. W., tariff 25 & 2 from Montreal.
Onawa, Iowa, 220 & 17 from Chicago.
Sioux City, Iowa, 270 & 22 from Chicago.
Sloan, Iowa, 245 & 19 from Chicago.

OFFICES CLOSED.

Moreau, New York.

GENERAL INFORMATION.

Managers and clerks will please notice that the tariff circular under date of February 28, and published in the JOURNAL of March 2, is wrong in giving the rate for additional words. This should be ascertained as directed by tariff sheet giving rates from Washington and Louisville to points in the Southern Division, dated February 1, 1867, the scales for additional words being thereto attached.

North Vineland, N. J., office was opened last summer, the name was incorrectly given as Forest Grove, N. J.
Camden Station, Baltimore Md., will hereafter be checked direct on all business whether paid or free.

WILLIAM ORTON,
President.

MARRIED.

BENJAMIN—NAISBY.—January 23, 1868, by the Rev. Dr. Bomberger, at the bride's home, A. J. Benjamin of Western Union Telegraph Office, Salisbury, Md., to Miss Allena Naisby, of Philadelphia.

MR. O. M. DUNN, of Bromfield, Ind., desires us to publish a list of the numeral abbreviations of the Western Union Telegraph Company. He says: "I have been trying for the last two years to get a book or publication of some kind that has them, but so far have failed."

Both to this correspondent and others who both desire and need information on this and other subjects connected with their duties, we recommend the purchase of L. G. Tillotson & Co.'s latest edition of J. E. Smith's Telegraph Manual. It is very cheap, only 30 cents per copy, and is simple and practical. Address L. G. Tillotson & Co., 26 Dey street, New York. For two new subscribers and two dollars cash, we will send a copy of the Manual extra.

NATURE will be reported. All things are engaged in writing their own history. The plant and pebbles go attended by their own shadow. The rock leaves its scratches on the mountain side, the river channel in the soil, the animal its bones in the stratum, the fern and the leaf their modest epitaph in the coal. The falling drop makes its sepulchre in the sand or stone; not a footstep in the snow or along the ground but prints in characters more or less lasting a map of its march; every act of man inscribes itself on the memories of his fellows and his own face. The air is full of sound, the sky of tokens; the ground is all memoranda, and every object is covered over with hints which speak to the intelligent.

Important Telegraph Law.

WASHINGTON, March 3d.

In the House of Representatives, Mr. Farnsworth, of Illinois, introduced a bill, of which the following synopsis is given, which was appropriately referred:

The first section confers jurisdiction upon the District and Circuit Courts of the United States in all suits or proceedings brought by or against any incorporated Telegraph Company.

The second enacts that if any person shall wilfully cut, break, displace, molest, injure or destroy any pole, wire or cable, or other appliances and property owned by any Telegraph Company, or shall wilfully destroy or impair the insulation of the wires, or interrupt the transmission of the electric current through the same, he shall be subject to a heavy fine and imprisonment.

The third, fourth and fifth sections provide for the manner of instituting and carrying on suits in courts under this bill.

The sixth section provides for the punishment by a fine of \$1,000 and imprisonment for one year of any agent, operator or employe of any such Telegraph Company, or any other person, who shall knowingly or wilfully send by Telegraph any false or forged message purporting to be from such Telegraph office, or shall wilfully deliver or consent to be delivered any such message purporting to have been received by Telegraph; and also any person who may conspire to furnish any operator or employe any message, knowing the same to be false or forged, with the intent to deceive, injure or defraud any individual, partnership or corporation and the public.

The seventh section enacts that any officer, agent, operator, clerk or employe of any Telegraph Company, who divulges to any other party than the party from whom the same was received, or to whom the same is addressed, any message received or sent over any Telegraph lines, or who alters a message in any way, shall be fined \$1,000, or imprisoned not to exceed one year.

The eighth section provides for the punishment of any operator who steals news off the wires, or speculates upon information acquired in sending messages.

The bill consists of fifteen sections, most of which are devoted to the protection of the public against frauds and injustice by the Telegraph Companies, their agents and operators.

A Scientific Explanation: The Fire Bell Mixed.

Shortly before 12 o'clock this noon, the fire alarm bell sounded district No. 26 or No. 24, or some other number, and it kept sounding in a manner that indicated very much fire somewhere, if the volubility of the bell was to be relied upon. The steamers came out, and went to where the fire was, and it wasn't there; they then proceeded to the next best place where the conflagration was supposed to be, and found it in the same place where it wasn't in the previous locality. After wandering around promiscuously for a quarter of an hour, the department held a sort of mass convention on Central Row, and a big crowd collected to discuss the question. Meantime the alarm bell was doing its prettiest to toll out its mournful tidings. There was a good deal of swearing all around, but finally the trouble was cleared up.

It appears that in moving a house on Wethersfield avenue, one of the fire telegraph wires was broken, whereupon, *there being nothing to prevent*, the bell went to work vigorously as stated.

The cause of the difficulty is easily explained. When a wire is cut, the horizontal divergence of the positive current of the elective diaphragm ceases to vibrate on the ground swell, and the momentum of the axletree is therefore broken by the grand concussion of the self-repeater; whereupon the bell is seriously exaggerated to the fullness of its horizontal position! At any rate, this is as we understand it.

The accident, as a matter of fact, was made to tell upon the public by two boys, who picked up the broken wire, and amused themselves by touching the two ends together, which funny operation they repeated till the cause of the trouble was discovered.—*Hartford Times*.

ECONOMY in fuel might be greatly promoted if the consumer would imitate the practice of good firemen in sprinkling over the surface of the fire a thin layer of coal as often as required. By this method the gases from the fresh coal are not wasted, as they are when the coal is put on in great quantities at a time, when nearly all the gas goes off unconsumed.

A Subterranean Lake of Boiling Water.

The *La Crosse* (Wisconsin) *Democrat* tells the following remarkable story: "This afternoon, about 3 o'clock, the residents of the eastern part of the city were startled by a loud report, resembling the discharge of a park of the heaviest artillery. Many supposed it to be occasioned by blasting operations at the stone quarries east of the city; but the fact was soon ascertained that the explosion occurred at the artesian well that has been sunk to the depth of 280 feet, and situated about midway between the river and the bluffs.

The workmen at the well became sensible of a remarkable change going on within the bore. The drill had been working through a substratum of dark porous rock for five hours, and had been making rapid progress, when suddenly the machinery stopped, the rods became violently agitated, and a deafening explosion ensued, followed by a stream of boiling water gushing with a mighty force through the tube from the depths below. The startled workmen were blinded by clouds of steam. Geo. Hayes, the workman in charge of the drill at the time, had a very narrow escape. He received a jet of boiling water in his neck and breast, but was partially protected by heavy woollen clothing. William Marks, another operative, was badly scalded about the feet and ankles. Patrick Cox, Andrew Parkman and Karl Snyder, the remaining workman, were but slightly injured. The horses became panic-stricken, and reared and plunged violently, and, extricating themselves from the harness, dashed madly over the frozen prairie in the direction of the bluffs.

The upward pressure of the water is very great, certainly not less than two hundred pounds to the square inch. The mean temperature is about 183 of Reaumur's thermometer.

Of course, all conjectures as to the extent of the submarine lake, and the length of time which the boiling water will continue to flow, must for the present be purely speculative. Dr. Percival, late State geologist, was of opinion that far beneath the bed of the Mississippi there existed another stream flowing in the same direction of much greater magnitude, and whose waters were of a much higher temperature than the waters of the river.

The well has been visited by crowds of citizens, and the singular phenomenon has given rise to much speculation and wonder. Many strange theories have been advanced. One scientific gentleman who has had wide experience in geology, as well as much practical knowledge of mining operations, is of the opinion that the friction of the drill has ignited some hidden reservoir of highly inflammable oil or gas, the intense heat of which has caused the water to boil and seek an outlet through the bore of the well. Other intelligent parties entertain widely different views, and the flowing well of boiling water bids fair to furnish a prolific theme for scientific investigation.

The extensive vineyards of the Hon. Edwin Flint and George A. Metzgar are in imminent danger of being submerged by the boiling flood. We trust that the Artesian Well Company will not be subject to any vexatious litigation in consequence of this unforeseen and unparalleled occurrence. Fortunately those of our citizens who are the owners of property liable to be inundated are wealthy, public spirited gentlemen, who will not take advantage of this break of the elements to embarrass this enterprising project. The snow for a space of about six acres has entirely disappeared, and the brown grass of the prairie swollen by the heated element, has assumed wild and fanciful shapes.

The strange spectacle of a great column of steam rising from the midst of the vast snow-clad plain in mid-winter, is indeed singular, and impresses upon our minds at once a sense of man's weakness, and awakens us to a faint conception of the awful power of the hidden elements beneath our feet.

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THE following are among the signs over the shops of traders at Fort Smith, Arkansas: "Camphein And burning flew," "Ches Nuts biled and Roar," "Cainset cheers Reseeted Hear," "Woshing, ironin and goin out duin dais wurk dain here."

The Secrets of the Ocean.

Mr. Green, the famous diver, tells singular stories of his adventure when making search in the deep waters of the ocean. He gives some new sketches of what he saw at the "Silver Banks," near Hayti:

The banks of coral on which my divers were made are about forty miles in length, and from ten to twenty in breadth. On this bank of coral is presented to the diver one of the most beautiful and sublime scenes the eye ever beheld. The water varies from ten to one hundred feet in depth, and so clear that the diver can see from two to three hundred feet when submerged, with but little obstruction to the sight.

The bottom of the ocean, in many places, is as smooth as a marble floor; in others it is studded with coral columns, from ten to one hundred feet in height, and from one to eighty feet in diameter. The tops of those more lofty support a myriad of pyramidal pendants, each forming a myriad more, giving reality to the imaginary abode of some water nymph. In other places the pendants form arch over arch; and, as the diver stands on the bottom of the ocean, and gazes through in the deep winding avenues, he finds that they fill him with as sacred an awe as if he were in some old cathedral which had long been buried beneath old ocean's wave. Here and there the coral extends to the surface of the water, as if the loftier columns were towers belonging to those stately temples that are now in ruins.

There were countless varieties of diminutive trees, shrubs and plants in every crevice of the corals where water had deposited the earth. They were all of a faint hue, owing to the pale light they received, although of every shade, and entirely different from plants that I am familiar with that vegetate upon dry land. One in particular attracted my attention; it resembled a sea fan of immense size, variegated colors and the most brilliant hue. The fish which inhabit these "Silver Banks" I found as different in kind as the scenery was varied. They were of all forms, colors and sizes—from the symmetrical goby to the globe-like sunfish, from the duldest hue to the changeable dolphin.

Phrenology in the Montreal Post-Office.

The post-office is not a place that would be suspected as a source of fun, far less as a field for the acting of a serio-comic drama. It appears that phrenological qualification is now necessary to retain a position in that office. For some time past the post-master was not satisfied that all was right, and being a firm believer in the development of certain bumps, he had the heads of the clerks of the establishment examined, and the result was most unsatisfactory in the case of three of those employed in the office. The moral and intellectual bumps were found deficient, so much so that it was impossible to retain these gentlemen any longer as public servants. It is not known whether the same experiment will be made in the other branches of the public service.—*Montreal Telegraph.*

Effect of Darkness and Silence.

Under the above heading a report has appeared from Dr. Ralls Smith, who says he is "confident that the sense of hearing, as well as that of sight, is lacking among the fishes in the mammoth cave."

Prof. Agassiz and Prof. Wyman have demonstrated that the fishes in the cave, of which there are several species, are all blind; that they all have rudimentary orbits, developed in some species more than in others; but that, at the same time, all have large well developed auditory organs, even larger in proportion than ordinary fish. See "Silliman's American Journal" for March, 1854.

Prof. Silliman visited the cave in 1850, and states that the cave rat possesses, when first captured, a very imperfect, if any, sense of vision, which, however, appears to improve when kept long in the light; but this same rat is extremely shy; and notwithstanding the cave is full of innumerable tracks, they are seldom seen, as they flee when hearing the approach of man.

Dr. Smith asserts that these animals are deaf, because there is nothing to be heard, forgetting that they make sounds by their own movements, and produce articulate sounds. It would be more probable that very acute hearing in these animals compensates for the loss of sight, as is the case with the blind in general.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL.

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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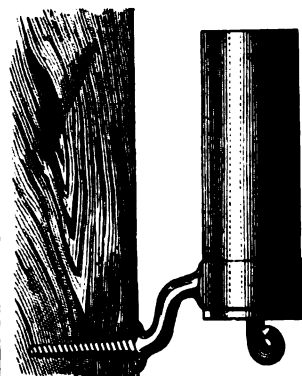
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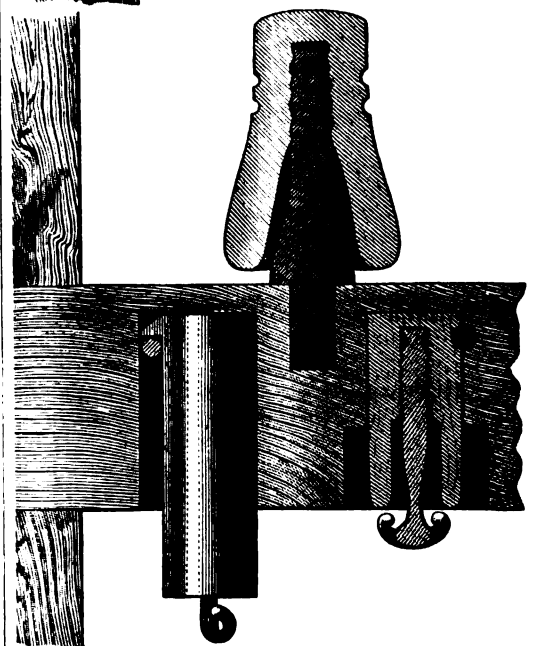
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JOURNAL OF THE TELEGRAPH.

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NEW YORK, APRIL 1, 1868.

VOL. I.

EASTERN DIVISION.

TESTS OF SPEED.

Transmission of Dispatches by the Morse Telegraphic Apparatus.

THE W. U. TELEGRAPH COMPANY,
Office of the Gen'l Supt. of the
Eastern Division,
145 Broadway, N. Y., March 23, 1868.

Hon. Wm. Orton, President W. U. Tel. Co., N. Y.:

MY DEAR SIR—In compliance with Executive Circular No. 4, Mr. A. S. Brown, Manager of New York office, was instructed to conduct several trials of speed in telegraphic transmission by the Morse apparatus. I respectfully submit herewith Mr. Brown's report and affidavit, together with the sworn statements of Messrs. Tinker and Merrihew, Managers at Washington and Philadelphia, showing the following result:

	No. of messages.	Words in each message.	Total No. of words.	Time occupied.	Average words per minute.
First Trial, Report.			2224	60 min.	37 1-15
Second " 94	90		1890	60 "	31 1-3
Third " Report.			2514	60 "	41 9-10
Fourth " "			1352	30 "	45 1-15
Fifth " "			2540	60 "	42 1-3

I respectfully invite attention to the length of time each trial was continued, and to the excellence of the original copies herewith enclosed.

Very truly yours,

THOS. T. ECKERT,
Gen'l Supt. Eastern Division.
NEW YORK, March 21st.

Gen. T. T. Eckert, Gen. Supt.:

In compliance with orders received from you, a number of tests have been made, with a view of ascertaining the highest attainable speed by the Morse system of telegraphing. I herewith submit the following statement showing the results of these tests.

Yours, very respectfully,

A. S. BROWN,
Manager N. Y. Office.

JANUARY 19, 1868.—Mr. M. Mareau, chief operator in the Western Union Telegraph Office at Washington, sent to Wm. Wallace, Jr., operator at Buffalo, two thousand two hundred and twenty-four (2,224) words of press report in one hour, through a repeater at New York. The length of this circuit is six hundred and sixty-three (663) miles. The report was copied by Mr. Wallace on manifold sheets, three copies being taken, one of which accompanies this.

JANUARY 19, 1868.—Mr. W. E. Kettles, an operator in the W. U. Telegraph office at Washington, sent to Plaister Cove, C. B., ninety-four (94) messages of twenty (20) words each in one hour. A copy of these messages was also taken at this office in passing. The distance from Washington to Plaister Cove, by line, is, to the best of my knowledge and belief, fourteen hundred (1400) miles. Repeaters were used at New York and St. John. The messages were received at Plaister Cove by Messrs. Reese and Sherman. Their copies have not been received here, but the messages were afterward repeated back to Washington and found to be correct. The originals, as sent from Washington, and the copies taken here, are enclosed.

JANUARY 21, 1868.—D. F. Marks, night manager, and Charles Bagley, operator in the New York office of the W. U. Telegraph Company, sent to N. Snyder, operator at Philadelphia, two thousand five hundred and fourteen (2,514) words of press report in one hour. The distance, by route of the line, is ninety-one (91) miles. The copy of this report, taken by Mr. Snyder, is herewith enclosed.

FEBRUARY 19th, 1868.—Mr. R. I. Hutchinson, an operator in the Western Union Telegraph Office at New York, sent to N. Snyder, operator at Philadelphia, one thousand three hundred and fifty-two (1,352) words of press report in thirty (30) minutes. This report consisted of ordinary telegraphic news, cut from a paper of that date. The original of this report is enclosed.

FEBRUARY 20th.—Mr. Edward Stewart, of the Western Union Telegraph office, Washington, sent to Mr. N. Snyder, at Philadelphia, two thousand five hundred and forty (2,540) words of press report in one hour. This report was a speech delivered by M. Thiers in the French legislative body on January 19.

A. S. BROWN,
Manager of New York office.

City and County of New York, ss.:

On the 23d day of March, A. D. 1868, before me personally appeared A. S. Brown, to me known to be the manager of the New York office of the Western Union Telegraph Company, who, being duly sworn, deposes and says, that the foregoing statements, by him subscribed, in respect to five several tests of speed in telegraphing by the Morse system, are true and correct in every particular to the best of his knowledge and belief.

R. M. ROCHESTER,
Notary Public.

City of Philadelphia, ss.

Personally appeared before me, an Alderman in and for said City, Lant. S. Jones, who being duly sworn according to law, says, that on January 21st, 1868, Nicholas J. Snyder, operator at Philadelphia, Pa., received from Mr. W. F. Marks and Charles Bagley, operators at New York, a portion of press report, containing, to the best of my knowledge and belief, 2,514 words; time occupied, one hour.

LANT. S. JONES,
Night Chief Operator, Philadelphia.

Sworn and subscribed before me, March 20, 1868,
JOHN WHITE,
Alderman.

City of Philadelphia, ss.

Personally appeared before me, an Alderman in and for said City, James Merrihew, who being duly sworn according to law, says, that on February 19th, 1868, Nicholas J. Snyder, operator at Philadelphia, Pa., received from Mr. R. J. Hutchinson, operator at New York, a portion of press report, containing, to the best of my knowledge and belief, 1,352 words; time occupied, 30 minutes. This report consisted of ordinary telegraphic news, cut from a paper of that date.

JOHN MERRIHEW,
Manager Philadelphia.

Sworn to and subscribed before me this 20th day of March, A. D., 1868,
JOHN WHITE,
Alderman.

City of Philadelphia, ss.

Personally appeared before me, an Alderman in and for said City, James Merrihew, who being duly sworn according to law, says, that on February 20th, 1868, Mr. Nicholas J. Snyder, operator at Philadelphia, received from Mr. Edward Stuart, of W. U. Telegraph Co.'s Washington office, a portion of press report, containing, to the best of my knowledge and belief, 2,540 words; time occupied, one hour. This report was a speech delivered by M. Thiers in the French legislative body, January 29th.

JAMES MERRIHEW,
Manager, Philadelphia.

Sworn and subscribed before me this 20th day of March, A. D., 1868,
JOHN WHITE,
Alderman.

Charles A. Tinker, of the City and County of Washington, District of Columbia, being by me first duly sworn, deposes and says that he is manager of the Western Union Telegraph Office located in the said City of Washington; that M. Mareau, chief operator of said Washington office, sent, on January 19th, 1868, twenty-two hundred and twenty-four words of press report over a wire between Washington, D. C., and Buffalo, N. Y., in one hour. This circuit is to the best of my knowledge and belief, six hundred and sixty-three miles in length, and was worked through repeaters at New York. The report was received and copied by Mr. Wallace, operator at Buffalo, without once breaking. On the same day, January 19th, Mr. Wm. E. Kettles, operator in said Washington office, sent to Plaister Cove, Cape Breton, ninety-four messages, containing twenty words each, in one hour. This circuit, to the best of my knowledge and belief, is fourteen hundred (1400) miles in length, and was worked through repeaters at New York and St. Johns, N. B. The messages were received at Plaister Cove by operators Reese and Sherman, and were afterwards repeated back and found to be correct.

On February twentieth (20th), Mr. Edward C. Stewart, also an operator in said Washington office, sent to Philadelphia twenty-five hundred and forty (2,540) words of press report in one hour, being received and copied by Mr. Snyder, an operator in Philadelphia office. This report consisted of the first half of a speech delivered by M. Thiers before the French Legislative body, January 29th, and was sent from the copy printed in the New York Tribune, February 18th, 1868.

CHAS. A. TINKER.
Sworn to and subscribed before me, this 20th day of March, 1868.

E. L. CORBIN,
Justice of the Peace.

[SEAL.]

All the manuscript connected with the above tests we have in our possession for transmission to the Paris Commission on Telegraphs, and we certify to its clearness, correctness and regularity. There is no evidence of unusual haste, and, except in two or three places, no change or correction of any kind appears.

ED. JOURNAL OF THE TELEGRAPH.

An exchange says the present insatiable appetite for "latest news" makes man appear to be a telegraphivorous animal.

Correspondence.

Voltaic Electric Induction.

NEWCASTLE, Del., February 21st, 1868.

To the Editor Journal of the Telegraph:

In my first article on this subject I had the manliness to attach my signature. Your correspondent, T, in commenting upon it, does not.

He doubts the accuracy of my statement, and, without testing the experiment, advises me to try it again with other coils. He thinks I have a *metallic* connection, or, in other words a "cross." I have yet to learn that silk is a metal.

The particular experiment I made, when repeated by very experienced hands, may fail. Whether this be so or not, and whether the statement I made in reference to the subject be regarded as admissible, must be left to the judgment of each reader who *thinks* upon the subject.

The assertion of the fact upon my part does not make it so.

In order, however, that no one may labor under any delusion, I will state distinctly what, to my mind, is a self-evident fact, and of which I will, in due course of time, furnish ample proof.

First. That if a force be transmitted upon a wire of a certain size and length, a portion of that force can be made to manifest itself upon a second wire.

Second. That this force manifested upon the second wire will *not be momentary*, but will continue as long as the primary force is in existence.

Third. That these two wires need not be formed into a coil or coils, but be placed parallel to each other, and *not in metallic* connection.

Fourth. That the *only* coil to be used shall be a galvanometer, for the purpose of observing the deflections of the needle.

I do not deny that secondary, tertiary and quaternary forces are not obtained in the manner as laid down by Faraday, Henry and others.

It does not follow, however, that because they employed certain instruments, and obtained *momentary* effects, that it is beyond human ingenuity to devise plans and instruments that will indicate *continuous* results as stated.

All the forces, from the secondary up to the seventh order, have been found to vary in *intensity* and quantity, and it is owing to these *variations* which has rendered the investigation of the so-called laws of such forces complicated and difficult.

Respectfully,

M. V. B. BUELL.

Frictional Electricity Excited by the Air.

PHILADELPHIA, March 7th, 1868.

To the Editor Journal of the Telegraph:

SIR—The extraordinary nature of the phenomena recited under the above caption in your last number, induces me to request that your correspondent will furnish some additional information on the subject. To properly comprehend the cause of such an excessive disturbance of the wires, there should be known the state of the weather immediately preceding and succeeding the phenomena; that is to say, whether it was clear or cloudy, dry or damp, rainy or snowy, the temperature, &c. It would also be interesting to know whether the line had, at any previous period, been affected by any other free electricity than the ordinary discharge of lightning, common to all lines in the warm months.

Although the duration of the disturbance is given, your correspondent unfortunately neglected the date. During the past month, February, the planets Jupiter and Venus steadily and rapidly approached each other, until, on the 27th ultimo, they were within twenty-three minutes of one degree. It was expected and announced that this conjunction of two such immense masses would have some sensible effect upon our world, in the form of gales of wind, magnetic

storms, etc.; and a correspondent (of ENGINEERING, I think,) suggested that it would be a favorable opportunity for observations upon the electrical disturbance of telegraphic wires.

In the absence of any information as to the day upon which the disturbance mentioned in your paper took place, it would be premature to announce that it was due to the celestial phenomena spoken of; but it is not too soon to say that the theory advanced by your correspondent is wholly untenable. The friction of air upon iron does not produce *electricity* but *heat*. In the hydro-electric machine, from which your correspondent probably derived his idea, the electricity is generated by the rubbing of *water* not against *iron* but boxwood, the vapor of water or steam merely supplying the power. By suddenly driving the piston into a syringe, or in any other manner compressing air rapidly, your correspondent will be convinced of this fact. Again, the effects produced by the extra current denoted a *quantity* rather than an intensity charge.

The parallelism of the wind and wire would be the most unfavorable position to develop excessive friction.

Finally, the fact that the Aurora produces generally but fitful currents cannot be used as an argument in such a totally unparalleled case as the present.

I would respectfully suggest that any operator who may have noticed any unusual disturbance on his line, during the past month, communicate to the JOURNAL an account of it. Respectfully, T.

CANTON, Miss., March 7, 1868.

To the Editor Journal of the Telegraph:

We cannot but notice that operators are becoming every day more and more inclined to vice and dissipation.

That Telegraphic pursuits tend to this as some seem to think, is preposterous; but that it is owing to separate and distinct causes, cannot be denied.

Telegraphers, from being changed so often, and having to make new acquaintances at every place they go, become wearied of such up-hill work, and naturally seek that society which is easiest to enter. There is a class of men in every town, more or less loose in their habits, who are always ready and eager for any accession to their numbers. Operators too frequently accept such as their companions.

And then, we think that the scanty and inferior furniture of some telegraph offices offers but little inducement to operators to remain in them; for, on the same principle that a cheerful and ornamented home tends to render young men contented, and to improve their morals, would a neatly furnished office render operators pleased with their situations and averse to immorality.

The first of these evils could, to a great extent, be alleviated by the operators themselves.

All operators spend much money foolishly, especially those who tolerate loose and frivolous companions. Now, if this amount was applied to the purchase of good solid books, and to articles, many of which are quite inexpensive but very cheerful in an office, and which he could take with him wherever he went, he would never experience a dearth of cheerful companionship, telegraphing would be rendered more and more pleasant, giving him respect for a "profession" irreproachable in itself, but rendered questionable by unthinking operators, blind to their own interest.

We should cultivate a spirit of fraternity, discourage vice and dissipation by our own examples; and the fruits would soon be seen in the cordiality with which good men received, and spoke of us, and in the silent approval of our own consciences—a good work well done. D.

FREDERICK, Md., March 12, 1868.

To the Editor Journal of the Telegraph:

As you have kindly invited correspondence, I write you. One thing alarms me. You say, "corre-

spondence, brief, practical, sketchy, sensible, will be received gladly."

You remind me of the lady who advertised for a girl; wanted one fresh from the "ould sod" who could wash, iron, cook, run a sewing machine, nurse the baby, and give the children sound moral instruction.

I can't fulfill all your conditions, but will try and keep to the first.

"*Apropos des dots*," does not Prof. Morse take up friend Varley rather hastily in your No. 7? It seems to me, after reading Mr. Varley's letter carefully, he only asserts that the *improvement of doing away with the spaced letters in the Morse alphabet* is due to the Germans; whereas, the Professor seems to blame him for crediting them with the *invention* of the Morse alphabet.

Your article in No. 7 on "Interpreting Telegraph Rules" put me in mind of another thing which most operators are in the habit of doing, without thinking of the consequences which *may* result; that is, writing out a message for another party, and *signing their name to it*, at their request.

To show the danger of it: I once wrote such a message for a man, ordering some small article, and the merchant duly forwarded it by express. The party ordering in the meantime changed his *mind*, and would not take it (he was one of the kind you can draw through an inch and a quarter auger hole if you took his boots off), saying he was not legally responsible, "as he did not write or sign the message!" I had the package returned, and paid the expressage, and considered *that* experience cheaply bought.

Moral.—If you write a message for another party, make *him* (beg pardon, ladies, or *her*) sign it.

I must tell you here of a little laugh I had, "all alone to myself," the other day. A domestic Fenian lady came to my office, with a letter neatly wafered and stamped with a dirty thimble, requesting me to "Send this by tellygraft to Harrpur's Firry, sure." I took it, ran my finger through the seal, and having opened it, was going to read it, when the old lady, with a countenance expressing a struggle between righteous indignation and holy horror at my audacity, exclaimed: "And what furr are ye after raydin me lethter furr?" Having duly explained the matter to her, in a short discourse on the science (with a slight digression on static induction and Ohm's theory), she put out her hand for her "lethter," saying: "Faith, I'll jist send it by the post office." I gave her the letter and "let her went." G. S.

LA GRANGE, KY., March 13, 1868.

D. R. Downer, Secretary.

DEAR SIR—I am indeed happy to give you my name and aid in the noble cause you represent. Surely the "*Telegraphers' Mutual Life Association*" is a corporation much needed by operators, and is being needed more and more every day as our pleasant science advances.

How much easier an operator (who has some *one* or several depending upon him for food and raiment) can rest when he knows that should Providence at any day take him away, his mourners will be comforted by his prudence and forethought in preparing for the awful end.

I earnestly hope that every operator, who can be admitted, will see the importance of the association, and not hesitate to take advantage of its good membership. Although it is now a comparatively small institution it is the germ of a great one at some future day. Wishing you much success, I remain,

Yours truly,

C. G. FREEMAN.

SOME men are like cats. You may stroke the fur the right way for years, and hear nothing but purring. But accidentally tread on the tail, and all memory of former kindness is obliterated.

A Question for Mr. Varley.

To the Journal of the Telegraph:

When a world-renowned physicist undertakes to instruct us in Science, why does he not give us modern doctrines—especially if there are any improvement upon those taught many years ago?

In his letter of January 29th, Mr. Varley explains the chemistry of Daniels' battery on a hypotheses at least twenty years old, and which is now laid aside by the best chemists of his country. According to MILLER, HOFFMAN, ROSCOE, WILLIAMSON and others, neither hydrogen nor sulphuric acid play any part in the performances going on in this battery as now constructed. Sulphuric acid is not, as he says, SO^3 but H^2SS^4 —a compound of the former with the elements of water (H^2G). Nor is sulphate of copper a compound of sulphuric acid and the oxide of copper, but one in which an atom of copper is combined with the SO^4 in place of H^2 . So sulphate of zinc is zinc and SO^4 .

Let us now look at the resemblances which these several compounds have—

H^2SO^4 = Sulphate of Hydrogen (sulphuric acid).

Cu SO^4 = " Copper.

Zn SO^4 = " Zinc.

If we construct a battery of zinc, copper and sulphuric acid, on closing the circuit, H^2SO^4 is decomposed, H^2 appearing at the copper and SO^4 at the zinc, combining with it and forming sulphate of zinc (Zn SO^4).

If now we remove the copper plate, wipe off the hydrogen, and replace it inclosed in a porous bag or cup filled with a solution of sulphate of copper, the same action takes place throughout, except that in place of hydrogen, copper appears at the negative plate.

Allowing the circuit to remain closed after all the sulphate of copper is used up, action still goes on the same as before, but now comes a deposit of zinc, instead of either hydrogen or copper. Mr. Varley seems to dispute this, but I have seen it many times occur, under favorable circumstances. Zinc is deposited until the copper surface is coated over with zinc, then, zinc being opposed to zinc, action ceases.

Let us contrast the action as explained by the two theories.

Ancient Theory.

Modern Theory.

"On closing the circuit X X X X X, a change takes place in the solutions—the zinc, having more affinity for the oxygen than the copper, takes it from it leaving metallic copper, sulphuric acid and oxide of zinc, which two latter combine, forming sulphate of zinc."

MODERN CHEMISTRY.

CHICAGO, March, 1868.

Heat Generated by Electric Discharges.

A paper recently read at the Berlin Academy by Poggendorf, contains the following deductions from experiments made by the author:

1. The direct discharges of the machine are hotter at the positive than at the negative pole.

2. The temperature between the poles varies with the form of the electrodes. If the electrodes are spherical, the temperature is within certain limits—directly as the diameter of the sphere.

3. The elevation of the temperature between the electrodes depends on their nature. Under like conditions, the more volatile the metal forming the electrode, the higher is the temperature produced.

We have given a large portion of the present number to correspondents, to the exclusion of valuable matter. Some have still to wait.

Telegraphic.

We notice by the telegraph journals that the question of fast telegraphing is being revived and several tests of "receiving" and sending have been made over the Western Union Company's lines within the past three weeks, the most remarkable of which, perhaps, was that of Mr. N. Snyder, of Philadelphia, who received twenty-five hundred and twenty words of reporting in one hour, "without a break;" his copy, which was in manifold, being very legible. This certainly was a very creditable performance on the part of Mr. Snyder, and deserves special mention. In this connection we will mention an extraordinary feat in the way of receiving Press reports, which, we believe, has never before been made public, and is not therefore generally known. Mr. P. H. Burns, well known as the holder of the "Champion Key," while night operator in the Spring of 1865, made a wager with a brother operator that he could receive "Report" two weeks without being compelled to "break." Mr. Burns not only succeeded in receiving the report without a break, for the stipulated two weeks, but followed it up by receiving the regular night report for fourteen months without once being obliged to "break" or have New York "go back and repeat over," on account of being unable to read words while passing through.

This may seem impossible to many, but we have good authority as to the truth of the statement, and Mr. Burns' telegraph friends claim that if necessary it can be substantiated by the testimony of the operators in the New York office who worked the Eastern press wires during the time in question.—*Worcester Evening Gazette.*

WANTED—A SITUATION IN A TELEGRAPH OFFICE BY a first-class Paper Operator.

Address, Box 176, Warren, Pa.

To the Editor Journal of the Telegraph:

The following shows the necessity of a change in some of the letters of the Morse alphabet:

In the morning press report of the 13th instant was an item from Ottawa, Canada, dated 12th. In this item is a paragraph beginning "Reported that Licenses," &c. The operating receiving the same translated it "Reported that Lyons, &c." In telegraphic characters they stand exactly the same.

Lyons, &c.

Licenses.

In the modified alphabet of Europe this could not have occurred.

The operator acknowledges he could not see the sense of the paragraph, but as it came plain, he did not ask repetition.

To the Editor Journal of the Telegraph:

I have learned since my arrival here, of a very flattering compliment which was paid to the gentlemanly manager of the Western Union Telegraph Office in this city, Mr. Jas. Schell, Jr., by the citizens of Binghamton. A short time since a church fair and festival was held here, and one of the principal features was that of an election for a handsome clock, which was put up by the ladies to be balloted for, they selecting two young men, viz., Mr. Schell and Mr. Doyle, as candidates, the one receiving the highest number of votes to take the clock (each vote being ten cents). The balloting continued each night for one week, during which time there was cast 9050 votes, Mr. Schell receiving 4711, Dr. Doyle 4339, giving Mr. S. a majority of 372, and realizing for the church the extraordinary sum of nine hundred and five dollars. The original cost of the clock was about fifty dollars. Very respectfully,

BINGHAMTON, N. Y., March 25th, 1868.

Personals.

C. Clay Yeakle, operator Western Union Telegraph Office, Philadelphia, has resigned.

John E. Cardwell, formerly of W. U. Co.'s Wilmington, Delaware, office, has been transferred to Philadelphia to fill the vacancy occasioned by the resignation of Mr. Yeakes.

James Carley has been appointed receiving clerk. *vice* Carson, resigned.

William B. Gill has been appointed assistant receiving clerk, *vice* James Carley, promoted. Mr. Gill will continue to discharge the duties of the commercial news department.

Miss F. A. M. Eyster, formerly of the York, Penn., office, has been transferred to the Western Union Company's new office, Altoona, Penn.

M. J. McSorley, operator, died at his mother's residence, this city, yesterday (March 23). Mr. McSorley held the position of operator at the Philadelphia office of the American Company for several years, served some time at Port Hood, and latterly at Washington in the Franklin Company's office.

Abraham Scott, for so many years battery man for the "Magnetic," "American" and "Western Union" Companies, has been relieved, and Arthur Potter appointed in his place. "Abe" has been a general favorite with all of us, and on his retirement the operators and clerks of this (Philadelphia) office made up a purse of fifty (\$50) dollars, and presented it to him, much to the old man's surprise and gratification.

K. D. Walker took charge of the Fairmont, West Virginia, office (Western Union Line), on the 14th of March, *vice* W. W. Campbell.

Very Dutch.

Peru, Ill., sends the following very rich specimen, being a message actually left at that office for transmission:

To Mr. Ad—:

Val ju send mir no guts el veht form.

AARON —.

Which, being translated, means:

Why you send me no goods, I wait for them!

The combination of the last two words is especially happy and is a decidedly new style of "packing" messages, which we commend to the attention of our friend Stoker. We hope Aaron has received his "guts."

To Correspondents.

Our good friends who write us now and then, and whose articles appear in the JOURNAL, must pardon us if they occasionally find them abbreviated or changed. Sometimes we are compelled to omit half a dozen lines of good reading to squeeze the article into its proper place; sometimes an unintentionally harsh expression has to be softened; sometimes a good letter has been made too long and weakened by an unnecessary preface or appendix. We desire to have every communication look and read well, and as we are nurse, our friends must let us occasionally arrange the children's dresses. Don't get offended. No change will be made which will alter the sense, or give cause for offense.

GUTTA-PERCHA may be made capable of resisting a high temperature by dipping it for a moment in sulphuric acid at 60°, and then washing it in water. An immersion of a few seconds is sufficient for pure gutta-percha, but if it contains asphaltum or india-rubber the operation lasts longer, extending to even a few minutes.

HOW TO STOP THE FLOW OF BLOOD.—It is not generally known that the blood, even from severe cuts, may be staunched by binding on the wound the fine dust of tea. After the flow has been staunched, laudanum may be applied with advantage.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 5,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID,
145 Broadway, New York.

NEW YORK, APRIL 1, 1868.

Effect of Cold on Insulation.

It is well known that nowhere is it more difficult to secure proper insulation and freedom from contact with disturbing and obstructing causes than in large seaboard cities. The multiplicity of wires, the humid air, the wet contact, aided by innumerable strings and kite tails over which disconsolate gamins have wept and raged, the dirtying processes of salt and soot deposits on and in insulators of whatever form, all combine to make the insulation in large cities a difficult and perplexing problem, which we fear nothing but underground lines will perfectly solve.

We deem it necessary to say this much before introducing one of the tests made by Mr. Varley, showing the effect of cold in the reduction of resistance to the current as compared with the same wires during the prevalence of damp weather.

EXTRACT FROM MR. VARLEY'S REPORT.

"The following tests were made at Harlem, each side, to ascertain the improvement due to the frost." The wet test had already been taken, but is not necessary to state, the whole appearing in the result of the frost test.

"No. 8 wire, in England, gives 12½ ohms at 60° Fah. = 15.5° centigrade. Iron improves in conductivity by reduction of temperature—approximately 1 per cent. for, 50° Fah.

American No. 8 iron wire is rather lighter than the English wire of the same number (I am informed), and allowing 13½ ohms at 60° Fah., its resistance at 32° will be approximately 18 ohms; at 0, will be approximately 12.2 ohms.

TEST.

New York to Harlem—Distance 8¼ Miles.

No. of Line Wire.	Damp Test in Ohms.	Frost Test in Ohms.	Ratio of Improvement.
2	7,750	290,000	87 per cent.
5		650,000	
7	20,200	600,000	30 "
8		600,000	
10	55,000	1,000,000	18 "
18	34,750	640,000	18.4 "
27	20,000	340,000	17 "
28	24,500	300,000	33 "
3	6,800	323,000	51 "
9	49,700	613,000	12.3 "

NOTE BY ED.—The difference of relative improvement is explainable by the different conditions of the wires, their relative freedom from obstructions, and different insulation. To the merit of insulators we do not now propose to refer. The test embraces the most approved forms. Experienced men will also remember that wires which have been often broken, especially where, as in a city, rust is so apt to supervene between the layers of the joints, wet weather much improves their conductivity, and so far reduces the resistance as to materially aid the insulation by lessening the tendency to escape. The term ohm is the name of the British unit used in measuring the power of electric currents, an ohm being the minimum degree.

INSULATION IN CITIES.

Mr. Varley, in the recommendations with which he sums up his report, remarks as follows:

"The best and cheapest way of getting rid of your city troubles, is to lay down iron pipes from 145 Broadway to Fifteenth or Fifty-fifth Street, and carry all your wires underground to that point.

The insulating covering which answers best is "Hoopers" wire, which is a tremendously high insulator, and is not affected by dark temperature even up to 212° Fah.

"Next to this comes gutta-percha covered with tape and the tar mixture alluded to in the report (this we will give hereafter).

"The Electric and International Telegraph Co. has no overground wires in London, Liverpool, Manchester, Glasgow, Edinburgh, Newcastle, &c. We have overground wires in Dublin city, and find the cost of keeping them in any sort of order, greater than that of the underground wires, which give almost no trouble.

"The next best thing is to insulate your wires in the following manner, so that the rain itself shall keep them in order.

"Cover a piece of No. 8 wire, which has been galvanized and then tinned, with hard rubber, in the following form:

Insert one of these at each arm and solder the joints. The length of these should be seven feet, covered portion, five feet.

"The above insulator may be considered a double conductor, the electricity running over the surface from each end. The rain washes the insulator every time it falls, and improves it by washing, because the insulator is constructed to work while saturated with water.

"I have used these insulators since 1861 on the east coast of England, and north coast of Wales, where the wires are close to the sea, and the salt deposit defied all other forms of ordinary insulation, and found them to answer admirably. They insulate better than all other forms."

We must defer further quotations to another number, and also the remarks of Mr. Varley thereon, which aid the illustration of the subject on hand.

Telegraphic Profanity.

In the correspondence to which we have been introduced by our new duties, no portion of it is so pleasant to us as that which once more draws us into intercourse with the associates of our early telegraphic labors. Few now understand what were the toils, how many were the anxieties, how frequent the hardships connected with these early years. Yet these, in which we struggled together with heartiness and enthusiasm, had their compensations. Our salaries were small, but we were content. Our own first salary we took out in simple glory, and on this delightful remuneration labored 18 hours out of the 24, sometimes sleeping on the instrument table beside an ambitious editor who wanted the first sheets of the expected news. Often, in the midnight train, with lantern in hand, and all the paraphernalia of a repairer's kit slung across our shoulders, with Sam Zook, and Anson Stager, and James Lindsay as companions have we sallied out to mend a break so as to have the line all right by morning. The grassy bank on which we rested when our work was done was soft and grateful, and the loaf of bread and the bucket of milk on which we sometimes made our midday meal tasted sweeter to us than the most savory viands of the Fifth Avenue or St. Nicholas Hotels. These were days of joyous labor, although the superintendent's salary, when glory was changed to gold, was not as much as that now given to a lady

operator, and some of whose aids rejoiced in salaries of \$300 a year.

But we forget. Here is a letter before us from John Campbell one of those early companions, now settled quietly and happily with his wife and children in the old town of Carlisle, Pa. Like some others, he is glad to be in communication with his old superintendent again. He writes us of times' changes, many for the better, a few for the worse. To one of the last of these he briefly refers, and which we use as a text for a few editorial words. It is in reference to occasional profanity over the wires, a thing forbidden by rule, always deemed harmful to the business, and, between distant parties, specially offensive and irritating.

If ever a business deserved and demanded refined intercourse among its co-laborers, it is the Telegraph. We would be glad to be the means of increasing it. The use of oaths between parties hundreds of miles apart is particularly mean, offensive and cowardly. Personal presence often does much to soften even the essential barbarity of an oath. We can see the kindness of the eye and the burning enthusiasm of the man, whose lips are tempted to savage use by some unworthy indignity and forgive it. There are men with whom we sometimes converse, whose natural vigor and impatience in the accomplishment of their high duties, lead them to the use of oaths, which round themselves in such impetuous vernacular, that we almost forget their ruggedness in admiration of the strength and enthusiasm which they represent. And yet we have wished that these same men could be made aware how much these interjected and unneeded expletives rob argument of its force, and strength of its serenity. The great forces of the world are silent. Calmness gives dignity to power. Oaths indicate lack of personal control, are an offense to good taste, and, in themselves, are absurd and degrading.

We take advantage of our growing venerableness to write thus paternally. We would be glad if we could induce every operator to refrain from an offence which is particularly hurtful in a business where mutual dependence in the performance of its duties is necessarily so great. "Swear not at all" is no less a religious duty than, on these wondrous means of intercourse, a business necessity. The telegraphic service demands patience, good-fellowship, frankness, generosity. To our mind, it demands far more. An oath thrust into the face of a distant fellow operator, over wires on which each letter has to be manipulated with all the coolness of malice, and by an agency so ressemblant of the Divine omniscience, should be met with expulsion so prompt as to forever prevent its repetition.

THE attacks of the *New York Herald* upon the Western Union Telegraph Company, so fierce, persistent and invindictive as to neutralize their power, have at last been met by such a statement of facts by the *Times* and *World*, as must fully satisfy the public desire for knowledge of the merit and animus of the onslaught. This paper has been silent respecting these assaults, because reply was, from this source, repugnant and unnecessary. The falsehoods were too numerous, the malice too striking, the vindictiveness too apparent, to permit any response without degradation. Any word said by us would have been attributed to the Executive officers around us. They needed and asked no defence. Even the *Times* and *World* would have remained passive witnesses of these daily brawlings of their noisy neighbor had the *Herald* not touched upon matters in which the New York Press and the Telegraph Company had so acted, as to render defense of a necessarily silent partner a matter of personal and public duty. In their hands we leave the controversy.

It is a noticeable fact that, during the period of these daily anathemas, the stock of the company maintained its former market value, and has now advanced two per cent.

Official Statement—Western Union Telegraph Company.

FEBRUARY, 1868.

Gross Receipts,	\$600,183.32
Expenses,	345,855.52
Net Profit,	\$254,327.80

Notice.CHECK AND FREE MESSAGE DEPARTMENT,
Executive Office, March 27, 1868.

The resignation of Mr. George H. Smith, Superintendent of the Check and Free Message Department, having been accepted, that Department will on April 1st, proximo, be transferred to the control and supervision of the Auditor, Mr. W. H. Abel, whose instructions will be respected.

WM. ORTON, *President.***Superintendents Sweet and Wilson.**

In a biography of Judge John D. Caton recently published in the *Telegrapher*, the following appears, which we gladly transfer to our columns.

An illustration of the correctness of his judgment is shown in the cases of the two gentlemen employed by Judge Caton as Superintendents of the lines of the I. and M. Co.

Mr. E. D. L. Sweet first became connected with the I. and M. Co. in 1849, and has remained with it in all its changes until the lease of its lines to the Western Union Company, when he assumed the Superintendency of the consolidated lines at Chicago.

Mr. J. S. Wilson first became connected with the Company in 1847, and has remained faithful to its fortunes, and is retained as one of the Superintendents of the Consolidated lines.

Very much of Judge Caton's telegraphic success is due to the zeal and ability displayed by these gentlemen in seconding his plans, and carrying into effect the improvements which were originated and adopted to extricate the Company from the misfortunes which well nigh worked its destruction. Judge Caton always fully acknowledged his indebtedness to them, and has always manifested a sincere interest in their welfare and prosperity, which, on their part, is fully reciprocated.

A WEEK ago the *Telegrapher* exposed telegraph operators as an unintelligent fraternity. In the present number of our own paper, our Canton, Miss., correspondent alludes to a certain tendency to vice among operators, which he regards, however, as not necessarily an outgrowth of the system. To both of these we will hereafter refer, but cannot now. Evils and ignorance no doubt exist. We believe they are both on the wane. Taking this hive wherein 200 men daily work as an average of the standing of the craft elsewhere, we claim a growing intelligence and a higher *morale* than that of former years. Our work is to aid the increase of both.

Self-closing Key.

We have received from Mr. A. J. Gillespie, of Ashley, Illinois, a self-closing key of very decided merit and ingenuity. We would be glad to describe it fully, but in all such cases we desire the full permission of the inventor to do so. This device has a double finger plate, the upper one of which flies back the instant the finger of the operator is removed, and by doing so releases a stout spring which presses down the arm of the key and firmly closes it. A combination of this invention of Mr. Gillespie's with the excellent anti-trunnion key of Mr. Wm. A. Benton, of Macon, Ga., to which we referred in last number, would seem to supply all that is desirable in a key, and yet we have a plan of our own for closing keys which we in some respects prefer, because it does not interfere with the finger plate at all, but acts without interference, though it does not for a second or more close the circuit.

TARIFF BUREAU.**Semi-Monthly Circular.**WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
April 1, 1868.

TO ALL OFFICES ON W. U. LINES:

Please note the following changes in your Tariff Book, which have occurred since the 15th March, the date of the last Tariff Order:

The following rates will be charged hereafter on through business from Louisville, Ky., and Washington, D. C., to the places named below:

Americus, Miss., tariff from Louisville,	
Ky., 235: from Washington, D. C.,	260
Athens, Ga.,	300
Bainbridge, Ga.,	350
Batesville, Ark.,	275
Beasley's Station, Ala.,	250
Blakely, Ala.,	250
Blue Mountain, Ala.,	250
Brickley, Miss.,	225
Camak, Ga.,	300
Charlotte, N. C.,	300
Chester, S. C.,	300
Clarendon, Ark.,	250
Columbiana, Ala.,	250
Company's Shops, N. C.,	300
Concord, N. C.,	300
Columbus, Ga.,	275
Covington, Ga.,	250
Durham, N. C.,	300
Evergreen, Ala.,	250
Forestville, N. C.,	300
Fort Valley, Ga.,	275
Franklin, N. C.,	300
Greenville, Ala.,	250
Greensboro, Ga.,	275
Henderson, N. C.,	300
High Point, N. C.,	300
Hillsboro, N. C.,	300
Kittrells, N. C.,	300
Lexington, N. C.,	300
Littleton, N. C.,	300
Macon, Ga.,	275
Macon, N. C.,	300
Madison, Ga.,	275
Marion, Ala.,	250
Montgomery, Ala.,	250
Montevallo, Ala.,	250
Opelika, Ala.,	250
Pollard, Ala.,	250
Ridgeway, N. C.,	300
Rutledge, Ga.,	275
Salisbury, N. C.,	300
Selma, Ala.,	250
Talladega, Ala.,	250
Tensaw, Ala.,	250
Union Point, Ga.,	275
Warrenton, N. C.,	300
West Point, Ga.,	250
Winnboro, S. C.,	300
Wolf River, Miss.,	225

OFFICES OPENED.

Bradford Junction, O., tariff same as Piqua, O.
Little Piney, Mo., same as Rolla, Mo.
Milan, Ind., same as Moore's Hill, Ind.
St. Charles, Mich., same as Saginaw, Mich.
Xenia, Ind., same as Kokomo, Ind.
Scrub Grass, Pa., same as Brady's Bend, Pa.
Shamburgh, Pa., same as Pitt Hole, Pa.

OFFICES CLOSED.

Monrovia, Md., Williamsburg, Va., Doe Gully Tunnel, West Va., Brady's Mills, Md., and Weaveron, Md.

OFFICES OPENED ON OTHER LINES.

Logan, Iowa, tariff from Chicago, 135 and 7.
" St. Louis, 115 and 6.
" Council Bluffs, Io. 35 and 2.
Little Sioux City, Io., " Chicago, 165 and 10.

GENERAL INFORMATION.

Messages addressed to *officers* of the Baltimore & Ohio R. R., at Baltimore, Md., will be sent to, and checked against Camden Station, Md.

In the last circular dated March 15, the remark under Altoona, Pa., should read: All offices beyond Pittsburg and Harrisburg to add 30 and 3, &c., instead of "all offices beyond Pittsburg to add 30 and 3, &c." Onawa, Iowa, 230 and 17 from Chicago, should read 175 and 11; Sloan, Iowa, 245 and 19, should read 185 and 13; Sioux City, Iowa, 270 and 22, should read 195 and 14.

Check direct with the following offices on the Delaware, Lackawanna and Western R. R. tariff same as present rates for "this" and "other lines" added together.

Abington, Pa.,
Bridgeville, N. J.,
Clark's Summit, Pa.,
Delaware, N. J.,
Dunning's, Pa.,
Factoryville, Pa.,
Forks, Pa.,
Hop-bottom, Pa.,
Henryville, Pa.,
Lehigh, Pa.,
Moscow, Pa.,
Montrose Village, Pa., 20 and 2 from Montrose Station, Pa.,
Mt. Bethel, Pa.,
Montrose Station, Pa.,
New Milford, Pa.,
Nicholson, Pa.,
Oakland, Pa.,
Oxford, N. J.,
Stroudsburg, Pa.,
Spragueville, Pa.,
Tobyhanna, Pa.,
Water Gap, Pa.,
Washington, N. J.,
check Montrose Station.
All offices having sheet "A," "Special Rates," will add to such list of offices the following:
Fair Haven, Conn., tariff 30 and 3 more than to New Haven, Conn.

Lyons, N. Y., tariff same as Clyde, N. Y.
Illion, N. Y., tariff same as Utica, N. Y.
Alleghany City, Pa., tariff same as Pittsburg, Pa.

WILLIAM ORTON,
*President.***Errata in Monthly Circular—Journal No. 6.**

For offices closed on "other lines," Eastern Division, read *offices opened*.

Simeon E. Mayo.

Among recent changes, we notice the resignation of Mr. Mayo, circuit manager of the Western Union Telegraph Company at Albany, to accept the management of the telegraph line of the Susquehanna Railroad company, in connection with other railroad duties of a responsible character. For the past sixteen or twenty years, Mr. Mayo has been known as one of the most expert and useful men connected with our State lines, and, first as messenger, then as operator, and finally and for many years as manager, has always been trusted and honored. It is a good deal to be able to say, as Mr. Mayo truly says in a letter now before us, "I have worked sixteen years, have received and sent thousands of messages, and never made a mistake that cost the company one cent. Our own acquaintance with Mr. M. has been long and intimate. We have valued him highly and trusted him implicitly. His home will still be in Albany, and we wish him all the happiness he can bear, and entire success in his new duties.

Singular Effects of Lightning.

Sir David Brewster published an account of the effects of lightning in Forfarshire which is of much interest. In the summer of 1827, a haystack was struck by lightning. The stack was on fire, but before much of the hay was consumed the fire was extinguished by the farm servants. Upon examining the haystack, a circular passage was observed in the middle of it, as if it had been cut out with a sharp instrument. This circular passage extended to the bottom of the stack, and terminated in a hole in the ground. Captain Thomson, of Montrose, who had a farm in the neighborhood, examined the stack, and found in the hole a substance which he described as resembling lava. A portion of this substance was sent by Capt. Thomson to Sir David's brother, Dr. Brewster, of Craig, who forwarded it to Sir David, with the preceding statement. The substance found in the hole was a mass of silex obviously formed by the fusion of the silex in the hay. *Electric.*

TO U. S. TELEGRAPH CO. STOCKHOLDERS.—The undersigned will attend to the sale or exchange of United States Telegraph Co. Stock for actual shareholders, without commission. U. S. stock can be exchanged for stock of the Western Union Telegraph Co., three shares of the former for two of the latter, as per contract. Odd shares will be bought at market rates, i. e., two-thirds of the market price of stock of the Western Union Telegraph Company.

J. D. REID,
Rm. Rooms W. U. Tel. Co.,
145 Broadway, N. Y.**MARRIED.**

At Barton, Orleans County, Vt., March 23, 1868, by Rev. Church Tabor, George W. Howe of Western Union Telegraph Company, Stevenson, Ala., to Miss Dora E. Billings, of Barton, Vt.

SPACE AND MATTER.

By one of the Telegraph Boys.

The infinity of space presents itself to the mind as a self-evident fact. Let any one imagine himself capable of leaving the earth in any direction and in a straight line with the velocity of a thousand miles per second, would there be an end or stopping place for want of further extension of space? No; he might travel at that speed for millions of ages and be no nearer his journey's end than at the start; in fact would not have made a point in infinite space. The above I think is self-evident.

Taking it for granted that space extends to infinity in every direction, the next point to entertain is, whether this infinite space is wholly or in part occupied by matter, and whether we shall grant the same infinity to matter, that we have to space. That proposition is not so readily answered, for one of our most acute perceptions of matter is the comparative limit of its extent as presented to our senses. Logically it may be demonstrated that all space is occupied, and that matter is as infinite as space; for empty space is a nonentity, ideas are based upon matter, and to remove matter is to remove the "basis of an idea," which at once prevents us from such an admission.

Let us regard the universe as it presents itself to our senses, or that part of it which the range of our vision, assisted by the most powerful instruments (which of course largely extend our acquaintance), we are made aware of the existence of those blazing orbs by the light which they radiate to us, and which of course must pass through the intervening space or matter. That positive science, mathematics, gives us some idea of their immense distance, and of the planets an accurate knowledge; had we instruments of proper delicacy, and perceptions sufficiently acute, we might make some positive statements as to the distance of the fixed stars, if in the case of one of them (61 Cygni), a parallax of $\frac{1}{4}$ of a second has really been obtained as is stated, then it must be at least 20,000,000,000,000 miles distant, a distance so great that sound travelling at the rate of eleven hundred feet in a second would require more than seventeen millions of years to reach it and Arcturus, a burning sun, in bulk thirteen million times greater than our world.

To comment upon the distant Astral systems which the telescope allows us to contemplate in the immensity of space, would be too much of a digression from my subject. But the new science Spectrum Analysis informs us that these distant apparitions are material, and contain elements of matter identical with those composing our earth. With the Spectroscope the chemist and astronomer now wander hand in hand through the universe analyzing the chemical and physical condition and nature of these distant worlds, many of which are found to be in a state of intense ignition.

If light is matter, then all interplanetary and stellar space is occupied; if it is not a substance but simply a force, vibration, or undulation, still is space occupied for it must include matter to transmit this force or undulation, for these vibrations of the physical forces, Light, Heat, Electricity and Chemical action, as well as attraction, if not material must be merely qualities of matter, in other words, a mechanical oscillation or vibration of the atom. The latter theory I believe is recognized by nearly all eminent Physicists of the present day. We must then conclude that matter is infinite, and that all space is occupied. As well as light we may mention other forces which pervade the universe, as heat and the force of universal attraction so admirably demonstrated by Newton, that force which determines the position of all the heavenly bodies. How can we conceive of one body taking cognizance of another with empty space intervening? As a friend sug-

gestively remarked, "it is difficult to conceive of pulling without a string to pull by." The great strides which are being made in Scientific discovery and knowledge forcibly presents to us the progressive tendency of the human mind. This human progression may be as infinite and unlimited as the matter and force which develops it. H. L. B.

POUILLET has made observations with a pyrhe-liometer from which he estimates that the amount of heat annually received by the earth from the sun would melt a crust of ice surrounding the earth 101 feet thick.

A Story from Paris.

A Paris letter tells the following story of a Twelfth Night *fete* in that city: A wealthy family in the aristocratic boulevard Malesherbes were amusing themselves in seeking the King's portion, or the ring in the festival cake, when a lady of the company says to the hostess:

"I wish my portion to be given to the poorest little boy we can find in the street."

The servant was dispatched on this freezing night, and not far from the house he found a ragged urchin, trembling with cold and hunger. He brought him up, was ordered into the saloon, where a thousand lights glittered, and a sparkling fire gladdened and surprised him. He drew his portion which the benevolent lady had promised, and as luck would have it, the little fellow found the "ring" (beans they use in Paris instead), and, of course, he was "King." They all shouted out that, being a King he must choose a Queen. He was asked so to do, and, looking round the company, he chose the very lady who had proposed to cede her portion of cake. He was asked why he chose her. He said:

"I don't know! she looks the most like mother!"

"Mother! whose mother?"

"My mother! I never knew her, but was stolen away from her, and here is her portrait!"

With this he drew from out his ragged coat a likeness, which proved to be that of the very lady herself, who, in Italy, had her child stolen from her, and now he turns up a poor little ragged Savoyard, dragging along a miserable existence in Paris, while his mother, by an intuition, perhaps, felt that in the air near to where she was one so dear to her.

Glycerin and Yolk of Eggs.

Four parts by weight, of yolk of egg rubbed in a mortar with five parts of glycerin, according to the Philadelphia *Journal of Pharmacy*, gives a preparation of great value as an unguent for application to broken surfaces of the skin of all kinds. The compound has a horny-like consistency, in unctuous fatty substances, but over which it has the advantage of being quickly removed by water. It is unalterable, a specimen having laid exposed to the air for three years unchanged. Applied to the skin it forms a varnish which effectually excludes the air, and prevents its irritating effects. These properties render it serviceable for erysipelas and cutaneous affections, of which it allays the action.

ABERNETHY once said to a rich but dirty patient, who consulted him about an eruption: "Let your servant bring to you three or four pails of water and put it into a wash tub: take off your clothes, get into it and rub yourself well with soap and a rough towel, and you'll recover." This advice seems very much like telling me to wash myself," said the patient. "Well, said Abernethy, "it may be open to to that objection."

To Preserve Fresh Flowers.

Put a pinch of nitrate of soda into the water every day when you change it. This will preserve flowers for a fortnight. Nitrate of potash in powder has nearly the same effect.

Western Union Telegraph Company.

BOARD OF DIRECTORS.

Moses Taylor, New York.	O. H. Palmer, New York.
E. D. Morgan, New York.	Hiram Sibley, Rochester, N. Y.
W. E. Dodge, New York.	D. A. Watson, Rochester, N. Y.
Francis Morris, New York.	Isaac Butts, Rochester, N. Y.
C. Livingston, New York.	B. R. McAlpine, Rochester, N. Y.
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W. Orton, New York.	E. Cornell, Ithaca, N. Y.
N. Green, Louisville.	J. H. Wade, Cleveland, O.
D. N. Barney, New York.	G. Walker, Springfield, Mass.
W. G. Hunt, New York.	R. S. Burrows, Albion, N. Y.
Geo. Jones, New York.	Alfred Galtner, Cincinnati, O.
John J. Cisco, New York.	John Butterfield, Utica, N. Y.

Le Grand Lockwood, New York.

OFFICERS.

William Orton, *President*.

Hiram Sibley,

N. Green,

B. R. McAlpine,

Vice-Presidents.

O. H. Palmer, *Secretary and Treasurer*.W. H. Abel, *Auditor*.R. H. Rochester, *Assistant Treasurer*.Marshall Lefferts, *Engineer*.

SUPPLY DEPARTMENT.

William Hunter, *Superintendent of Supplies and General Purchasing Agent, New York*.A. H. Watson, *Storekeeper, New York*.H. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.*

CENTRAL DIVISION.

Anson Stager, *General Superintendent*.

Residence, Cleveland, Ohio.

ASSISTANTS.

Superintendents of Districts.

District	Superintendent	Residence
District 5—	E. P. Wright,	Cleveland, O.
" 6—	T. B. A. David,	Pittsburg, Pa.
" 7—	George T. Williams,	Cincinnati, O.
" 8—	John F. Wallick,	Indianapolis, Ind.
" 9—	R. C. Clowry,	St. Louis, Mo.
" 11—	W. B. Hibbard,	Omaha, Neb.
" 12—	J. J. Wilson,	Quincy, Ill.
" 13—	E. D. L. Sweet,	Chicago, Ill.

EASTERN DIVISION.

Thos. T. Eckert, *General Superintendent*.

Residence, New York City.

ASSISTANTS.

District Superintendents.

District	Superintendent	Residence
District 1—	Jesse Hoyt,	New Glasgow, N. S.
" 2—	Robert T. Clinch,	St. John, N. B.
" 3—	James S. Bedlow,	Portland, Me.
" 4—	George W. Gates,	White River Junction, Vt.
" 5—	Charles F. Wood,	Boston, Mass.
" 6—	George B. Prescott,	Albany, N. Y.
" 7—	S. B. Gifford,	Syracuse, N. Y.
" 8—	D. H. Bates,	Philadelphia, Penn.
Metropolitan District—	J. C. Hinchman,	New York City.
B. & O. Railway District—	A. G. Davis,	Baltimore Md.
Erle Railway District—	W. J. Holmes,	New York.

SOUTHERN DIVISION.

John Van Horne, *General Superintendent*.

Residence, Memphis, Tenn.

ASSISTANTS.

Superintendents of Districts.

District	Superintendent	Residence
District 1—	J. R. Dowell,	Richmond, Va.
" 2—	J. W. Kates,	Lynchburg, Va.
" 3—	J. A. Brenner,	Augusta, Ga.
" 4—	C. G. Merriweather,	Mobile, Ala.
" 5—	James Compton,	Jackson, Miss.
" 6—	James Coleman,	Memphis, Tenn.
" 7—	Thomas Johnston,	Corinth, Miss.
" 8—	Geo. W. Trabue,	Nashville, Tenn.
" 9—	L. C. Baker,	Little Rock, Ark.
" 10—	G. M. Baker,	Shreveport, La.
" 11—	D. P. Shepard,	Houston, Texas.
" 12—	D. Flanery,	New Orleans, La.

MACHINE SHOPS.

George M. Phelps, *Superintendent, Williamsburg, N. Y.*George W. Shawk, *Superintendent, Cleveland, O.*Robert Henning, *Superintendent, Ottawa, Ill.*W. H. Johnson, *Superintendent, Louisville, Ky.*

Love and Lightning.

A lady once whose love was sold,
 Asked if a reason could be told
 Why wedding rings were made of gold.
 I ventured thus to instruct her:

Love and lightning are the same—
 On earth they glance, from Heaven they came:
 Love is the soul's electric flame,
 And gold its best conductor.

Necessary Rules of Sleep.

Dr. Winslow wisely says there is no fact more clearly established in the physiology of man than this, that the brain expends its energies and itself during the hours of wakefulness, and that these are recuperated during sleep. If the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that, in early English history, persons who were condemned to death by being prevented from sleeping, always died raving maniacs; thus it is also that those who are starved to death become insane—the brain is not nourished, and they cannot sleep. The practical inferences are three: 1st, Those who think most, who do most brain work, require most sleep. 2d, That time "saved" from necessary sleep is infallibly destructive to mind, body, and estate. Give yourself, your children, your servants—give all that are under you, the fullest amount of sleep they will take, by compelling them to go to bed at some regular hour, and to rise in the morning the moment they awake; and within a fortnight, Nature, with almost the regularity of the rising sun, will unloose the bonds of sleep the moment enough repose has been secured for the wants of the system. This is the only safe and sufficient rule; and as to the question how much sleep any one requires, each must be a rule for himself—great Nature will never fail to write it out to the observer under the regulations just given.

An Eloquent Passage.

"It can not be that earth is man's only abiding-place. It can not be that our life is a bubble cast up by the ocean of eternity to float a moment upon its waves, and sink into nothingness. Else, why these high and glorious aspirations which leap like angels from the temple of our hearts, forever wandering unsatisfied? Why is it that the rainbow and cloud come over us with a beauty that is not of earth, and then pass off to leave us to muse on their loveliness? Why is it that the stars which hold their festival around the midnight throne, are set above the grasp of our limited faculties, forever mocking us with their unapproachable glory? And finally, why is it that the bright forms of human beauty are presented to our view and taken from us, leaving the thousand streams of our affections to flow back in Alpine torrents upon our hearts? We were born for a higher destiny than earth. There is a realm where the rainbow never fades, where stars will be spread out before us like the islands that slumber on the ocean, and where the beautiful beings that pass before us like shadows, will stay forever in our presence."—*G. W. Prentice.*

A DISPATCH to a gentleman in this city, says that the Cable Banquet in London was a gratifying success. The replies from America and Cuba to telegrams sent from the dinner table, were received in an average of about one hour from the time of sending the message, or thirty minutes each way. Those from the President and Secretary of State, the Governor-General of Cuba, and Vice-President Nenninger of the International Ocean Telegraph Company, Messrs. Cooper, Orton, Smith, and Sanford, were read and received with enthusiasm.

In 1867, nearly 5,000,000 telegrams passed through the various telegraph stations in Great Britain.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL.

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-300th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

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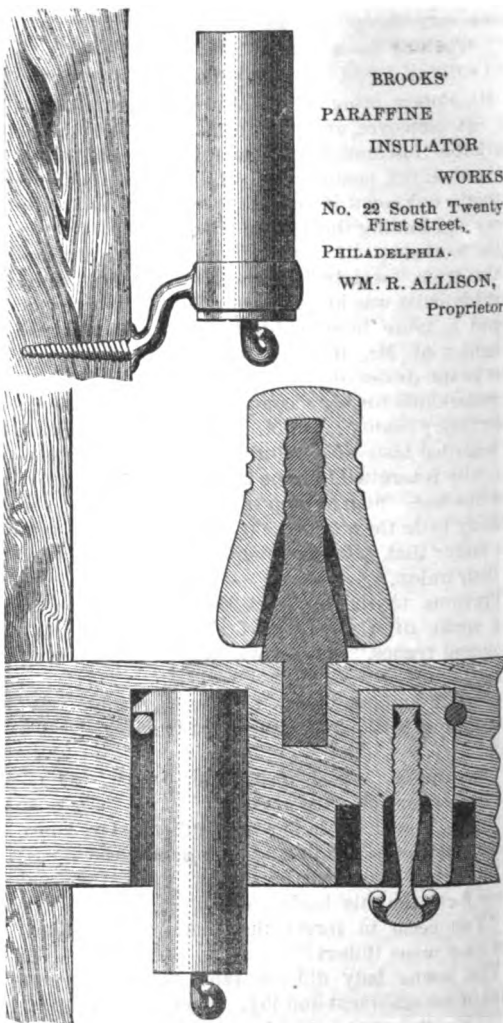
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JOURNAL OF THE TELEGRAPH.

NO. 10.

NEW YORK, APRIL 15, 1868.

VOL. I.

INDUCTION RELAY.

Patented by Elisha Gray, Cleveland, Ohio.

A novel and effectual mode of operating a relay has just been patented by Elisha Gray, of Cleveland, O., which embodies a principle that necessarily renders it non-adjusting.

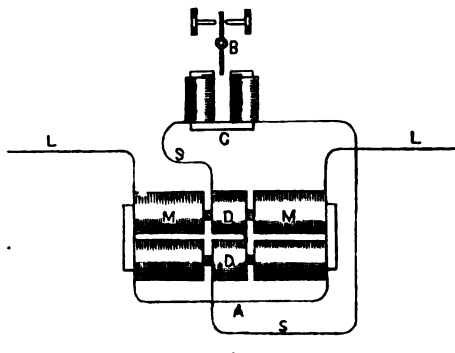
The accompanying diagram will assist the reader in getting a clear understanding of its *modus operandi*:

M and M' are two small relay magnets, made in the ordinary way, and connected with the main line by the wires L, L and to each other by the wire A in such a manner that their polarity will be opposite when facing each other. Between and in contact with the poles of the magnets M, M' are placed two straight electro-magnets, or electro-magnetic armatures D, D. These are wound with insulated coarse wires which are connected together by their inner ends, while their outer connect with the small electro-magnet C by the wires S, S, forming a closed local circuit, entirely independent of, and insulated from the main line. B is a straight steel armature, pivoted in the middle and permanently magnetized, one end of which vibrates between the poles of the electro-magnet C, the other between screw points which prevent it from striking the poles of the electro-magnet, and also regulate the length of the stroke. This armature has no spring and will not rest on either screw point when placed there, so long as the electro magnet is neutral, which is always the case except at the moment of opening, and again at the closing of the key in the main circuit.

Having described the different parts with their connections, it only remains to illustrate the principle involved and make a practical application. The instrument is connected with the main circuit as described by wires L, L, and is operated with the ordinary key. It will be observed that the line current does not pass through the electro-magnet C, which controls the armature, but only through the magnets M M. Now suppose the line to be closed, the cores of the magnets M, M are rendered magnetic by the power of the current, and the cores of the straight magnets D, D by induction. The armature B is resting on the forward point, whither it was thrown by a momentary wave of induced electricity. This wave has passed through the magnet C, giving it temporary polarity, one pole of which has attracted the magnetized armature, while the other has repelled it, and thus all the powers, both of the electro and permanent magnets have conspired to move the armature in the same direction. Now if any operator on the line should open his key and break the current or any portion of it, there would be a sudden reduction of magnetism in M. M & D, D which will produce a momentary wave in the opposite direction from that produced at the closing of the key; this of course will produce an opposite polarity in the magnet C, and a reverse stroke of the armature. And thus it will be seen that as often as the line current is closed an induced current will flow in one direction, and as often as it is opened it will flow in the opposite direction.

Now if the armature is adjusted so as to respond to feeble currents, such as would be produced by

the working of the most distant key over heavy escapes, it is plain that it will work for any other key on the line on the same adjustment, because the initial and terminal wave of the induced electricity in the coils D D are practically equal. If one is suddenly increased the other is proportionately increased, and vice versa, in other words the flow and return are equal. The results obtained by this instrument do not depend upon any delicacy or arrangement of movable mechanism or complicated machinery, but utilizes an unfailing law of nature, and applies it by means of the simplest machinery.



Improvements in Automatic Telegraphy.

Since the 11th September, 1867, the directors of the telegraph lines have made use, in the service between Paris and Lyons, of a new system of rapid transmission invented by MM. Chaudassaignes and Lambrigot, telegraph clerks. This telegraph acts automatically, transmitting the despatches between the two towns at the rate of 120 or 180 despatches per hour by a single conducting wire, a velocity three times as great as that obtained by other systems, and capable of being augmented proportionately to the diameter of the wire. The transmissions are made by a band of metallic paper on which the signals composing the despatch are traced in insulating ink. The reproduction is obtained on a band of unsized paper, the centre portion of which is impregnated with a chemical liquor necessary for the formation of the characters existing on the metallic band. In order to obtain regularity of execution in the different operations, such as the composition, transmission, and reception, they pass through several hands according to the requirements.

One instrument in communication with the line is composed of—1. A clock-work movement. 2. A double roller which sets at work either the metallic or the chemically prepared paper. 3. A ringing apparatus for calling the attention of the correspondent. 4. A "Morse" manipulator of ordinary construction for the exchange of the conventional signs necessary for setting in movement or stopping the rollers. The clock-work movement is set at work by a weight easily wound up by means of a pedal; it serves to maintain the rollers in movement. Near the roller round which the metallic band passes, is a point which represents the extremity of a conducting wire. The roller communicates with the electric pile. When the band is drawn into movement by the rotation of the roller, the point is placed sometimes on

one of the metallic parts of the band, and sometimes on the written parts of the despatch where the isolating ink is, so that the conducting wire marks the message by the alternate passage, and breaking of the current. Near the roller, on which is coiled the unsized paper, is placed a cup filled with a solution of nitrate of ammonia and ferrocyanide of potassium. In the middle of this cup is a small roller which dips into the liquid in its lower portion, and the upper portion of which rises a little higher than the level of the basin and supports the band of unsized paper which, drawn by the rotation of the two rollers, turns the small dipping roller and becomes impregnated with the solution.

A point of iron representing, like that of the metallic band, the extremity of the conducting wire, leans, slightly inclined, resting by its own weight upon the damp paper which is in communication with the earth. The voltaic current decomposes the wet portion, and leaves a coloured deposit which represents the signals of the despatch. The working of this apparatus is entirely mechanical. The transmission and the reception of the despatches take place automatically; one clerk superintends the machine. In order to compose the despatches into conventional signals on the metallic band, another instrument, called the compositor is employed, similar to that of Morse, the signals of which are employed. The band of metallic paper unrolling itself is raised by a lever so as to touch a thick roller covered with a resinous preparation in fusion, which cools suddenly as soon as it is applied to the metallic band. One clerk can prepare alone 35 to 40 despatches per hour; the telegraphic staff acquainted with the Morse apparatus can, without any study, compose despatches. For the service between Paris and Lyons three compositors suffice completely for the transmissions. The despatches reproduced on a band of chemically prepared paper are handed over to other clerks, who translate them for the printed despatches distributed to the public.

The result is that two composing clerks, two translating clerks, and a superintendent of the machines of reception and transmission, do as much work by aid of a single conducting wire as six clerks with three wires by the ordinary telegraphic system. A composing apparatus furnished with electro-magnets has been established on a line from London to Paris. When the employe in London wishes to transmit a telegram to Paris for the Lyons line, the only line in which this rapid service is installed, he manipulates as for the ordinary transmissions of the Morse apparatus; the letters or conventional signs are printed on a metallic band, and a few seconds afterwards are transmitted to the chemically prepared paper. Thus we have before us a great improvement in modern telegraphy. Up to the 11th September last the service of the Lyons line was carried on by aid of two or three Hughes' apparatus; each apparatus occupies two clerks and three batteries. By the new system five clerks do all the service with one line only. The new system works admirably and without a single hitch, and we can affirm that the invention of MM. Chaudassaignes and Lambrigot is destined to render great service to the telegraphic service. The economy of installation, and the saving effected in the number of clerks, the maintenance, wear and tear, etc., are marvellous.—*Chemical News*.

when the negative plate is "fully covered" with it, it is simply *insulated* from the water and the current necessarily ceases.

The sixth paragraph is correct; but it does not compare favorably with the ninth, nor with his answer to my question, "Is there not an affinity between hydrogen and sulphate of copper?"

The first part of the seventh paragraph requires our attention. Neither the rule nor example can apply to the Daniel's battery: admitting for the sake of brevity that those metals, when placed in *water* do produce results as he states; can we expect the same results under different circumstances, the one in water, the other in a solution of sulphate of copper? the last named compound is already saturated with copper and has no disposition to acquire more: it is passive to the copper plate, and it makes no difference (as I shall hereafter show), what affinity the negative plate may have for oxygen, so long as that affinity is not exerted. Mr. V. supports this statement when he says, in answer to my question, "If the platinum plate be immersed in sulphate of copper no increase of power will result."

The copper plate in the Daniel's battery is absolutely negative, and according to Mr. Varley's example, would stand—Zinc, Copper battery, 6—0=6.

The few next paragraphs are ably answered by TELEGRAPH OPERATOR, we will pass on to the fifteenth and sixteenth.

"Professor Daniel rested content with his great discovery," as well he might: he like Grove had "propounded the question to Nature" and like Grove, he had received a satisfactory reply; each had "put a material around the negative plate which had a great affinity for hydrogen," and each (if we accept Mr. Varley's theory) had succeeded in getting the sum, instead of the difference between the forces. I regret to find the eighteenth paragraph over Mr. Varley's signature, because much is due to Daniel and Grove, shall we rob Bunson? Is it not possible for "other nations" to make a discovery? Must "other nations" surrender the results of all research because Daniel and Grove have made brilliant discoveries? Though Mr. Bunson's name does not shine like theirs he has added much to scientific truth; he demonstrated the fact that *coke*, a material which has a strong affinity for oxygen, may under favorable circumstances serve as well for a negative plate, as the metals which have the least affinity for oxygen, and he should have the credit of it.

In the twenty-second paragraph we are told, "in the nitric acid form of Grove's battery, (nitric acid is always used in *Grove's* battery)," on passing the current through a small external resistance, the power after the lapse of a minute or more actually increases considerably in volume."

The above is correct; now let us compare it with the seventh verse in his letter on page 2, of No. 8. "On closing the circuit, hydrogen is observed on the surface of the platinum, which, combining with the oxygen of the nitric acid, produces a film of water partially separating the platinum from the nitric acid, and therefore a somewhat similar result is obtained to that of using dilute nitric acid. The amount of water produced (he should have added, *in a given time*) varies with the amount of work the battery is performing."

If we except both of these statements, we must believe the current will increase in volume as the nitric acid becomes diluted. Now if the current is passed "through a small external resistance," in other words through what we used to call a "*short surkit*," the battery performs more work and water is produced more rapidly. Upon this theory, we might reasonably expect the current would go on increasing in volume indefinitely.

The latter statement contains an error: on closing

the circuit, hydrogen is evolved by the decomposition of water, but it unites with the oxygen of the nitric acid immediately upon coming in contact with it and produces a film of water on the inside surface of the porous cup and *not* on the platinum: had he said, the film of water was produced on the surface of the negative plate, I think he would have been correct, for I believe he will yet be convinced that when the Grove battery is newly filled, *the surface of the nitric acid acts as the negative plate* and the platinum only as a conductor, and continues so until at least one equivalent of the oxygen in the acid is exhausted.

There are several errors in the balance of his letter, but to answer them in detail would occupy too much space in your valuable little Journal; I will make them the subject of a future communication.

I now propose to refer briefly to the substance of the questions asked in my former letter, and to assert them as facts, together with the answers I have received to "questions propounded to nature," and, confidently believing they can be sustained, I invite debate to prove them false.

There is, in all Voltaic arrangements, a reverse law analogous to the laws of Electro-Magnetism and Magneto-Electricity! That law is, as a current of electricity will decompose compounds, so will the decomposition of compounds (if conductors are properly arranged) produce a current of electricity.

The production of electricity in all known forms of Voltaic batteries is the immediate result of decomposition.

The *intensity* is always in proportion to the affinity which either element of the compound decomposed, may have for the material which excites decomposition, minus the affinity between the elements which form the compound, and the *quantity* is in proportion to the amount of that compound decomposed.

To illustrate—the intensity of the Smee's battery is in proportion to the affinity of oxygen for zinc, minus the affinity of oxygen for hydrogen, and the quantity is in proportion to the amount of water decomposed.

In the Daniel's battery the intensity is in proportion to the affinity of oxygen for zinc, minus the affinity of oxygen for copper, and the quantity is in proportion to the amount of oxide of copper decomposed.

In the Grove battery the intensity is in proportion to the affinity of oxygen for zinc, minus the affinity of oxygen for nitrogen, and the quantity is in proportion to the amount of nitric acid decomposed: in all the above named batteries, zinc only acts as a material to excite decomposition and as a conductor.

If greater intensity is wanted in either of these batteries it can be obtained by replacing the zinc with any conductor of electricity which has (under the same circumstances) a greater affinity for oxygen. Take for example, Sodium: the intensity will be found in proportion to the affinity of oxygen for sodium minus the affinity of oxygen for hydrogen, copper or nitrogen, and the quantity will be as before, in proportion to the amount of water, oxide of copper, or nitric acid decomposed.

Basing experiments (questions to nature) upon this theory, I have received a reply which establishes its correctness beyond question: *I have obtained a current of electricity by the decomposition of a carbonated alkali without the acid of any metal or material which has an affinity for oxygen.*

Accepting Mr. Varley's rebuke in relation to anonymous correspondence, I now give him my real name.

Yours, &c., D. H. FITCH,

alias INVENTUS.

FORT KEARNEY, Neb., April 9, 1868.

To the Editor Journal of the Telegraph:

DEAR SIR—In the JOURNAL OF THE TELEGRAPH of January 15, and also in the *Tribune* and other

papers, I see that efforts are being made to place the telegraph under the control of the Government. Mr. Washburn, of Illinois, is the main mover, and is urging the adoption of a bill in Congress with the above-named object in view.

This is a question of great importance to every employee of the telegraph companies in the United States, superintendents, agents, operators, all are interested, and all, I think, are opposed to any such movement. One of the main arguments in support of the bill is, that tariffs would be reduced, on that account the telegraph would be used more than ever, and it would be placed within the reach of every one, become, in fact, so common that the laboring man and capitalist would alike use it for a common carrier instead of the mail. They complain now that it is a monopoly. Perhaps the tariffs would be reduced, and I presume our Senators and Congressmen would reduce them so as to frank all *their* messages, and use the telegraph as they now use the mail, and make the unfortunate wires a carrier of more nonsense than ever passed over them before, of no use to any one, and of no earthly consequence whatever. I presume these same Senators and Congressmen so anxious to control our telegraph lines, would give passes to their political friends, and allow them, also, to send their messages free. One thing is certain, it would immediately be turned into a great political power, precisely the same as our mail system now is. The superintendents, the managers of the larger offices, the most important positions would not be filled by the most competent persons, by those that had labored long and faithfully for the companies, by practical operators—but by political favorites, men who, perhaps, know nothing about the business, and would probably be found anywhere but in their offices after their appointment at big salaries. It is very plain to see how our postmasters are appointed, and why. Just the same way would be the working of the telegraph if under Government control—the ability and suitability of the appointments would be secondary considerations. Again, once in two or four or six or eight years, every time a great political change would be made, then a great change would be made among telegraph officers, and telegraphers and postmasters would be running around minus their political heads, and a most sorrowful-looking set they would be, too. Another very interesting item to operators: two or three times a year a tax would be levied on all employees by the dominant party—a certain per centage on their salaries; perhaps the tax would amount to \$25 or \$50 a year. Everybody in the employ of the company, from superintendent down, same as it now is in our post-offices from postmaster down, all would be included—and woe to the poor unfortunate who does not "shell out" at these times.

The art we now take so much pride in would be debased by "the party in power," to assist them, and instead of returning a handsome premium on the capital invested, as it now does, it would pay but very little, perhaps nothing, and might even *cost* the Government something to run it, as our mail now does in certain portions of the United States.

Mr. Washburn speaks of the Western Union Company as a monopoly. As well might it be claimed that our principal railroads are monopolies, and should be under the control of Government. The Union Pacific Railroad, the Atlantic and Great Western, the Illinois Central, the Camden and Amboy that *does* control New Jersey, or those roads Vanderbilt carries in his pocket—why are not the Hon. members exercised about these monopolies? Or our principal lines of steamers, our express companies, the American, Merchants' Union, United States, Adams, Wells, Fargo & Co.—these, mayhap, are in danger of becoming monopolies. Where would Mr. Washburn like to stop? Must the Gov-

ernment control everything? There are many powerful companies in the United States, besides the Western Union Telegraph Company, in danger of becoming monopolies.

I think every employee of the telegraph should oppose this measure with all his power. We all know what the sentiments of the JOURNAL are. The same number in which it mentions Mr. Washburn's will, contains the following: "Once take from popular management the pursuits which give vigor to our national life, and place them in the hands of government officials, then farewell to the enterprise which stimulates and distinguishes us as a people."

In proof of this "enterprise," I will enquire if "government officials" had had the management of our telegraph lines, would the Atlantic Cable have been working successfully now? Would the effort ever have been made, in the extreme north, of building "Collin's Overland?" I question if ever this line—originally known as the "Pacific Telegraph Line"—would have been built yet; and if it had, it would have been at an additional expense of two or three times what it did cost, for government never can do any work as cheap as individuals or incorporated companies, nor as well.

May the day be far distant when this change is made, and the government controls our telegraph lines.

JOHN W. FORD.

WE are indebted to Mr. Cromwell Fleetwood Varley, the celebrated English electrician, for showing us to what a wonderful extent rapidity in telegraphic transmission can be carried. Mr. Varley's visit to this country a few months since was made with the view of causing the American Morse alphabet to be abandoned, and the English Morse alphabet substituted in its place. He claimed that of the two the English alphabet was the better one, and inasmuch as the use of one alphabet by the whole world must ultimately result, Mr. Varley sought to accomplish the adoption of the English alphabet in America, the only country where it is not already in use. When his intention was made known, tests of speed were immediately made to show that worthy gentleman that such an arrangement would prove an extremely poor speculation for America. Before he left this country it was shown him that we could transmit two words by our system while one was transmitted by his; so Mr. Varley went home with his object unaccomplished.—*Providence Journal*.

Mr. Varley came with no such purpose except to show the advantage of some changes in the Morse alphabet which had no reference to speed of transmission, but for the avoidance of error. The provision of the paper exhibiting this supposed advantage was a simple contribution to the *Journal*. Speed by the one alphabet is just as attainable as by the other, one or two letters excepted.

New Electrical Batteries.

M. Balsamo has presented to the French Academy a battery, both elements of which consist of iron, the one being immersed in a solution of chloride of calcium, the other in diluted sulphuric acid, the two solutions being separated by a porous cell. The iron in the sulphuric acid acted as the positive element, and the other as negative. A constant and quite an intense current is obtained by this arrangement. Another novel battery, termed an "electric buoy," is now being experimented upon at Cherbourg. It consists of a zinc plate and a cylinder of carbon, attached to a cross piece of wood, having sea water as an exciting liquid. Still another variety is that of M. Miergue, of Bonfarik, consisting of a cylindrical cell of porous carbon, containing nitric acid, and an exterior cylinder of amalgamated zinc in a cell full of water.

Applications for insurance have increased of late, but they should be more numerous.

Patent Granted.

BY SPECIAL ACT OF CONGRESS.

INDUCTION-COIL APPARATUS AND CIRCUIT-BREAKER.—Charles Grafton Page, Washington, D. C.

I claim, 1. An induction-coil apparatus, consisting of a primary and secondary circuit, when said secondary circuit is many times, that is to say, two, three, or more times the length of the primary circuit, having the connections so arranged that shocks, sparks, and electrostatic results may be obtained from the secondary circuit alone, or from the combined primary and secondary circuits, or from the primary alone, or from portions of either circuit, substantially as set forth.

2. The combination of an automatic circuit-breaker, with either a primary coil alone, or a primary and secondary coil combined, substantially as set forth.

3. The combination of a mechanical circuit-breaker with a primary and secondary coil combined, substantially as set forth.

4. The combination of both a mechanical and automatic circuit-breaker with a primary and secondary coil, combined substantially as set forth.

5. The combination of a primary and secondary coil, enclosing an electro-magnet, with an automatic circuit-breaker, substantially as set forth.

6. The combination of a primary and secondary coil, enclosing a compound or divided electro-magnet, with an adjustable automatic circuit-breaker, substantially as set forth.

7. The combination of a primary and secondary coil, enclosing a compound electro-magnet, with an attached hammer circuit-breaker, substantially as set forth.

8. The spark-arresting circuit-breaker, whether used with a primary coil alone or a primary and secondary combined, substantially as set forth.

9. The spark-arresting circuit-breaker, whether used with a coil or coils, enclosing an electro-magnet, substantially as set forth.

10. The spark-arresting circuit-breaker, whether attached to or independent of the primary or primary and secondary coils, substantially as set forth.

11. The adjustment of the retractile force of an automatic circuit-breaker, substantially as set forth.

12. In combination with such adjustment, adjusting the distance of the hammer or the armature from the pole or poles of the electro-magnet which actuates them, as set forth.

13. Adjusting or regulating the length of vibration of the circuit-breaking bar, by means of a set-screw, or any mechanical equivalent for substantially the same purpose, substantially as herein set forth.

14. The employment of one electro-magnetic instrument to open and close the circuit of another electro-magnetic instrument, using either one battery for both, or separate batteries for each, substantially as set forth.

15. The employment of separate and independent batteries to operate an electro-magnetic circuit-breaker, and the circuit which is broken by it, substantially as set forth.

TELEGRAPH-APPARATUS.—Elisha Gray, Cleveland, Ohio.

I claim, 1. Operating a relay by to-and-fro currents of magneto-electricity, momentarily induced by a disturbance of the main or line-current, in the manner substantially as described.

2. In combination with the receiving-magnet or magnets, the electro-magnetic armature, in which a secondary current is induced on the disturbance of the line-current, substantially as described.

3. In combination with the induction-apparatus, constructed as described, the polarized relay, placed in a short circuit, and operated by induced currents, in the manner and for the purpose as set forth.

4. The arrangement of the magnets B C and B' C', in combination with the magnets D' D', used in the manner and for the purpose substantially described.

Foreign.

Translated by Mr. Walter Kenneth Griffin, London, Eng.

At the last semi-annual meeting of the Mediterranean extension Telegraph Company, who hold the cable to the Isle of Malta, the President declared that in consequence of the indemnity promised by the Italian Government having been paid only in part, the dividend would only be declared to shareholders after the entire amount had been received.

England, already bound by seven cables to the European continent (three of which terminate in France), is seeking to secure direct communication with Scandinavia.

A company has been formed at New Castile, with a capital of £100,000 sterling, to lay a submarine cable between the British Isles and the north of Jutland, and also to purchase the cable lately laid between Denmark and Norway. The company estimate that by even charging only 4 francs (72c.) for the entire transit of the cable, the returns would reach the sum of 300,000 francs, or about \$54,000 currency. It is easy to foresee that a direct line would carry all the English correspondence to that part of the continent, as well as produce a decided improvement in the regularity of the Dano-Anglo service, and could also be used with advantage by France and Belgium. We have heard that the company intends combining with the lines to the middle of Europe, and, if so, the Danish and Swedish Governments will, without doubt, encourage an enterprise which will bring to their hands the despatches of England to Russia.

The Minister of Public Works in Italy has prepared a project of reform in the telegraphic service of that country. The tariff for the transmission of despatches to the interior of the kingdom will be sensibly reduced.

At the semi-monthly meeting of the Indian Telegraph Company (Limited), which has been held lately, the Bureau, authorized by the Assembly of 12th July and of the 9th of August last, confirmed the provisional agreement made with the Telegraph Construction and Maintenance Company to give up their line to Egypt, upon payment of 37,500 francs, to be paid at the end of the year commencing the 1st of July last, or 3 p. ct. upon the capital of 1,250,000 fr. The rents due 31st December, 1867, having been paid, a dividend will be declared of 3 p. ct. The future of the company depends very much on the success of the Anglo-Indian Telegraph Company, who only wait a favorable occasion to commence the enterprise. M. Sebag has proposed to sell the line to the Egyptian Government, in case the arrangements proposed by the new company should not be carried out.—*Jour. des Telegraphes*.

TELEGRAPH wires were laid down at the back of the high altar in Notre Dame, to receive the Pope's blessing for the Prince Imperial on the occasion of his taking the communion.

CHAMPION TELEGRAPH KEY.—Mr. H. P. Burns, of the Western Union Telegraph Company's line in this city, having held the Champion Telegraph Key of New England and New York eighteen months against all contestants, it has now become his property. It will be remembered that some months ago several closely-contested matches for the possession of this key took place over the Western Union Company's lines, in which extraordinary skill in fast telegraphing was displayed. Out of six of these matches, Mr. Burns came off victorious in five. The champion key, which is made of gold, is to be worn as a breastpin, and is a beautiful piece of workmanship.

The Western Union Telegraph Company have 179 lady clerks and operators in their employ.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
146 Broadway, New York.

NEW YORK, MAY 15, 1868.

We yield our easy chair to Geo. B. Prescott, Esq., the well known author of the "History, Theory and Practice of the Electric Telegraph," to indite the following article on

The Telegraph and the Government.

The idea of bringing the telegraph system of the country under the control and administration of the government, has attracted some attention in the United States as well as in the New Dominion; but, as yet, has not been discussed to any great extent. In nearly all European countries, outside of Great Britain, state administration prevails, and in England it is probable that the experiment will be tried of working the telegraph in connection with the post-office department. The argument in favor of this course may be shortly summarized. The telegraph is as much a national boon as the post-office, and government resources would enable a wider communication to be established. High tariffs would be done away with, and such charges adopted as would bring within the sphere of telegraph communication persons now excluded therefrom by heavy charges. The government might make a profit, but would not desire to do so, as it would be an object to enable all to partake of the advantages of the telegraph. Government management would be more economical, as the postal department might be incorporated with a telegraphic department and one set of officials answer for both. Important benefits would be conferred on trade; greater dispatch and stricter accountability would be secured.

Now, interference with private enterprise is dangerous, and the reasons for ousting private enterprise must be undoubtedly good before a government is justified in converting itself into a monopolist. I propose, therefore, to inquire in a general way whether private enterprise has not achieved in the United States, so far as regards telegraphs, such results as bear comparison with those secured only by government action elsewhere. The telegraphic system of France, Belgium and Switzerland is considered the best in continental Europe, and especially worthy of imitation. Let us see, therefore, what the resources of the government have done for the people of those countries. The following comparative statement will assist in the examination:—

	Miles of wire.	Offices.	Proportion of offices to inhabitants.
France,	71,080	1,301	1 to 30,753
Belgium,	5,395	307	1 to 10,000
Switzerland,	3,717	252	1 to 10,000

Now let us compare the above with those countries which are free from government control:—

	Miles of wire.	Offices.	Proportion of offices to inhabitants.
England,	77,440	2,040	1 to 14,000
New Dom.	9,040	497	1 to 8,000
United States	150,000	4,000	1 to 7,500

In all other countries of Europe the comparison is far less favorable for government control than in these enumerated. Russia has but 40,000 miles,

Austria, 25,000, Italy, 20,000. The telegraphic system of the United States is more than twice as extensive as that of France, five times greater than that of Russia, and equals in extent the aggregated systems of Austria, Prussia, and the lesser German states, Italy, Spain, Belgium, Switzerland, Greece, Turkey, and all this has been accomplished by the energy and activity of private enterprise.

It is stated that there are eighty-eight places in England and Wales of more than 2,000 inhabitants with no telegraph communication, but we know of no place in the United States with that number of inhabitants without an office, and a great majority of the towns with four or five hundred inhabitants are provided for. Besides, efforts are constantly put forth to increase the offices and the facilities for doing business. The Western Union Telegraph Company expended in seventeen months, ending January 1st, 1868, \$828,463, in the construction of new lines, and during that time has opened several hundred new offices. In order to retain its position and forestall competition this company is compelled to provide for the wants of the country wherever there is a reasonable prospect of remuneration for the service.

The following statements of the number of offices in the principal cities in the northern section of the country, will give an idea of the extent of the present facilities in those places. New York has 74 offices, Philadelphia 35, Boston 24, Chicago 22, Cincinnati 21, Baltimore 19, Washington 16. The number of employees attached to the telegraph offices in New York is 375, in Philadelphia 211, Baltimore 114, Boston 156, Washington 115, Cincinnati 93, and Chicago 86.

Private enterprise has with us so far achieved much greater results than governmental management in Europe. As regards the tariff for messages, they are less than the rates established in Europe, if we take the depreciation of our currency into account. Reductions in rates to more than one thousand offices have been made within the past year, amounting, in some cases, to as much as 50 per cent., and the Western Union Telegraph Company—whose lines extend from the Gulf of St. Lawrence to the Gulf of Mexico, and from the Atlantic to the Pacific Ocean—is constantly engaged in the reduction of its rates, irrespective of competition or any other extraneous influence.

G. B. P.

Double Transmission.

We have had in our possession for some months sketches of the European double transmitting system prepared by one of our ingenious city operators, but have been prevented publishing them on account of the pressure of other matter. In response to a wish expressed by some we will soon give diagrams of all of these as opportunity offers. Except to Companies who have to economize their wires, the process is not a desirable one for practical use. We want to remove dangers, not to invite them; still the process of double transmission over a single wire is interesting and attractive and deserves illustration.

We are glad to see that Dr. Bradley our veteran instrument maker, has taken to himself a partner in life, in the person of Mrs. Jane A. Reed, of Jersey City. We have seen no cards, and received no cake to put beneath our dreamful pillow, but we wish the Dr. and his companion many years of happy domesticity and every blessing which can make life cheerful and desirable.

A copy of an address by 400 operators and clerks to the executive officers of Telegraph Companies respecting Sabbath labor has been handed to us by a friend, but to which we must postpone reference until a future number. The address issues from Boston.

Bishop's Central Telegraph Depot.

113 Liberty Street, New York.

Mr. Bishop's circular giving notice of his desire to open an exhibitor's room for telegraph was received just as we were going to press with last number. The efficiency of such a place depends much on its acceptability with manufacturers: their confidence in Mr. Bishop's fairness. A Central Depot, central and accessible, and in control of so well and favorably known as Mr. Bishop, can come a great convenience, and, to manufacture great economy. The room will no doubt be opened and become a place of resort for purchasers. We hope it will prove acceptable to manufacturers, and give to the public the opportunity of seeing the progress of invention and the skill of our various telegraphic workmen.

Death and a Fortune—A Sweeping Patent. Obituary.

Professor Charles G. Page, of the United States Patent Office, died on the fifth inst., after a lingering illness. He was the author of many important discoveries in electro-magnetism, and the inventor of an electro-magnetic motive power engine, which attracted some attention from fifteen to twenty years ago. Prof. Page had for many years been chief examiner in the Patent Office, of the class termed "philosophical instruments," embracing all inventions in mathematics, mensuration and electricity, and including clocks and watches, optical instruments, meters of all kinds, telegraphs, and a great variety of other subjects, and he had served in the examinational capacity for a longer period than any examiner now in the Patent Office. His duties have always been performed with ability and to the general satisfaction of those doing business with the Office, and his place cannot be easily supplied.—*American Artisan.*

Before Mr. Page's decease a bill was passed by Congress granting him a patent for electric circuit breakers by which American telegraphy is practically put into the hands of his heirs. The items of the patent will be found elsewhere, and they cover every form of known telegraphy except the simple closing of a circuit by the key and hand. All automatic closers, repeaters, local circuits, registers, printing machines, &c., are covered by this sweeping patent. Prof. Page's connection with the Patent Office prevented the issue of this to him while engaged as an examiner. Now it is the property of his heirs. Circuit breakers in actual use or manufactured April 15th, are exempt from its operation, but no machinery after that date can be employed without consent of the patentees. This will make some stir in telegraphic circles, especially as it is known that the heirs are determined to have the full benefit of the rights thus acquired.

Returned to the Service.

We are glad to welcome back to new and less exhausting duties the late auditor, Edward Chapman, Esq. Mr. Chapman is well advanced in years, but maintains much freshness of life and manners, and a chirography of rare beauty. All his friends are glad to see him at his post again where we hope he will continue until the Friend of all toilers leads him to his rest.

Mr. Brooks has been adding to his stock of insulators by the manufacture of several new styles in which iron is not employed except for the stem. Some of the styles shown us are similar to those used with advantage in England, and consist of porcelain into which paraffine has been inspissated and having a rubber covered stem. One of these is very simple and easily substituted for some less perfect form.

BISHOP'S TELEGRAPH ROOMS, 113 LIBERTY STREET, NEW YORK.

TO MANUFACTURERS OF TELEGRAPH AND ELECTRIC INSTRUMENTS AND APPARATUS:

I design opening Rooms in the building now occupied by the BISHOP GUTTA-PERCHA COMPANY, No. 113 Liberty street, N. Y. City, for the Reception and Exhibition of every kind of

TELEGRAPH AND ELECTRIC APPARATUS,

to be kept open Every Day, and properly attended to, and the articles on exhibition taken care of by me.

I invite you to send me any articles of your manufacture, properly labeled, with name and price at which you sell them.

The charge for space and care of Instruments, etc., will be ten per cent. of their marked saleable price for the year.

Insurance, if required, will be charged extra.

Exhibitors will at all times be admitted to the Rooms with their customers to show samples, and sell from them, free of charge.

N. B.—Battery power will be supplied for testing, etc.

Respectfully,

SAMUEL C. BISHOP.

New York, May 1st, 1868.

MARGARET: A Story of Home Prairie Life. By LYNDON. N. Y. Charles Scribner & Co. 1868.

This tasteful duodecimo, just issued by a firm well known for the delicacy of its taste in publications bearing its imprint, we find on our table. Having read many of its chapters before while being published as a serial, Margaret is no stranger to us. We are equally happy in an acquaintance with the fair authoress who disguises herself under the euphonious name of Lyndon. The one is a counterpart of the other, refined, intellectual, placid, pure. Nor do these characteristics which invest womanhood with her truest dignity and attractiveness, and which by that subtlety of the highest art which so pervades all it touches as to give the consciousness of beauty without the appeal of any special limning, prevent a power of delineation, a certain gentle graphicness of illustration, a ripple of cheerful sunny lustre from distinguishing this welcome book which must make Margaret an honored guest wherever there is a true appreciation of the good and the beautiful. No one can read this story of a prairie home without being made better by the reading, even though the process be an unconscious one, just as the young green grass and the violets that silently look up to us on this sweet May morning, inspire us quietly yet effectively with a gentleness like their own.

We have not space to comment on this volume as we would gladly do. We introduce it to our readers with our warmest benediction. It will quicken the love of the true and the womanly, and prove a grateful addition to those purifying influences which God gives to a true woman wherewith to entone others with her own purity and gentleness.

Removed.

Messrs. L. G. Tillitson & Co., have removed to new and eligible quarters at No. 11 Dey street—first floor. This change indicates prosperity. No house deserves it more. Mr. Tillotson is a practical electrician, experienced, good-natured, polite. His firm has become what it is by promptness, fair prices, and good workmanship. We wish the house abundant success.

So much matter has accumulated upon our hands both from home sources and abroad, that until the last moment, we had determined on issuing a full double sheet. Finding however that great delay would thus be caused, we have, somewhat hastily, thrown together the usual quantity of matter, and may issue an extra number having special reference to the English Governmental assumption of the Telegraphs and its bearing on a similar purpose in America. The English papers have generally canvassed this new movement, and the data thus provided cannot but be useful to all concerned.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
May 1st, 1868.

To all Offices on W. U. Lines—

Please note the following changes, which have occurred since May 1st, the date of the last Tariff Order, in your Tariff Book:

NEW OFFICES.

Andover, Mass., tariff same as North Andover, Mass.
Nicholasville, Ky., tariff same as Lexington, Ky., except from such points as Gen'l Supt. Van Horne shall instruct to charge a special rate which he has been authorized to make.
Sharon Springs, N. Y., reopened for the season.
Sewaukeew, Mich., tariff same as East Saginaw, Mich.
Girard, O., tariff same as Niles, O.
Phalanx, O., tariff same as Leavittsburgh, O.
Summit, Miss., tariff from Louisville, Ky., 1 60, from Washington, D. C., 8 25.

OFFICES OPENED ON OTHER LINES.

Cumberland Mills, Me., tariff 25 and 2 from Portland, Me., check Portland.
Molino, Fla., 100 and 10 from Pollard, Ala., check Pollard.
Philadelphia, N. Y., tariff 35 and 2 from Oswego, N. Y., check Oswego.
Highland Park, Ill., 45 and 4, from Chicago, check Chicago.

OFFICES CLOSED.

Schooley's Mountains, N. J., mail business hereafter at Hackensack, N. J.
New Canaan, Conn., mail business hereafter at Stamford, Conn.
Ashford, Conn., Alkali, Neb., St. Veynns, Col.
Malad City, Idaho, Shaffer, Pa.
Offices having "Special Sheet A" will check North. Madison, O., tariff same as Painesville, O.; Conneaut, O., same as Ashtabula, O.; Amsterdam, N. Y., same as Schenectady, N. Y., with the following exceptions:
Albany, N. Y. to Amsterdam, N. Y., 25 and 2.
Troy, N. Y., to Amsterdam, N. Y., 25 and 2.
Schenectady, N. Y., to Amsterdam, N. Y., 20 and 2.
North East, Pa., same as Erie, Pa. To take effect May 20th, 1868, unless orders have been received otherwise.

WILLIAM ORTON,
President.

A New Cable.

GUARANTEED FOR ONE HUNDRED YEARS!

The following letter has been placed in our hands. It bears the address of the "National Telegraph Co." ("Societe Americaine"). If the managers of such a company exist, they have the benefit of the translation:—

PARIS, le 18 Mars, 1868.

MESSIEURS—Une experience de plusieurs annees a suffisamment demontree a tout le monde je pense, que tous les cables pour la telegraphie electrique construits jusqu'a ce jour sont vicieux, que tous se sont rompus et que tous doivent se rompre, parceque leur confection ne repond pas au service qu'ils doivent rendre.

J'ai donc l'honneur de vous faire connaitre, Messieurs, que j'en ai inventee une que ne se rompera jamais, et que j'ose garantir pour cent ans; mon cable outre sa solidite a toutes epreuves reunit une autre qualite qui nest pas moins a dedaigner: c'est qu'il est excessivement bon marche; ainsi, construit ici, je m'engagerais a le faire, pour la modique somme de frs: 1:70cs le kilo bien entensee pour le fer seulement.

En consequence, Messieurs, je viens vous offre, soit la confection de ce cable, soit la vente de mon invention, je vous cederai celle ci pour la modeste somme de deux cent milles francs, c'est peu de chose en egard des services exceptionnels, qu'il rendra a votre societe.

Si cette affaire, Messieurs, peut vous convenir, veuillez etre assez aimables de m'en dire un mot le plutot possible, parceque mon intention est a l'offrir a d'autres societes, si elle ne vous agree pas; je suis persuade qu'elle presente trop d'avantages pour ne pas etre accueillie de suite.

Je me tiens, Messieurs, a votre disposition je me rendrai a New York a votre premier appel; toute-

fois, bien entensee a vos frais et moyennant de mon garantir une indemnite de cinq mille francs, dont 1,500 francs comptant, et 3,500 francs a mon arrivee, pour ne couvrir de frais, de deplacement et perte de temps.

Agreez, Messieurs, mes bien sincerres salutations,
DESMETZ.

Rue St. Denis, St. Antoine No. 1.

PARIS, March 18, 1868.

GENTLEMEN—Many years experience has, I think, afforded to the world sufficient proof that all the cables for telegraphic purposes hitherto constructed are faulty, that they break, and that they will continue to break because their construction does not harmonize with the amount of service they are intended to perform.

I have, then, the honor, gentlemen, to inform you that I have invented one which will never break, and which I venture to guarantee for a hundred years. My cable, independently of its solidity in all respects, possesses another quality by no means to be despised, namely, its excessively low cost. I would engage to manufacture it here for the small sum of one franc seventy centimes the kilogramme, it being understood that this charge is for the iron only.

Further, gentlemen, I offer to give up to you the construction of this cable, to sell you my invention for the modest sum of two hundred thousand francs, a small consideration compared with the inestimable services which it will render to your company.

If this matter, gentlemen, should be deemed worthy your consideration, will you kindly inform me of it at your earliest convenience, as should it not, it is my intention to offer it to other companies, persuaded as I am that the advantages it presents are too numerous to allow it to be long neglected.

I hold myself, gentlemen at your disposal, and will present myself in New York at your first call, always, be it understood, at your own cost, and deducting from my guarantee an indemnity of five thousand francs, 1,500 of which to be paid here and 3,500 on my arrival, to cover my expenses for freight, passage, and loss of time.

I am, Gentlemen,
&c., &c., &c.,
DESMETZ.

Rue St. Denis, St. Antoine No. 1.

We have thus introduced Mons. Desmetz to the nation, and hope 1500 francs will be at once sent to him with such delicacies as a gentleman from Paris may be supposed to require. Should Mons. Desmetz deem it convenient to make a permanent home at Pere la Chaise before the expiration of the guarantee, we trust he will leave his hat as a security for any misfortune which may succeed his departure.

76,993.—PRINTING TELEGRAPH.—Edward A. Calahan, Brooklyn, N. Y.

I claim, 1st, A magnet for giving or controlling the impression, placed in a main electrical circuit, that is separated from the circuit that controls the type wheel or denoting device, so that the impression can be made independent of any other operation, when the type wheel or denoting device has been properly moved, substantially as set forth.

2d. Two or more type wheels, separately controlled by magnetism, and arranged side by side, or with their axes on the same line, so as to be impressed jointly or separately, on the strip of paper, substantially as and for the purposes set forth.

3d. The combination of the type wheels, k and l, magnets, f and i, with the magnet, c, and impression roller, u, or its equivalent, substantially as and for the purposes set forth.

4th. The reverse ratchet wheel, q, and pawl arm, in combination with the ratchet wheel, p, and pawl, 2, for moving and holding the type or character wheel, substantially as set forth.

We published in No. 4 an article from a European Scientific Journal, showing that a stream of electricity passed through a seed, caused a reversal of the natural growth, the stalk growing downwards, the root upwards. Has the following any origin in electricity? Was Edgar Burnham ever in a Telegraph office?

A Most Strange Chapter.

From the *La Crosse Democrat*.

A correspondent writes us from Waterloo, Iowa, asking if we know of one Edgar Burnham, and of his history.

We do. And as it is a strange, true one, known to hundreds, we give it in the *Democrat* as it is, and we may correct some errors those who speak of him have failed to do. Eight years since, when we were engaged as city editor of a Milwaukee paper, there lived in this State an editor named Powell, now connected with a Chicago paper, we think. He is, unless he has quit it lately.

In 1863 Powell was married to a Miss Ellen Burnham, of Brodhead, Wis., after a courtship of some months. Miss Burnham's parents were old residents of Brodhead, and of high respectability. The daughter taught music, had a large number of pupils, and was very attractive. Powell lived with her as a husband two years, she being all that time a good wife in all respects, presenting him with but one child. At the expiration of two years, when about 21 years of age, Mrs. Powell's voice changed, she grew light whiskers, and gradually changed her sex, *developing into a man* in all respects, as if nature, anxious for a freak, had turned a portion of herself wrong side out.

The husband and wife separated when the wife became a man, and Mrs. Ellen Powell took the name of Edgar Burnham, donned male attire, sought and obtained employment as a clerk in Chicago, and lived a single young man for one year.

During this time he fell in love with a niece of Senator Morgan, of New York, but did not marry her, for reasons not pertinent to this article. But about the end of the year he did marry a young lady of Brodhead, Wisconsin, a Miss Gerta Everett, who was a music pupil of his when he was a Miss Ellen Burnham, over three years previous to the marriage. This second marriage was about two years ago. Soon after this marriage "Edgar" Burnham and wife removed to Waterloo, Iowa, where they now reside, or did not long since.

The former girl is now a man, the former wife is now a husband, the former mother is now a father, the former young lady teacher of a young lady is now that young lady's husband! Truth is, indeed, stranger than fiction, and the above simple statement of facts borders so upon the marvellous we could not believe it did we not personally know nearly all the parties.

Any one can be convinced, by writing to the parties in either of the places we have named, of the full and entire truth of this wonderful transformation, which puzzles not only the medical but the entire scientific world, and which fact appears now for the first time in print, though the particulars have long been known to us and to many other newspaper men and prominent citizens of this State.

Patents.

ELECTRO-MAGNETIC LOG.—W. I. Reid, Brooklyn, N. Y.

I claim the log, provided with a break for closing and breaking the electric circuit, substantially as described, in combination with the registering-instrument connected therewith by an electric conductor, the said registering-instrument being provided with an escapement operated by an electromagnet, and with the means described, or equivalent means, for registering, all substantially as specified and for the purpose set forth.

ELECTRIC TELEGRAPH.—Cromwell Fleetwood Varley, New York, N. Y.

I claim, 1. Making insulators for telegraph wires of two or more insulating caps, exclusive of the cement which unites them, each cap being a complete insulator in itself, so that if one of the caps be defective, the other or others shall arrest the electric current, as set forth.

2. The use of a non-conducting pin inside an insulating cap, such pin being constructed of iron or steel covered with hard rubber, or being formed of stoneware or porcelain, substantially as described.

3. Glazing the lower part of porcelain or stoneware or earthenware caps, and leaving the upper part unglazed, substantially as and for the purposes set forth.

4. Making the lower edge of the insulator cap externally sharp, but internally rounded, so that drops of rain, when blown outwards, shall fall off, and when blown inward shall not break off, but run, by capillary attraction, up the rounded surface out of the wind, substantially as set forth.

5. Making porcelain or stoneware or earthenware caps with two or more projecting ears, in combination with and arranged above and below the groove for the wire, so that when the insulator is inclined to the wire, the latter can be inserted, but when at right angles to it, the latter cannot be gotten out, as set forth.

The History of a New York Bank Cashier.

"Burleigh" writes from this city to the Boston Journal:

"The cashier of one of our leading banks resigned some time since, and the paying teller was immediately elected to fill his place. He was quite a young man, and was promoted over the heads of those who had been in the bank many years in subordinate positions. The secret of the promotion is well worth knowing. The new cashier lives some miles out of the city. He entered the bank when quite young. He resolved to make himself useful. Living farthest away, he was the first at his post in the morning. Having the farthest to go, he was the last to leave. He never was afraid to work, and never hesitated to lend a hand when his own duties were done. Others would go out to restaurants and hotels for their lunch. He brought his with him, and ate it in a little closet. For his own pleasure he never left the bank during business hours. If any of the clerks wanted to go away, he was always ready to take their place. He could always be found, and was prompt at any call. His spare time was devoted to an intelligent comprehension of his business. As paying teller he was very popular. He was never snappish or ungentlemanly. Growling, grumbling, unreasonable customers could not irritate him. He overstayed his time to accommodate men who were belated with their checks. As cashier, he is the same genial, agreeable, prompt officer that he was in subordinate life. Men disappointed in their discounts take a refusal from the cashier with a better spirit than they do an accommodation from some men. He still keeps up his habits of close attention to business, and takes his frugal lunch in his closet as when struggling for position."

The Atlantic Telegraph a Nuisance.

The *Poll Mall Gazette* says:—"The existence of the Atlantic telegraph certainly lessens the interest of the impeachment trial. The bald statements sent through the cable keep the English reader constantly in advance of any real information, and when he has read in one column of the newspaper that the case for the prosecution has closed, it is difficult to fix his attention upon those preliminary details which appear in another column. Except to persons interested in the rate of exchange, the Atlantic telegraph, has hitherto been simply a nuisance."

A Locomotive Struck by Lightning.

From the *Peoria Transcript*, 4th inst.

On Friday last, during the hail storm that visited this section, the eastward bound train on the Toledo, Peoria and Warsaw railway, George Boies, conductor, and C. A. Martin, engineer, had just left El Paso as the storm struck it. When about a mile and a half east of that city the lightning struck a telegraph pole. Instead of shattering it and going to the ground, it burst the insulator, making a blaze of light, passed on the wire to the next insulator and burst that, with another blaze of light, as intense, a looker on informs us, as a thousand gas jets, and so on for five poles. It then ran down one pole and leaped to the track, and ran back without doing any damage until it struck the engine. It ran up one of the drivers and burst a section of two feet out of the solid tire, and passing along the boiler, without doing any damage, it reached the lever and went upwards with a blaze of light similar to that on the telegraph wire, and with a detonation like a small cannon. So intense was the light, and so violent was the shock that the engineer was nearly blinded, and almost stunned. Our informant says that the appearance of the light on the track and on the wires was brilliant beyond conception. It looked as if there was an immense lake of fire ahead, into which the train was about to plunge, and the contrast between the light and the ordinary day light that followed, seemed as great as that between the brightest day and the darkest night.

Perseverance.

The little city of Freyburg, in Switzerland, has the largest organ in the world. When in full play, it pours forth a tempest of sounds through a forest of pipes, "seven thousand, eight hundred in number," shaking the walls and the foundations of the old St. Nicholas Church in which it stands. All the musical bands in Boston, New York, and Philadelphia combined would not make an orchestra equal in power to this mighty instrument alone.

It is all the work of one man, named Aloys Moser. He was poor; he was not thought to be a master in his art; he never received any adequate reward for his labor. Without assistance or suggestion from others, he formed the design of building, for his native city, an organ which travellers from distant nations should turn aside from their journeys to hear; and which, when heard in the darkness of the cathedral at night, should make an hour for them never to be forgotten. And so poor Moser began his life's work, and he persevered for long years in the face of opposition and poverty and ridicule, until his task and his life were finished together. His aim may not have been the highest, nor his motive the best, but he persevered with the faith of a martyr till his work was done; and now it stands among all similar works in the world, like Mont Blanc among the mountains, peerless and alone.

Wires Leading into Offices.

From *Varley's Report*.

The "leading in wires" are fruitful sources of interruption everywhere. In England we formerly used with great success wires covered well with gutta percha, and then wrapped with tape and then saturated with the following mixture nearly cold:

Boil together equal parts in bulk of wood tar, gas tar and slacked lime. Stir well when boiling and continue the heat until the moisture is driven out, which is seen by the frothing subsiding. When cool apply to the taped wire, and then cover the wire with dry sand.

Hang the wire up to dry in the air, and in three or four days time it will be ready for use. This resists sun and moisture and protects the gutta percha.

During the last few years we have used Hooper's wire, which is cheaper and better, and in some cases we have used the semi-hard vulcanite covered wire.

Telegraphers' Mutual Life Insurance Association.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

Its officers shall consist of a Treasurer and Secretary.

I. There shall be an Executive Committee of five, of which Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

V. No officer shall, at present, receive any remuneration for services.

No expense of any kind will be allowed except for expenses of incorporation, stationery, postage, circulars, certificates advertising.

I. Any person, regardless of sex or class, may become a member of this association provided they are or have been engaged in the telegraph business and subscribe to these articles, are unobjectionable to the Executive Committee.

II. The initiation fee shall be one dollar and fifty cents, dollar of which shall go to the contingent fund, and the balance to the expense account.

III. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

K. It shall be the duty of each member of this association to file in writing, the name of his or her executor or heir, failing to which the amount of insurance shall be used, first, to pay expenses of burial, and the balance to be given to such relative of the first degree as are dependent on the deceased, or if there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

L. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which within the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be liable only on the unanimous vote of the Executive Committee and the payment of dues.

M. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

N. Special meetings of the association may be called upon the written request of twenty-five members.

O. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

P. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

Q. Certificates of membership shall be given, signed by the Treasurer and Secretary.

R. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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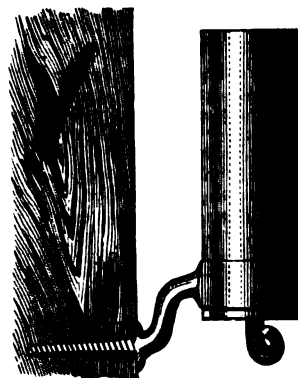
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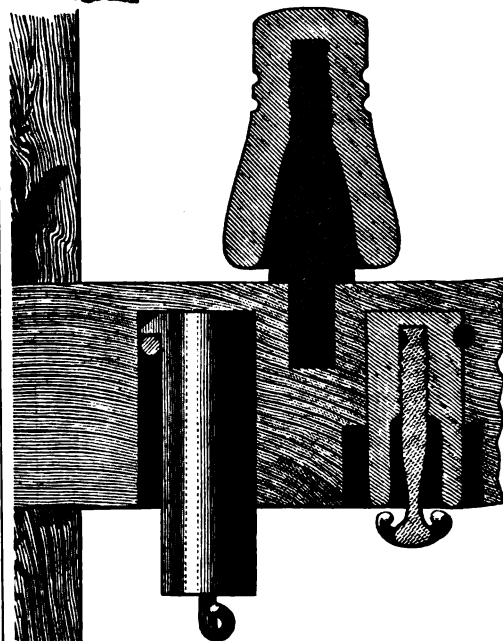
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JOURNAL OF THE TELEGRAPH.

O. 13.

NEW YORK, MAY 22, 1868.

VOL. I.

The Government and the Telegraphs.

From the London Times.

The Parliamentary Return named below furnishes the public with the facts and arguments on which the Government have relied in introducing the Bill before the House of Commons for the acquisition of the electric telegraphs by the post-office. It consists of two reports by Mr. Scudamore to the President and the late Postmaster-General. The pamphlet of which the title is also given below is an argument against the Government Bill, on behalf of the Electric and International Telegraph Company. It ought to be able, therefore, in these two representations to obtain a sufficient view of the reasons for and against this important proposal. To a great extent this advantage is obtained; but we must confess there are points of consequence on which the conflicting statements leave us in considerable doubt. We cannot but think it unfortunate that the scheme of the Government, and the grounds on which it has been proposed, should have been so tardily announced. Mr. Scudamore's reports, standing by themselves, could appear conclusive, but after reading the statement of the Company the case does not appear to us plain. The pamphlet is written with most unnecessary heat, but it nevertheless shakes Mr. Scudamore's arguments in some instances, and adduces considerations which he seems to have overlooked.

The Company are mistaken in supposing that the scheme is a novel one. It seems to have been first suggested by Mr. Thomas Allan in 1854. Two years afterwards an officer of the post-offices submitted a similar plan to the Lords of the Treasury. In 1861 a more important memorandum to the same effect was addressed to the Chancellor of the Exchequer, and by him forwarded to Sir A. Spearman and Mr. Scudamore for consideration. It was written by Mr. Ricardo, formerly member for Stoke, and Mr. Burrell, of the Broad Sanctuary. Mr. Ricardo was the founder of the Electric and International Company. The subject was revived by the Edinburgh Chamber of Commerce in 1865, and in consequence Lord Stanley of Alderley, who was then Postmaster-General, directed Mr. Scudamore to inquire into it. The result was the first report in this Return. The change of Government delayed the question; but, under the direction of the Duke of Montrose, Mr. Scudamore was again directed to the subject, and presented a supplementary report last February.

The experimental data upon which the scheme is founded are derived chiefly from the Belgian and Swiss systems; and Mr. Scudamore commences both his reports by an examination of these systems. Unfortunately, his representations on this fundamental point are directly challenged by the Company, and it is not easy to decide between the two. We will, perhaps, be best to quote the following summary by Mr. Scudamore himself of the results of his comparison:—

"I. From the following table it will be seen that at the close of the year 1865, the proportion of telegraphic accommodation to territory and population was greater in Belgium and Switzerland than in the United Kingdom;—

	There was at the close of 1865,	In Belgium.	In Switzerland.	In the United Kingdom.
Miles of Telegraphic line to every 100 square miles of territory . . .		17½	18 7-10	11 2-10
Number of telegraphic offices to every 100,000 persons . . .		61-3	99-10	56-10

"II. In the next place, while the facilities for telegraphic communication were less extended, the tariff for inland messages was higher in the United Kingdom than in Belgium and Switzerland. In Switzerland the charge for a message of 20 words had for many years been, uniformly and without regard to distance, one franc. In Belgium the charge for a like message was also uniformly one franc from December, 1862, until December, 1865, when it was reduced to half a franc; while in the United Kingdom the charge ranged upwards from 1s. according to distance, the attempt which the United Telegraph Company made to establish a uniform rate of 1s. having been defeated by the too powerful competition of their rivals, and the tariff of the London District Telegraph Company—viz., 6d.—being limited to a very narrow area. Since the close of 1865 the London District Telegraph Company also have substituted a tariff of 1s. for a tariff of 6d., while the other companies have adhered to a tariff varying with distance, but the Belgian and Swiss Governments have maintained respectively their tariffs of half a franc and one franc to the end of 1867, when the Swiss inland rate also was reduced to half a franc.

"III. My report next pointed out that under the combined influence of greater facilities and a lower tariff the development of telegraphic correspondence had been proportionately greater in Belgium and Switzerland than in the United Kingdom. In arriving at this conclusion I argued that the utility of a telegraphic message might be measured by the time gained by the telegraph over the post, and that the success of a telegraphic system might consequently be ascertained by a comparison of the growth of its business with the growth of the business of the post-office in the same place or country. As by reason of the greater extent of the United Kingdom the telegraph has a much greater advantage over the post in the United Kingdom than in Belgium or Switzerland, while there is no material difference in the rates of postage prevailing in the three countries, it seemed reasonable to expect that, even without taking into account the superior wealth and greater commercial activity of the United Kingdom, inland telegraphic messages would bear a higher proportion to inland letters in it than in Belgium or Switzerland. The following table shows, however, that the proportion of inland telegrams to inland letters has all along been much lower instead of much higher in the United Kingdom than in Belgium or Switzerland;

PROPORTION OF INLAND TELEGRAMS TO INLAND LETTERS.

Year.	Belgium.	Switzerland.	United Kingdom.
	Telegrams. Let's.	Telegrams. Let's.	Telegrams. Let's.
1860 . .	1 to 218	1 to 84	1 to 296
1861 . .	1 — 196	1 — 87	1 — 273
1862 . .	1 — 187	1 — 80	1 — 221
1863 . .	1 — 114	1 — 74	1 — 197
1864 . .	1 — 83	1 — 70	1 — 169
1865 . .	1 — 73	1 — 69	1 — 151
1866 . .	1 — 78	1 — 69	1 — 121

"In other words, in Belgium in the year 1866 there were 5-7ths of an inland telegram to every five persons, and in the same year there should have been in the United Kingdom, if its correspondence by telegraph had been proportionate to its correspondence by post, 3-4-7 inland telegrams to every five persons. There was, however, but one telegram of all kinds to every five persons.

It is a curious instance of the ambiguity of statistics that, by another form of calculation, the Company are able to present results materially at variance with this conclusion. If we compare the telegrams, not with the number of letters, but with the area of the countries, it appears that in the United Kingdom the number of messages to the square mile is 51, whereas in Belgium it is 61. In Switzerland, however, the messages to the square mile

are 44. Considering that the area of the United Kingdom is 122,000 square miles, whereas Belgium contains only 11,000 square miles, and Switzerland only 15,000, this comparison will appear by no means unsatisfactory. Again, the number of messages sent in the United Kingdom amount to one-fifth of the total number of inhabitants, whereas in Belgium they are only one-seventh, and in Switzerland one-fourth. The Company, indeed, justly observe that before the comparison between telegrams and letters can be depended on, we must know that the "letters" in question are of a similar character. A system has grown up in this country of distributing, by means of the post, millions upon millions of tradesmen's circulars, patterns, samples, appeals for charities, and the like. In Belgium and Switzerland this system is comparatively unknown. It is, therefore, entirely fallacious to base any calculations on the proportions of "letters" passing through the posts of the respective countries, unless you can eliminate from the English post all the circulars, samples and patterns that are circulated through it. If this could be done, it is probable that the telegrams in England would be found to bear a much larger proportion to the number of letters than either in Belgium or Switzerland.

It is, then, doubtful as a matter of fact whether, "under the combined influence of greater facilities and a lower tariff, the development of telegraphic correspondence has been proportionately greater in Belgium and Switzerland than in the United Kingdom." It may further be doubted whether the elements of comparison Mr. Scudamore has chosen are sufficient to show that our facilities are so far inferior. He compares the miles of telegraphic line with the square miles of territory. But the area of England being about ten times that of Belgium, there must of necessity be, so to say, greater waste spaces. The more scattered the population the smaller must be the proportion of miles of wire required. Mr. Scudamore admits, in fact, that there is "a more liberal allotment of wires to lines in the United Kingdom than in Belgium and Switzerland; but this," he adds, "does not compensate us for our more restricted distribution of the lines and less copious dissemination of telegraphic offices." If we attempt to reconcile these counter-representations, it would seem that whereas the system is more extended in Belgium and Switzerland, it is more active in this country, so far as it extends. It will be worth while to quote the following interesting sketch by Mr. Scudamore of the means for telegraphic intercourse at the disposal of the Belgians. Mr. Scudamore says:

"In addition to the 307 offices which are provided with the apparatus for the transmission of telegrams, there are certain offices not so provided, but at which the public may deposit and pay for their messages. These offices are called offices of deposit. Every post-office which is not a telegraphic office is an office of deposit, and like offices have been opened at a large number of railway stations. Ordinary messages, which are said to form 93 per cent. of the whole number of messages, are those which do not involve any complicated operations, such as repetition to insure accuracy, payment for reply, the following the addressee from place to place, the delivery of copies to more than one address, and so forth. Ordinary telegrams, moreover, must be paid for in stamps, or, which comes to the same thing,

must be written on stamped paper. For 5d., then, an ordinary message of 20 words may be sent from any part to any other part of Belgium. The sender may either take or send it to the nearest telegraphic office, or, if that be too distant from him, may deposit it at the nearest deposit-office, from which it will be despatched free of charge to the nearest telegraphic office; being despatched at once if the telegraphic-office and the deposit-office are situated in the same locality, and, when they are not so situated, being despatched by the first outgoing cart or carrier. Even in these latter cases, should the sender desire immediate despatch from the deposit-office to the nearest telegraphic-office, the deposit-office will find the means of despatch if the sender will defray the expense. On the arrival of the message at the terminal telegraphic-office it is at once delivered free of charge, if the addressee resides within the limits of the terminal office; but if he does not so reside, it is sent to him free of charge by post. Even in these latter cases, however, the sender, by paying the expense of a special messenger, may have it so delivered. The locality served free of charge by a telegraphic-office is defined as comprising the whole of the town or village in which the telegraphic-office is situated, and the adjoining places within a circle of two kilometres—i. e., a mile and a quarter—from the telegraphic-office. Lastly, it may be noted that, even if a double transmission by post takes place—i. e., a transmission by post from the sender to the telegraphic-office of despatch, and a transmission by post from the telegraphic-office of receipt to the addressee, no addition is made to the charge of half a franc.

"For the 'extraordinary' telegrams, the old tariff of 10d. for 20 words, with an addition of 5d. for every addition of 10 words or part of 10 words, has been retained. The sender of such a telegram has the right, on payment of a double charge—i. e., on payment of 20d. for 20 words—to require a record of its receipt. When he does this, the receiving-office transmits to him by telegraph an exact copy of his message, together with a note of the hour at which his message was delivered, and of the name of the person to whom it was delivered. The sender of an 'extraordinary' telegram may require it to be re-directed by telegraph in the event of the addressee having gone from the delivery of the receiving-office to the delivery of some other telegraphic-office, and he may have copies thereof delivered to any number of persons residing within the delivery of the receiving office at a charge of 5d. per copy."

The Swiss system is much the same, but there is one important addition—namely, that in Switzerland *mandats de post* (money orders) may, if the sender desires it, be sent by telegraph instead of by post.

Now, these are facilities which we could never hope to obtain from any private company. The company assert that this apparent completeness is gained at the expense of expedition. Some of their statements with respect to the Belgian management are refuted by Mr. Scudamore. In other respects the two statements are quite irreconcilable. A letter-carrying company whose sole object was revenue would never open post-offices in every country village and provide a daily transmission of letters. The post-office is required to do it on the grounds of public policy, without reference to revenue, and is expected, therefore, to work a considerable part of its machinery at a loss. The Department might be charged with a similar duty in the telegraphic service of the country if an adequate public advantage could be anticipated. Let us, then, see exactly what it is that Mr. Scudamore proposes to offer us. His scheme is summed up in the following paragraphs:

"What, then, would the post-office be able to do for the public if it were intrusted with the management of the telegraphs? It would be able to bring the telegraphs closer to the population, to extend the hours during which they could be used daily, to reduce the charges for the transmission of messages, and, lastly, to give facilities for the transmission of money orders by telegraph."

"I do not propose to encumber this Report, which is already of inconvenient length, with a detailed statement of all the arrangements, which it would be in the power of the post-office to make if it were intrusted with the management of the telegraphs, but will content myself with submitting the following outlines of the plans which would probably be found best suited to the purpose."

"I would propose,—

"A. To open a central telegraphic office at each of the ten district post-offices in London."

"B. To open subordinate telegraphic offices at the sorting offices and receiving offices in each district."

"C. To connect the subordinate telegraphic offices of each district with the central telegraphic office of that district."

"D. To establish direct communication between each central telegraphic office and each other central telegraphic office in London."

"E. To establish central telegraphic offices at the post-offices of the principal towns in the kingdom, and to establish direct communication between all such central telegraphic offices and the central telegraphic office in the East Central district of London."

"F. To establish direct communication between the more important of the central telegraphic offices in the provinces, and the central telegraphic offices in the west central, western, and southwestern districts of London."

"G. To establish a direct communication between each central telegraphic office in the provinces and such of the other central telegraphic offices in the provinces as it might be desirable to connect with it."

"H. To open subordinate telegraphic offices at the district offices, sorting-offices, and certain of the receiving-offices in Liverpool, and to connect them with the central office in Liverpool, and in like manner to open subordinate telegraphic offices at the principal receiving-offices in such towns as Edinburgh, Dublin, Manchester, Glasgow, Leeds, Bristol, Sheffield, Bradford, and to connect each group of such subordinate offices with its central telegraphic office."

"I. To open subordinate offices, connected in like manner with central offices, at the money order offices of all places having a population of 2,000 persons and upwards."

"J. To open deposit offices—i. e., offices at which messages may be deposited and the charge thereon paid—at every post-office in the United Kingdom at which no telegraphic office is established."

"K. To permit the pillar-boxes throughout the kingdom to be places of deposit for messages, provided such messages be written on stamped paper."

"L. To require payment for messages to be made in stamps, or by writing them on stamped paper, and to issue special stamps for that purpose."

"M. To make the charge for transmission from any one part to any other part of the United Kingdom, uniformly and without regard to distance, 1s. for the first 20 words, with an addition of 6d. for every addition of ten words or part of ten words, such charge to include free delivery by special messenger at any place within the town delivery of the terminal office when that office is a head post-office, and within one mile of the terminal office when that office is not a head post-office, and to include free transmission by post from a deposit office to the nearest telegraphic office, when the message is so left for transmission, or free delivery by post when the addressee resides out of the limits of the terminal office, and the sender does not desire to pay for a special messenger."

"N. To fix the rate for conveyance by special messenger beyond the limits of the free delivery at 6d. per double mile."

"O. To make arrangements, on the plan of those prevailing in Belgium and Switzerland, for the registration or re-direction of telegrams, and for the delivery of copies."

"P. To give facilities for the transmission of money orders by telegraph on payment of the charge for the message and of a commission, which shall not be less than two ordinary commissions, and under certain restrictions as to the amount to be remitted by any one person."

"Q. To effect a reduction, corresponding with the reduction of the charges for the transmission of inland telegrams, in the tariff of charges for the transmission of messages to foreign parts."

"R. To prepare a telegraphic guide, to be sold at a charge of not more than 6d."

"The period during which telegraphic offices are open daily for transmission of messages would also in many cases be considerably extended."

Perhaps it will render the effect of this scheme the plainer if we quote some illustrations which Mr. Scudamore gives of its practical working:

"I will first take the case of a person residing in a suburban district of London—for instance, Sydenham—receiving a letter from a correspondent in a suburban district of Liverpool by the first morning delivery, and desiring to send an immediate reply, in the hope of receiving a rejoinder from his correspondent by night mail. As matters at present stand, he can send a telegram through the London District and Electric and International Telegraph Companies; but to do this he must walk or send to the telegraph office, and the transmission and delivery of the message will in no case cost him less than 1s. 6d. for 20 words. The cost will increase with the distance of the addressee's residence from the receiving telegraphic office, and in all but extremely urgent cases the labor and the cost combined would deter him from using the telegraph. But if the scheme which I have described were in operation, and if he could confine his message to 20 words, write it on a stamped paper, and deposit it in the nearest pillar-box or deposit office before 12.45 p. m., he would secure its delivery, free of further charge beyond 1s., in any part of the postal district of Liverpool by 5 p. m., which delivery would leave his correspondent ample time for rejoinder by night mail."

"But let us suppose that the resident at Sydenham desires something more than a rejoinder by night mail—let us suppose that he desires his correspondent to leave Liverpool by a train starting from Liverpool at 5 p. m. In this case he might, if the scheme which I have indicated were in operation, take his message to the Sydenham sorting office by, say, 11 a. m., and secure its delivery (for one shilling) in any part of the postal

district of Liverpool by 8 p. m.; which delivery would give his correspondent time to catch the 5 p. m. train."

"Or let us take the case of a solicitor having his place of business in Chancery Lane or in Bedford Row, and being desirous to summon a number of witnesses from the suburban districts of Liverpool, and at the same time to send them money on account of the expenses of their journey. Such a solicitor, if the scheme which I have described were in operation, might not only, by depositing his message at the West Central Office by 11 a. m., have a copy sent to each witness by the 1 p. m. delivery in Liverpool, but might at the same time furnish each witness with a telegraphic money order, and the witnesses would have ample time to obtain cash for these telegraphic money orders before their departure from Liverpool on the same day."

In order to appreciate Mr. Scudamore's plan, it is necessary to add his observations on these instances:

"It will be obvious to all who study these illustrations that in an immense number of cases a service partly postal and partly telegraphic would meet all the requirements of the senders, while it would be much cheaper (the whole cost being covered by the charge for the telegram) than a service partly by special messenger and partly by telegraph. And it will be equally obvious that this partly postal and partly telegraphic service would in a vast number of cases serve as well for the reply to the message as for the message itself. For the transmission of a letter and the reply thereto between Lampeter and London forty-four hours are required; but for the transmission of a message and the reply thereto between the same places, on the partly postal and partly telegraphic system which I have described, only twenty hours would be required. So, again, the course of communication between Fort Augustus and London would, on the plan I have described, be shortened by a period of from two days to two days and a half."

That this combination of telegraphic and postal services would be a great boon to the country cannot be doubted, but it remains to inquire how far it is practicable. The first question to be discussed is, "whether such a system could be carried on without loss to the State?" Mr. Scudamore's calculations, which are indorsed by the Assistant-Controller and Auditor-General, are as follows: He first assumes that under his system the proportion of telegrams to letters would become the same as in Switzerland. This would give an annual distribution of 11,000,000 telegrams. The average price of these would probably be about 1s. 2d., and there would consequently be a gross revenue of about £640,000 a year. On the other side of the account, he estimates the value of the property of the companies at three millions, and, besides, this, £100,000 would have to be expended in the extensions proposed. This would give a permanent annual charge of about £100,000. Subtracting this from the gross revenue, we have left for working expenses £540,000. Now, the expenses of the existing companies are £345,000 a year. The increased business might augment this sum; but, on the other hand, amalgamation would reduce it; and, on the whole, Mr. Scudamore thinks that the total expenses would not amount to more than £404,000. This would leave a surplus of £135,000. Making the utmost allowances for error, there could not, he thinks, be a surplus of less than £77,750.

It appears to us, we confess, that the Company indicate several weak points in this estimate. In the first place, if the objections offered above to the comparison between the number of telegrams and letters be just, the basis of the estimate is destroyed. In the next place, is the Government likely to maintain the telegraphs with the same economy as a company which is able to act as its own manufacturer and contractor? But there is one remarkable point which Mr. Scudamore wholly fails to meet. It must be understood that in Belgium the telegraphic business is of three kinds—"International," or messages received from or sent to foreign countries; "transit" messages, or messages which simply cross Belgium in transit from one country to another; and "inland" messages. Now, even while the tariff in Belgium was a franc per message, there was a dead loss of 2d. on each inland message and the chief profit was made on the transit messages. A similar result has been observed in Switzerland. It is obvious, however, that Belgium and Switzerland occupy a peculiarly favorable position for transit messages.

and that we could not depend on this additional source of revenue. But if so, it would appear by the examples of these two countries that the business must necessarily be carried on at a loss, and experience, therefore, would seem to contradict Mr. Scudamore's theory. Moreover, he seems to have based his calculation on inland messages alone, so that this objection is peculiarly forcible, and he has at least left us in the dark as to the probable expense and return of our "international messages." Of course, if the Government acquire the inland telegraphs from the companies, they will be obliged to acquire some of the "international" lines, and since, in our case, these would be all submarine cables, their expense would be much greater than that of the "international" lines in Belgium. On the whole, the calculation appears to us, at best, incomplete, and it will, we think, be difficult to obtain sufficiently accurate data.

But there are some general considerations adduced in the company's pamphlet which ought certainly to be carefully weighed against the advantages we have sketched. They give an account, for instance, of the series of experiments and improvements which they have systematically carried on, and it may be doubted whether the Government would have the energy or the interest to pioneer in telegraphic science to the same extent. A serious difficulty again arises in the relations between the railways and the telegraphers. At present, the Electric and International Company performs a great part of the telegraphic signalling required by the railways; and in consideration for such services the railway companies grant "way-leaves" to the telegraphic company. Is the Government prepared to undertake this business? If not, it would have, of course, to pay rental to the companies for the use of their offices and grounds, and a considerable sum would thus be added to Mr. Scudamore's estimate of "working expenses." The company next draw attention to a point of no little consequence to ourselves. They have an arrangement called a "Press tariff," under which they convey messages containing news of public interest to all the newspapers of the United Kingdom. "Columns upon columns of important news are thus daily and nightly transmitted to the newspapers at no more cost than the ordinary rate which those papers are accustomed to pay for the most common intelligence—namely, one penny per line. Does the Government propose to make itself the sole means of affording this intelligence?" Supposing they were ready to do so, is it altogether desirable that all the news agency of the country should be in the hands of the Government? But would it be possible for a Government Department to adjust itself to the sudden and exceptional demands sometimes made on the telegraphs in the discharge of this office? The following passage appears to us to suggest considerations of great importance and difficulty:—

"For many years the Electric and International Telegraph Company have had an 'Intelligence Department,' to which a large and experienced staff of editors, reporters, and others is attached, for the purpose of collecting home and foreign news, political, domestic, and commercial, and distributing the same to every point at which such information can afford interest. The clubs in London receive, every half hour, intelligence of the general proceedings of Parliament. The provincial newspapers and subscription-rooms, farmers' ordinaries, and other circles, are supplied by telegraph with news of every occurrence which can affect their interests. A visit to any one of these political or commercial centres will illustrate at once the vast importance, as well as the immense public convenience, of this organization. How does the Post-office propose to deal with arrangements such as these? What security would the public have, under Post-office arrangements, for the early, full, complete, and satisfactory conveyance of intelligence by telegraph? The 'Intelligence Department' of the Electric and International Telegraph Company has very varied duties to perform. Wherever there is any considerable gathering of individuals, whether for a permanent or temporary purpose, the wires of the Company have to be placed in their midst, and special arrangements have to be made for the conveyance of the intelligence arising from the gathering. If Her Majesty the Queen visits any particular part of her dominions, the report-

ers of the Company have to attend and to transmit information of every occurrence during the royal progress. If an agricultural meeting, a musical festival, or a Social Science Congress is held in any part of the United Kingdom, however distant, information of every day's proceedings has to be collected and conveyed. If a public man of mark addresses his constituents or a public meeting, in any portion of the country, the words which fall from his lips have to be reported and telegraphed to the principal newspapers of the kingdom almost as soon as they are uttered. Is it within the province, or the duty, or the business of the Post-office thus to undertake the work of the press? At the present time it is certain that all this information, so important to the public and to the world at large, will be transmitted with the greatest expedition, in the best and most comprehensive form, and at the lowest possible prices. But let the conveyance of such information become the duty of a Government department, and, above all, a monopoly in the hands of a Government department, and it may be considered certain not only that the supply of such information will be curtailed, but that the price at which it will be delivered will be largely and inconveniently enhanced."

It seems, indeed, true that "in seeking to possess themselves of the inland telegraphs, the promoters of this scheme do not appear at all to have foreseen the difficulties in which they were involving themselves—that they were interfering with *all the Railway Communication of the country, with all the Public Intelligence of the country, with the Press of the country, and, above all, with our Foreign intercourse, political and commercial.*" These questions are scarcely, if at all, touched in Mr. Scudamore's reports.

There are several other points raised; but we have said enough to show that if there are great advantages offered to us by this scheme, there are not a few dangers in adopting it, and that there is room for a great deal of discussion before the public mind is fairly made up on the subject.

The Government and the Telegraphs.

From Engineering.

In the preamble of the bill introduced by the Chancellor of the Exchequer, it is recited that "Whereas it would be attended with great advantage to the State, as well as to merchants and traders, and to the public generally, if a cheaper, more widely-extended, and more expeditious system of telegraphy were established in the United Kingdom, and to that end it is expedient that Her Majesty's Postmaster-General be empowered to work telegraphs in connection with the administration of the Post-office."

It is, of course, a self-evident truth, that "a cheaper, more widely-extended, and more expeditious system of telegraphy" would be of immense advantage to the State, merchants, and the general community; but it will not be so easily conceded that all this is to be attained by simply transferring the administration of telegraphs from the present boards of direction of competing companies to a Government official.

Of course it would be quite possible for the Government to extend the lines, and even reduce the prices, since they have not to earn a dividend for shareholders; but that a *more expeditious system of telegraphy* shall at the same time be provided, without making the telegraphy a heavy yearly tax on the country, is simply promising great things, which we have not the slightest reason for believing can be brought about by merely placing all our telegraphic lines in the hands of an official of the Post-office.

A telegraph is not capable of conveying an unlimited number of messages per day, and therefore there is a limit as to the price at which messages could be sent remuneratively on any given circuit, even supposing that the wire was kept in constant work during the twenty-four hours. For such constant use, however, of one wire, throughout the twenty-four hours, we must suppose the messages arriving for transmission in continuous succession, or else *some must wait*. In practice, however, the great mass of messages are given in between business hours, say between ten A. M. and five or six

P. M. Sufficient wires must be provided, therefore, so that this mass shall be despatched within those hours, the wires remaining idle, or nearly so, during the rest of the twenty-four, or else messages must be delayed in order to spread them over the twenty-four hours. It is evident that the first method cannot be adopted at the same prices as the second, since it involves three times the number of wires required for the second. In fact, just as we reduce the price of messages, so we must either decrease the profit or increase the average delay. Assuming that the dividend earned by our present companies, therefore, is a fair one, it is evident that to decrease the price we must increase the average expedition with which messages are despatched, unless we can find some means of actually decreasing the time occupied in sending a message.

Mechanical manipulation, long ago proposed, experimented on, and rather carelessly abandoned, but now perfected by Wheatstone, in his automatic telegraph, is a great step in this direction, and, no doubt, when adopted throughout the principal circuits, will enable a reduction of price to be effected. But this improvement (the benefit of which we shall have whether the Government obtain their bill or not) is entirely a scientific one, and, indeed, as we have shown, the only hope of decreasing the price of telegraphing in England must be by means of scientific improvements such as these.

Now, have we any right to expect that the Government has some great stock of these improvements on hand, ready to be brought into play directly the lines are made over to them, or have we much reason to hope that such improvements hereafter will be more readily accepted by Government officials than by the officers and directors of our present telegraph companies? Does the history of the Admiralty or the War Office give reason to expect that inventors and scientific men will have a freer scope for improving telegraphs when these become a Government monopoly? We think not.

Government departments have not as a rule a character for quick perception of the advantages of any novelty, and we fear that, scientifically, the telegraph will come practically to a stand-still as soon as it passes into the hands of the Government. We shall, perhaps, be lucky indeed if we do not recede; for the grand promises of cheap telegraphs, and with greater expedition also, without any explanation of how this is to be effected, leads us to doubt whether the promoters of the scheme really have any plan in detail, or, indeed, any knowledge of the subject whatever.

We trust, at least, that a select committee will enable the whole design of the Government to be carefully weighed before the country takes the final step of placing our telegraphic system at the mercy of a Government department.—*Engineering.*

A new English invention is an apparatus for employing electricity, in connection with a thermometer, to regulate the temperature of a room. An ordinary mercurial thermometer is provided with a platinum wire inserted in the glass bulb, so as to be in connection with the mercury. Another wire, capable of elevation or depression, is placed at the other end of the thermometer. These two wires connect with two poles of a battery, and forming part of the circuit is an electro-magnet, whose armature control the opening or closing of a valve regulating the admission of hot air. If it is desirable that the temperature of the room should not rise above sixty degrees Fahrenheit, the point of the movable platinum wire is brought to that number on the thermometer. When the mercury registers sixty degrees, the circuit is closed, and the armature of the magnet closes the hot-air valve, until the temperature becomes reduced, when the valve is again opened. Thus a nearly even temperature may be maintained—a very desirable object in hot-houses.

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New York, May 1st, 1868.

Journal of the Telegraph.

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NEW YORK, MAY 22, 1868.

EXTRA EDITION.**The Telegraph Control Bill.**

Justice to a subject which is of such national importance as the absorption of the telegraph system by the Government must apologize for our devoting this number of the JOURNAL so largely to its exposition. It is known that Mr. Washburne has been industriously collecting material from European sources to enable him to inaugurate a similar movement here. We begin to see what that material is. The report of Mr. Scudamore of the English Postal service to government, copious quotations from which will be found in the article from the *London Times* published on our first and following pages is the fruit of many years study, and must be regarded as exhaustive. For the past ten or more years, the subject has been under discussion by the English Postal Officers under different administrations, and the report just made, we must assume to be the conclusions of all the wisdom and ability which have been brought to bear upon the subject.

We regret that we have not yet obtained the complete documents in which the case is presented by government on the one side and the telegraph companies on the other, but we have in *The London Times* so ample extracts of the material portions of these antagonistic expositions, that they supply all the data which appears necessary.

The course of the English government in this investigation has been very peculiar. The companies

have been kept entirely in the dark as to its investigations, and have not been consulted in the preparation of its expositions. Neither have the English companies been invited to a joint consideration of a subject of so great importance to them, and on which they were supposeably, capable of shedding much needful light. The consequence is that the government presents its case copiously but weakly, and the Telegraph Company in the excitement of danger, warms up unnecessarily, dealing out in nervous Saxon its blows on every side, presents many facts which stagger its opponents, but nevertheless fails to close in so sharply with the adversary as to make the truth of its statements fully felt, and the contest is to some extent unsatisfactory.

One of the points made by government is that under a proper provision of telegraph facilities, the number of despatches should approximate the number of letters sent by mail. Of the supposed effect of this provision in Switzerland and Belgium some examples are given. We are unable to see, however, how any such comparisons can be used as a basis of argument except by introducing many other considerations which would properly enter into its examination. It was exactly on some such idea as this that in our own Senate Mr. Gratz Brown, of Missouri, made so many foolish and infelicitous statements. Telegrams were declared to be susceptible of delivery from Washington to New York for 3 cents, when it was within easy power of proof that it cost an average of 8 cents or more for delivery alone. The habits of a people, the nature of its commerce, the position of its centres of population and trade to each other, the postal facilities by railroads, the postal charges, and other influences all affect the solution of such a problem. The Telegraph Company very pertinently exposes the fallacy of the Government premises by reference to one single item, the facilities given by mail to scatter circulars throughout the kingdom, as in America for a merely nominal sum—the American postage being two-thirds of a cent each. Such facilities and the immense employment of them for advertising purposes, renders the comparison utterly preposterous. So that the statement narrows itself down to the simple truism that added facilities, will secure added business. Even this is true only to a limited extent, for where communities are uncommercial, and postal means at all good, no cheapness will induce the substitution of a despatch written briefly and by strange hands for the chirography which carries with it the charm of reality, and the little delicacies of language, without which, intercourse would be cold and undesirable. The telegraph will only be used when the tardiness of the mail interferes with a purpose, and even, if free, would never practically interfere with much which must ever seek the privacy of a personal seal and the protection of the mail bag.

The effect of a low tariff has been ignorantly exaggerated. It has been found that during a vigorous contest with an opposition line between two large cities, the reduction of the tariff to 10 cents per message, did not at all cause the use of the wires which many have so enthusiastically insisted must follow. To get at the merits of such a problem, one must consult the facts of his own case. "How many messages would I send per day, and on what subjects which I do not now employ the wires for, if messages were placed at a quarter of their present rate?" They would no doubt be multiplied, but it would at once be manifest that only in certain cases would the wires be used at all. Of course we throw out of view the question whether any company could sustain itself on such a reduction. That is another question.

But the reduction of rates carries with it other consequences well stated in the article from "Engineering," and which is by far the most intelligent pub-

lished in England on the subject. There must be greater mechanical speed of transmission attained, or a greater number of wires erected, or, as messages unlike letters in a mail bag must follow each other, great delay must ensue unless by some virtuous arrangement of the public to accommodate the government, despatches be brought in at all times as the wires can accomplish the task imposed upon them, and thus utilize the whole twenty-four hours of the day and night. What follows? In the one case greatly increased labor and cost with less pay, and in the other, an added night service which in a country like Great Britain, with limited area and quick railroad locomotion, the mails could far better and more satisfactorily perform.

The partly postal and partly telegraph idea looks well on paper; but, in America, and, we believe, even in England, would fail of successful employment. To places unreached by telegraph in America, the mails are infrequent, and the fact of the absence of telegraph facilities proves the existence of either a very small or of a very uncommercial community. Government could not do more in this respect in America than the Telegraph Companies, who receive messages to all points whether reached by telegraph or not, in the latter case by the simple addition of the charge for postage, or, when desired, for the cost of an express messenger. The vast range of our domain renders it impossible to establish a uniform tariff applicable to every place, so that stamped paper could be left at country towns for mailing to adjacent offices. To provide stamps of various denominations at such places is indeed possible, and might, at times, be convenient, but Telegraph Companies can do this as easily as Government, and in this there is no basis of a claim for greater efficiency or for any such advantages as would justify the change. It can be accomplished most easily by leaving with each Postmaster, or any other person, in small places where a telegraph office cannot be sustained, a tariff list from which he can collect on messages left with him, enclosing messages and amount to the nearest office and deducting his commission.

Just at this point of our writing, the synopsis of Mr. Washburne's bill for a Government Telegraph between Washington and New York comes to us.

The Bill to Construct a Telegraph Line from Washington to New York.

The bill introduced by Representative Washburne, of Illinois to-day, for the construction of a Government line, under the direction of the Post Office Department, between New York and Washington, provides:

That the Postmaster General shall within thirty days advertise in two newspapers in Washington, Baltimore, Philadelphia and New York proposals for constructing a Telegraph line from the Post Office in Washington to the Post Office in New York, by way of Philadelphia and Baltimore and such intermediate stations as he may designate. The Postmaster-General shall, at the time of opening proposals, also receive and examine any proposals from the proprietors of any existing line of telegraph for the sale to the United States of the entire line of such Telegraph between any two of said cities or for the entire line herein provided for, with all the franchises, rights and privileges connected therewith. The proposal of the lowest bidder is to be accepted and the work is to be of the best character. Power is given to the Postmaster-General to establish Telegraph stations at as many Post Offices along the line as in his judgment the public interest, with due regard to economy of administration, shall require, and shall employ in the business, as far as practicable, the employees of the Post Office, and also special Telegraph clerks, when necessary, at the customary salaries, and employ a general superintendent, who shall be a practical Telegrapher at a salary not exceeding \$3,500 per annum. No message shall be sent unless stamped with a three cent postage stamp. There shall be a uniform rate for the transmission of messages without regard to distance, of one cent each word, exclusive of the address and signature; but no message shall be sent for a less sum than ten cents, and there shall be charged two cents for the delivery of each and every message; provided the Government shall be entitled to send and receive all its messages over the line free of charge, and shall have priority in sending them; and provided that when less rates than are herein provided shall be

charged by any other Telegraph line between the same points, the Postmaster-General may reduce these rates to conform thereto; and provided further that he may direct that news telegrams for publication by newspapers shall be transmitted at a reduction not exceeding fifty per cent on these rates. Another section provides that persons tampering with despatches or making an improper disclosure of their contents shall be punished by a fine not exceeding \$1,000 or imprisonment not to exceed one year, or both, in the discretion of the court. The sum of \$75,000 is appropriated to carry out the provisions of the act.

The bill was referred to the Committee on Post Offices and Post Roads.

Here is a proposal for the erection of a government opposition line connecting the chief cities of the seaboard at one-third of the tariff which even the English Government propose to charge on despatches should the Telegraph system be allowed to come under its management. Its design is simply destructive of private companies. It is based on no ability to perform better service. It is predicated on one of the grossest errors ever presented to an intelligent people, that Telegraph Companies have selected only the chief cities for the opening of their offices, and that the whole system has been uncertain, expensive, and limited. It charges existing companies with infidelity to their trusts, rendering private and public business unsafe in their hands. "We see," says the report "the system in this country in the hands of rival companies, anxious only for extending their lines to prominent places where profits are to be secured, and indifferent to the public convenience!" We hesitate to use the word which should characterize such a statement. There is scarcely a town in any State, of any activity, and where a reasonable prospect has been given of paying expenses, which is not now, or in the near prospect of being thus supplied. It is true that the companies which have recently sprung into competitive existence, have based their success on attention solely to the business of large cities and a few active towns. It is not true, it is eminently false, when uttered respecting the older companies now united, so as by greater economy of management to make the widest application of the system possible, and whose offices are everywhere. How strange is such a statement in the face of facts like the following:

The Western Union Telegraph Company keep open over two hundred offices which are not self-sustaining; over one hundred which do not average over one dollar per month, as many as two hundred which do not average five dollars per month; and so on up. Its language is to all comers, to all towns, "show us that expenses will be met, and an office will be opened."

But what is not true of the company referred to, is true of the proposal of Mr. Washburne. He selects the choicest territory for his scheme, the largest cities for his philanthropic experiment. He adopts a tariff which cannot meet expenses unless by salaries such as in England and Belgium and Switzerland, render operatives mere nonentities, poor, hungry and spiritless. If such a system is what this great nation wants—women earning \$2.33 cents a week, and men \$4.00 to \$5.00 a week, men, women and boys who dare not breathe a scientific thought or propose an improvement lest they magnify their office, and enhance their personal value, then we say to the 5,000 intelligent operators now filling worthily their several posts, and sustaining worthily positions in social life, be off to new engagements and let this great wash of a false philanthropy waste itself in a service which amid the false influences of political control, and a management shorn of all the stimulus of interest or enterprise, must lower the pulse of the whole nation in that which, notwithstanding all the statements to the contrary, has better represented our national enterprise, has with quicker and freer step traversed our entire civilization, than any of the undertakings which have set their mark on the American name and fame.

Take the city of New York for example. The Telegraph Company selects a central office for its

main business. Into this enter all its distant wires touching Nova Scotia, Montreal, Chicago, New Orleans and often San Francisco with a single flash. Three blocks distant, however, a knot of financiers are transacting business. They cannot spare three minutes to walk to the central office, and the company opens one for them in their own room. A few blocks further a circle of men are selling and buying wheat; the Telegraph Company plants an instrument which connects them direct with all the grain centres of the continent. In another corner one hundred men are yelling out the rates of gold and want to whisper rises and falls to their comrades along the seaboard; the telegraph company gives them half-a-dozen wires to reach them all. There is a hog market in the suburbs, and the drovers have wires given them. Oyster mongers, fish venders, butchers, negotiators of vegetables, all have their offices assigned them. Every hotel of importance has its wire. The Union League Club asks a wire and has it. Tammany will have its own. A. T. Stewart has his wire, and Clafflin his. Every interest which human ingenuity rears to prominence, every community which passing events focalizes into excited masses, all have the swift wings of the telegraph put at their control. No less than seventy-three offices are thus provided for the permanent convenience of the public in the city of New York alone. So proportionally in all.

To accommodate the newspaper interest also a number of wires, otherwise unneeded, are kept up at great expense. A despatch of 10,000 words are presented at the Washington office which must reach New York in an hour, and it is done by giving half a dozen wires to its transmission. A wire is wanted at the Reporter's Gallery, it is given; at the White Mountains for a month or two, it is given; at the Light ship, it is given. On every side wants are met promptly and liberally.

Is it of any use to ask if Government could do all this? No! It is not inherent in the usual nature of its service. Government is a crocodile that cannot turn its body to the exigencies of such a service. It should at least neither defame the organizations which have achieved all this, nor by the selection of a rich field for its own experiments seek to impoverish and enfeeble them in their well appointed enterprizes and designs.

Instead of the popularity claimed for European Telegraphs under Government control, the censorship to which messages are exposed is a subject of bitter execration. In France, in Spain, and in other countries the abuse of this power is notorious. The directors of the Paris Bourse have the first reading of every financial message. That it would not be equally odious in America we have no right to presume. In all periods of political excitement, with all the offices in the charge of partisans, Government control would be simply hateful. Official position with us represents a reigning party, not posts of labor assigned for simple merit and made permanent on account of simple capacity. The political element would infest of necessity, every Telegraph station, and the friends of the reigning power be more or less admitted or be supposed to be admitted to its secrets. No political opponent could trust a confidential message to its transmission, and even if fidelity were possible, the fear of betrayal would be unavoidable. No sane man will doubt this. Actual purity of administration would not remove this dread. On the other hand we defy Mr. Washburne or any Committee which Congress may appoint, to prove the malfeasance which the preamble of Mr. Washburne's bill so broadly and sweepingly charges against Telegraph Companies, except in a degree so exceedingly exceptional, as to challenge public admiration for the general purity which has characterized the execution of their high trust.

We have authority for saying that the Swiss charge of half a franc per message does not meet

the expenses of the Department, nay, that the system is worked at heavy loss. All the Swiss railways belong to the Government and their agents, subject to service without additional pay. Postal service, by reason of the mountainous character of the country is necessarily slow, and the telegraph proportionally valuable.

The people are separated into Cantons, and their intermingling very limited. Their correspondence is confined to little more than that required by the necessities of commerce. The most munificent patrons are the tourists, of whom there are always multitudes, and the maximum of the revenue is derived from the through business from Italy to Northern Europe. Railway officials build its lines, carry on its repairs, watch, work, and manage them. In all these respects no parallel exists in America. Then again her offices only number 252. In the State of New York alone there are over twice that number; those of the Western Union Company alone, being over 500. The Swiss messages from all the 252 offices amount to three fourths of a million per annum; those of a single office of the Western Union Company, sent and received, to 1,400,000 per annum, exclusive of over half a million more passing through it to other places. A population consisting of isolated Cantons, separated by vast mountain ranges, with limited social intercourse, with slow postal arrangements, with everything to render the telegraph a needed appendage to the other means of communication, cannot supply any proper analogies to a land like either England or America where all the conditions are unlike and peculiar.

It is gravely stated in the preamble to the Washington bill, that in Great Britain, after a trial of twenty years, "the people of Great Britain, with singular unanimity, demand that the telegraph system be placed under the control of the postal authorities." We deny the fact. The public papers entitled to any consideration practically condemn it. The London *Times* demands more careful examination of the facts. The "Engineer" and "Engineering," the two ablest scientific papers in the world, condemn it. The only thing which can save it from utter failure is that excellence of the English postal service which no man can claim to have a counterpart in America, and which makes possible there, as it cannot here, the mixed telegraph and postal service proposed.

In England, however, Government does not attempt to destroy private interests as Mr. Washburne's bill proposes to do. Lines will be bought at fair values, not crushed out by Government pressure. Yet we have little faith in the lines of Great Britain passing from private control, and less of any extended grasp of them here, unless new conditions arise not now within our comprehension.

The propositions of the English Government are, in one respect, a singular revelation of an absence of centralizing wire arrangements by English Companies which we regard here as necessary, and which we cannot believe does not form a part of the English system. It seems very strange also to see Government proposing to supply every town with a population of 2,000 with telegraphic facilities, and that from 5,000 to 10,000 offices may thus be opened and iron boxes for smaller ones, as an added boon, when the Company claim that there are only 1,041 parishes in the Kingdom with a population of 1,500 unsupplied with telegraph facilities. What kind of wild data can have made such a statement possible? No, we cannot wonder at any such displays of official ignorance after perusing documents written by those among ourselves, who have every facility for knowledge of what they write, and yet whose public announcements are devoid of the courtesy which should characterize every attempt to interfere with industrial pursuits, and of truth itself.

Should Mr. Washburne get his line built from

Washington to New York, which is to be built at a cost of \$75,000, we shall see what "he will do with it." Will he give the public of New York seventy-four offices at which to grasp the warm hand of the Illinois Congressman and deposit its ten cents and postage stamp? Will he give Philadelphia thirty-five such offices, Baltimore nineteen, Washington sixteen? Or must we go to the Dutch Church on Nassau street and take our chances in the long file of clerks and anxious ones who wait in its filthy corridors for their chance to buy stamps, counting upon their silver watches their chance of losing the mail? Will this \$75,000 line ever give us, as now, a page of close newspaper matter in an hour?

The great trouble with all these efforts to do good service for a suffering public, arises from two fundamental errors: 1. Despatches are regarded as letters with which a bag can be filled, and, whether many or few, can be bundled along to their destination together with no greatly increased cost, and with no material additional consumption of time, however multiplied. 2. That a day is twenty-four hours when it is for practical purposes only five or six. And there is no use proving these things to our grand public benefactors, for these are the facts which would prick the bubbles by which fame ascends, and which, as they must burst sometime, we may as well give all the liberty of space and air they may demand.

In the matter of accountability also, the public have rights which will not unwillingly be surrendered. True, danger has obliged Telegraph Companies to claim a limitation of their responsibilities. There is a limitation demanded by the very nature of the business and the extraordinary elements employed in its transaction. But there is a measure of responsibility in damages for failures or negligence constantly made to be felt, and which so affects the possibilities of the success of the system, as to cause the most sleepless vigilance, a constant care and anxiety such as no other pursuit on earth evokes. All men know that in Government hands, such a pressure would practically cease. Why, it is not necessary to inquire; the fact must be conceded even in advance. The whole experience of the companies who connect in business with the European Government telegraphs prove the utter uselessness of appeal even in cases of the most flagrant neglect. A claim presented against them, even for a lost message, is met with a dumbness as profound as if made against the oyster beds of Chesapeake Bay. It would be not less so here.

We must be allowed to say in conclusion that this scheme in which, while charging that existing companies fail to reach the poorer and outlying distant communities of our land, selects for its own operations the most productive and best provided section of the entire country, is a thrust at private rights and a method of enterprize unworthy of the nation, and for which the money of the people should not be used. Only one thing would reconcile us to its adoption, and which if adopted, will induce us at once to surrender all opposition. Let the line be built and maintained by taxing the cities it connects or the men who vote for it. With such a rider attached to the bill, this great philanthropic design will vanish into thin air, as do the soap bubbles of delighted children as they evaporate from their sight to be seen no more forever.

From the New York Evening Post.

Government Going into Business.

In the House of Representatives on Monday, Mr. Myers, of Pennsylvania, introduced a joint resolution, which was referred to the Committee on Appropriations, "appropriating \$2,500 to defray the necessary expenses of experiments by Seth Green in the artificial propagation of shad and other fish in the rivers of the United States—the money to be ex-

pended under the supervision of Francis E. Spinner, Treasurer of the United States."

The business of artificially propagating fish already engages the capital and attention of several persons in this country; and will no doubt attract more and more capital, as it is developed, and succeeds in supplying the market with a necessary and favorite food. Mr. Seth Green, was we believe, one of the first to undertake the artificial breeding of fish in this country; but others have been quite as successful as he, and we can see no reason why Congress should give Mr. Green \$2,500; or if it does this, why it should not present a like sum to every other person engaged in the same business.

But, on the same day, Mr. Washburne, of Illinois, introduced in the House a bill for the construction of a Government Telegraph Line, under the direction of the Post Office Department, between New York and Washington.

Referring to the bill as given elsewhere: Here we find the Government, which already has about as much as it can do to collect revenue and see justice done, asked to go also into the business of telegraphing. It is not only to set up an opposition Telegraph line, but it is to undersell the present private corporations; and thus the whole power and capital of a Government of forty millions of people are to be openly pledged to drive out of business, if they can, a private company of citizens.

Why should the government set up and manage telegraph lines? Has it more money in the treasury than it knows what to do with? Are the people anxious to be taxed more heavily? Have the government officers at present employed so much idle time on their hands that they need to manage telegraphs to keep them busy?

The bill proposes that the government shall build and own a telegraph line between Washington and New York; but does any one imagine the job will stop there? Why between Washington and New York? Will not Boston also demand a government line; and New Orleans, Charleston, Cincinnati, Chicago, San Francisco, have not all these, not to omit Toledo, an equal right with Baltimore or Philadelphia to a government telegraph line?

Moreover, if the government should go into the telegraph business, why not into the express business also? The Postmaster-General now sends letters, therefore he ought, according to the friends of this project, to send also telegraphic despatches; so, as he carries small parcels, he ought on the same grounds to go into the express business. In the same way, as the Secretary of the Interior surveys and sells the public lands, would it not be well to have him also fence them, plough them, plant them with corn and wheat, or perhaps with oranges and bananas? So the Secretary of the Navy has a number of steamers under his control. Why should he not undertake the conveyance of passengers and goods from one port to another, with a provision that he shall always charge a little less than any private shipowner?

Why is it not far better to leave all these affairs to be conducted by private enterprise? Are the people so prosperous and so lightly taxed that they would like to pay the cost of telegraph lines all over the country? Are government patronage and office seeking so excellent and elevating that it is useful to increase both enormously, by adding largely to the number of men employed by the government? We have now a government Post Office, and everybody who wishes to send a letter in a hurry employs a special messenger, or a private dispatch post; is it likely that the government telegraph will be better served than the government postoffice?

It is quite natural that persons who have for some years urged what is called "protection," that is to say, government favoritism of particular interests at the expense of the whole country, should also favor

the establishment of all sorts of enterprises by the government. But we suspect that the people, who already pay as heavy taxes as they can bear, will not tolerate the imposition of new taxes, for such absurd and unnecessary purposes.

From the New York Tribune.

The project for a National Telegraph line between New York and Washington, to be owned and controlled by the Government, does not commend itself to our favor. We do not see what the Government has to do with enterprises of this sort, nor has its success in carrying the mails been such as to encourage it to attempt any more labor of the same character. All such work had better be left to private corporations, who will do it more cheaply, promptly, and honestly than we can hope to ever have it done by public officials. If the Government is to carry messages and letters, why should it not carry other things? Why should not the Secretary of the Interior control all the railway lines, and the Metropolitan Police have a monopoly of the New York market-expresses?

Death by Electricity.

To the Editor of the Chemical News.

SIR: I perceive you have a paragraph on the above in your last number of the *Chemical News*, being an alleged new form of capital punishment, by a writer in *Harper's Weekly*.

I beg to inform you that I am the original proposer of the above; in June, 1863, I suggested to the Conservateur des Abattoirs a Paris this method for slaughtering cattle; through insufficient address, this letter was returned to me by the "dead letter office." February 17, 1865, you published my suggestion in the *Chemical News*, page 84.

In May, 1866, the Royal Society for the Prevention of Cruelty to Animals wrote to me that "they will be glad to appoint a deputation to attend any experiments I may desire to make, and that they will procure the permission of a butcher for the trial." This fell through because I had neither the apparatus nor the time to carry it out.

In 1866 I proposed this scheme to His Grace the Duke of Richmond, to be used instead of hanging, in capital punishment, conjointly with the suggestion that executions should take place in private, for which I gave my reasons why I considered it more expedient than the present mode. I also used the following words: "Simultaneously with the shock, the wretched being would pass into eternity without a pang."

I have condensed my letter as much as possible, and in conclusion beg a place in your journal, in common fairness to myself.

I am, etc.,

CHARLES N. ELLIS.

WOLVERHAMPTON, April 29, 1868.

The Gold Medal to Cyrus W. Field.

A bronze copy of the gold medal to be awarded to Cyrus W. Field, by the Act of Congress, has been received at the Treasury Department, and was today exhibited by the Secretary at the Cabinet meeting. The model was designed by J. Goldsborough Bruff, of the Treasury Department, and was executed at the mint at Philadelphia. It is regarded by the Secretary of the Treasury, and competent judges, to be superior in design and execution to any other medal ever produced in this country, and is, of itself, evidence of the present efficiency in the artistic department of the mint.

THE Office of the East India Telegraph Company has been removed from 55 Liberty street, to 23 & 25 Nassau street, New York.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

J. D. REID, Treasurer.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

Western Union Telegraph Company.**BOARD OF DIRECTORS.**

Moses Taylor, New York.	O. H. Palmer, New York.
E. D. Morgan, New York.	Hiram Sibley, Rochester, N. Y.
W. E. Dodge, New York.	D. A. Watson, Rochester, N. Y.
Francis Morris, New York.	Isaac Butts, Rochester, N. Y.
C. Livingston, New York.	B. R. McAlpine, Rochester, N. Y.
E. S. Sanford, New York.	G. H. Mumford, Rochester, N. Y.
W. Orton, New York.	E. Cornell, Ithaca, N. Y.
N. Green, Louisville.	J. H. Wade, Cleveland, O.
D. N. Barney, New York.	G. Walker, Springfield, Mass.
W. G. Hunt, New York.	R. S. Burrows, Albion, N. Y.
Geo. Jones, New York.	Alfred Galtner, Cincinnati, O.
John J. Cisco, New York.	John Butterfield, Utica, N. Y.

Le Grand Lockwood, New York.

OFFICERS.William Orton, *President*.

Hiram Sibley,

N. Green,

B. R. McAlpine,

*Vice-Presidents.*O. H. Palmer, *Secretary and Treasurer.*W. H. Abel, *Auditor.*R. H. Rochester, *Assistant Treasurer.*Marshall Lefferts, *Engineer.***SUPPLY DEPARTMENT.**William Hunter, *Superintendent of Supplies and General Purchasing Agent, New York.*A. H. Watson, *Storekeeper, New York.*M. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.***CENTRAL DIVISION.**Anson Stager, *General Superintendent.*

Residence, Cleveland, Ohio.

ASSISTANTS.*Superintendents of Districts.*

	<i>Residence.</i>
District 5—E. P. Wright, - - -	Cleveland, O.
" 6—T. B. A. David, - - -	Pittsburg, Pa.
" 7—George T. Williams, - - -	Cincinnati, O.
" 8—John F. Wallick, - - -	Indianapolis, Ia.
" 9—R. C. Clowry, - - -	St. Louis, Mo.
" 11—W. B. Hibbard, - - -	Omaha, Neb.
" 12 J. J. S. Wilson, - - -	Quincy, Ill.
" 13—E. D. L. Sweet, - - -	Chicago, Ill.

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" 3—James S. Bedlow, - - -	Portland, Me.
" 4—George W. Gates, - - -	White River Junction, Vt.
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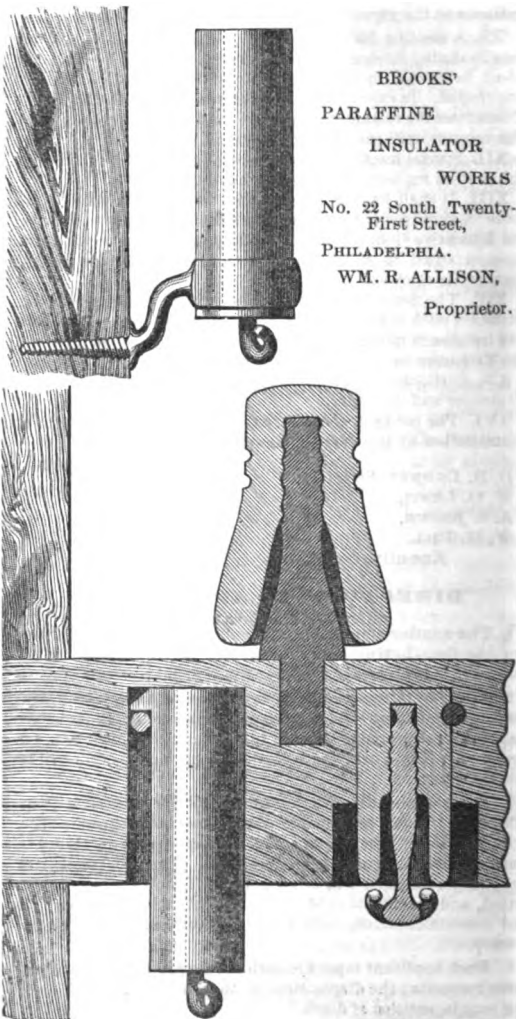
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JOURNAL OF THE TELEGRAPH.

NO. 14.

NEW YORK, JUNE 1, 1868.

VOL. I.

WE find the following on our table, and hasten to give it to our readers.

HIGHLY IMPORTANT.

Congressional Grocery Control Bill.

Whereas the system in this country "of providing the people with the necessities of life is in the hands of grocers, anxious only to extend their 'business' whence profits are to be secured, and indifferent to the public convenience," and, whereas governments are established for the good of the people, and not for the enriching of one class at the expense of the masses, and whereas the majority of the people are consumers, and therefore the victims of the aforesaid class of grocers, who grow rich at the expense of the rest of the community, and, whereas the government by its capital and exemption from taxation can defeat all private enterprises, and thereby supply the poor people of this country at less than the cost of said articles to said grocers, and, whereas the post-office department carries parcels for less than any Express company, therefore, be it enacted that the Post-Master General advertise in two newspapers in Washington, Baltimore and New York, proposals for establishing grocery stores in each of said cities. The Postmaster-General shall at the time of opening proposals, also receive and examine any proposals from grocers having existing groceries for the sale to the United States of the entire stock and fixtures of such groceries, together with the good-will of their said business. The proposal of the lowest bidder shall be accepted, and his stock is to be of the best character. Power is given the Postmaster-General to establish corner groceries in each and all of said cities, as in his judgment the interests of the public shall require, and shall employ in the business as far as practicable the employees in the Post office, who shall when not engaged in distributing letters make themselves useful in selling groceries at less than cost prices. There shall be a General Superintendent, who shall be a practical grocer and good politician, at a salary of not less than \$3,500 per annum. All goods purchased at said groceries shall be sold at one-half the wholesale prices of similar articles, and shall be paid for in stamps. No quantities of less value than two cents shall be sold at said corner groceries, provided nevertheless that all supplies for the government officials and their friends shall be furnished free, and their wants shall be first supplied, and, provided that if any grocer or any combination of grocers shall attempt to compete with said government groceries, it shall be the duty of the Postmaster-General forthwith to reduce his rates to conform thereunto, and use the public funds to crush individual enterprise: and the sum of \$750,000 is hereby appropriated to carry out the provisions of this Act, and such further sums shall be added thereto as may be requisite and necessary to carry into effect the aforesaid benevolent scheme to protect the poor people of our large cities from the cormorants who are so indifferent to the interests of the poor as to keep store for the purpose of gaining a livelihood.

The above bill will supply places for all who are

in want of office, it will provide the poor with food at the expense of the public, it will meet the wants of the masses who need food at less than cost price, and make them more comfortable in their condition. It will not be subject to the objection of having their plans and purposes all known to officials like the espionage of the Telegraph, and mistakes in selling groceries will not subject the people to the loss entailed by a mistake in telegraphing, and though politicians are proverbially impracticable, careless and lazy, the masses will have the means of ascertaining their fidelity, and will by their clamors make them industrious in supplying their wants. There will be less letter writing and more buying of groceries at these government stores. Further, we are an agricultural people, and this enterprise of Uncle Sam will compel the people to till the earth if they wish to escape starvation, instead of engaging in commercial pursuits, which do not increase the productive wealth of the country, thereby we shall fulfil the destiny of man, and eat our bread by the sweat of our brow.

New Magnetic Motor.

The practical working of a new electro-magnetic motor was exhibited yesterday afternoon in the lecture room of the College of the city of New York, Lexington avenue and Twenty-third street. It is the invention of Laban Clarke Stuart, and it is claimed that it will produce a power which, in various ways, can be used to supply the place of manual labor. Professor Doremus explained to the large audience which had assembled to witness the experiment, the principle of the invention, and how electricity was made available and utilized in the matter. A series of magnets were longitudinally arranged in an armature, or open case, about three feet long, so that they could be connected at pleasure, by a wire, with a battery in the basement, which consisted of forty cups. When the current was turned on the magnets were so ingeniously placed in connection that they revolved rapidly like an axle. The current was continuous, provision having been made to avoid the inconvenience of breaking it in order to produce motion. This magnetic axle, so to speak, turned a small wheel, and the wheel, which was only about seven inches in diameter, worked the piston rod of a pump by which water was raised nine feet. It would be rated in the market at a quarter-horse power, but it is not actually so much. It can be increased however, in proportion to the extent of the battery and the size of the magnets used. The cost of working the motor exhibited yesterday is fifteen cents an hour. Professor Doremus said it is in advance of anything of the kind which has yet been produced, and can be turned to practical account in various mechanical operations.—Sun.

In order to approach the railway bridge over the Mississippi, connecting Dunleith with Dubuque, the Illinois Central railroad have found it necessary to undertake the boring of a tunnel 900 feet long, through solid rock. This formidable undertaking has been left to the Rock Island contractors, and they have already commenced operations.

Correspondence.

The Profession.

To the Editor of The Journal of the Telegraph:

SIR:—It has always appeared to me to be a subject for regret, that the personal experiences of Telegraph operators, experiences gained by years of laborious application to their business, should be suffered to go unrecorded, and the profession be without their possessions. In common with the great masses of Operators, I was placed in charge of an office, when I was utterly ignorant of the duties required of me. Of even the most elementary truths in the science of electricity I was totally destitute, and the sum total of my acquirements in the art of telegraphy, consisted in my capacity to send or receive messages, and a knowledge of the mechanical structure of the key, which in one of my curious moments, I had completely analyzed. Not having had the advantage of a previous scientific education (and how many young operators do have?) I found the acquisition of information in regard to my profession, to be truly a "pursuit of knowledge under difficulties." The entire absence of any book which could be taken as a Manual of the Morse Telegraph, together with the fact that there was then no periodical devoted to Telegraph, left me no way, however willing to "live and learn."

These early experiences of mine have been recently brought to my mind, and it has occurred to me that a few suggestions through the columns of the *Journal*, might be productive of some good.

The profession of Engineering, of which our own is a branch, has long had periodicals devoted exclusively to its interests in the collection and distribution of facts and figures respecting the art; in addition to which Engineers have formed together numerous societies, where the members may exchange their experiences; the records of which are published yearly. The consequence of all this is, that no engineering work of any prominence in any part of the world, has been executed for years without a full and circumstantial account of it being published, and in the possession of all who are interested.

Telegraph Operators have no such societies, but we have the *JOURNAL*, and I am confident that you, Mr. Editor, will refuse admittance to no article, however humble its pretensions, which relates the result of experience in that part of the profession of which it treats. Of the many thousand readers of the *JOURNAL*, there are few who could not communicate something which would be valuable, while there are many whose experience would be a very mine of treasure could they but be induced to bring it to light. I will not occupy your space with an unnecessary amplification, but what a store-house of information would be the *JOURNAL* when it should constantly record the daily observations of Operators all over the country! If of nothing else, at least of the detection and location of unusually different "crosses" "escapes" "grounds" and faults of all kinds. Details of the effects of atmospheric electricity; results of experiments with batteries, instruments, &c.; account of construction of lines;

statements of observed facts which are not understood, and which probably could be explained by another, &c.

But I feel that if I do not close abruptly I shall grow tiresomely long, and after all each Operator is by far the best judge of what he can speak of, and cannot possibly derive benefit from any suggestions in the matter from

your most obedient servant,

T.

St. Louis, May 8th, 1868.

Dear Journal:—During the past few days the weather in this section of the country has played all sorts of pranks, varying from extreme heat to heavy thunder storms and whirlwinds which annoy the public generally and the telegraph fraternity in particular. Yesterday was extremely cold and blustering with an occasional shower. Omaha reported a heavy snow storm west of there, on the W. P. Road, blocking up trains, &c. Just think of snow in May. It sounds as unnatural as strawberries in December, but not half so pleasant. This morning, however, old Sol is out radiant as ever, and there is every prospect of delightful weather for a week or two.

It is understood here that the W. U. Company have made arrangements to construct a new line on the St. Louis and Iron Mountain R. R., from the end of the present line at Pilot Knob to Columbus, Ky. The Railroad is not finished, but is being rapidly constructed, and it is hoped that another year will give St. Louis a direct Railroad and Telegraph connection with the South by this route. The same company has also commenced work on a new line on the Madison County Railroad from the Junction of the St. Louis and Indianapolis Railroad to Edwardsville, Illinois. This line is built under contract with and along the line of the Railroad.

Edwardsville is a flourishing little town of four or five thousand inhabitants, but has never yet had telegraph communications. Its residents are of course highly pleased with this arrangement.

Johny Dwight, one of the finest telegraphers in the United States, paid us a visit a week or two ago. Many of your Eastern readers will be glad to hear he is the picture of health. Mr. E. H. Brown, our very popular manager, has been granted leave of absence for a short time, to attend a Baptist Convention at Baltimore, Md., to which he has been sent as a delegate from St. Louis. Mr. Brown's responsible and laborious duties as manager of this office, do not prevent his taking a very active part in Church affairs, and for some years past he has had charge of a large Sunday School.

W. H. Monro, late manager of the Topeka, Kansas, office has been transferred to Fort Sedgwick. W. E. Vigus succeeds Mr. Munro at Topeka. George H. Crain has been appointed superintendent of a division of the North Missouri Railroad in addition to his duties as railroad telegraph superintendent. Mr. Crain is quite a young man and until recently was an operator on the line which he now has charge of.

It may be well to observe here as an incentive to operators, that among others who have worked their way up from the lowermost round of the ladder, are the General Superintendent of the Illinois Central railroad, who worked for a number of years on the Caton lines, and was recognized as a first class telegrapher; and the Vice-President of the Cincinnati and Indianapolis road, who for a number of years "pecked brass" in the Cincinnati office of the Western Union Company. One of the division superintendents of the Mo. Pacific road is also an old operator, who worked for quite a while on the Ohio and Mississippi lines. Another division superintendent of this road has learned to operate and has had their wires connected with instruments at his residence on the road. The assistant superintendent of

the Southwest branch railroad of Missouri, has also learned to telegraph and can transmit dispatches, as can the general superintendent of the Iron Mountain road, who has a paper instrument in his office.

Speaking of these old fashioned instruments, a conundrum has just struck me. Not having substance enough about it to strike it back, I'll do the next best thing and inflict the punishment on your readers. "Why is a paper operator like an illiterate stranger sending a telegram? The one receives by register, the other registers by receiver." As Pat remarked, "If it aint good, it's original."

Stanton who is sitting at No. 4, wants to know "why he is like the *N. Y. World*?" Receiving no reply, he has the audacity to answer, "Because I am trying to raise Seymour!" Stewart slyly remarks, "it's hard work." VOYAGEUR.

Discharging Operators.

To the Editor of the Journal.

For the last nine months we have been watching the progress of your valuable paper. We cannot help from recognizing its benefit to "Telegraphers" and hope its success may continue. But, there is still something which might be added. From what we see of your paper, we are led to believe it is published for the benefit of the operators and the company. We make the following suggestions: 1st. Whenever an operator is dismissed from the service of the company for dereliction of duty, or any other charge made by his Dis't. Supt., let him (the operator) have a chance through your valuable paper of vindicating himself. This is nothing more than an executive officer would ask in case he was removed. 2d. In case the Dis't. Supt. sustains himself before his Gen'l. Supt., let the complaining operator be discarded from the profession, and *vice versa*. When we take in consideration the extent of the W. U. Company at this date; imagine the power of a District Superintendent, who may for some petty spite not only refuse to give him a letter of recommendation, but even refuse to extend the courtesy of his line to an operator, who, he (the District Superintendent) may have thrown out of employment. And again, telegraphers as a class are now verging on old age, i.e., those who are old in the business—and it is now too late for them to learn another profession. These matters may appear unimportant to a man who has a good position, yet to one who is out, it is a matter of very great importance. From what we know of you, we are satisfied you are working for the common good of the science and employees thereof. Our earliest recollections revert back to you as one who always encouraged us in our boyish days as a messenger.

Yours, ZTLOV.

Corbandoles, Montgomery
Co., Tenn., March 25, 1868.

THE New York State Association of Editors and Publishers will hold its next annual Convention at Watkins, on Thursday, June 25th, 1868. The annual address will be delivered by the Rev. Thomas K. Beecher, of Elmira, and a practical lecture given upon the mechanical part of the printing business and the general management of a country newspaper, by Marcus H. Rogers, Esq., of the *Berkshire* (Mass.) *Courier*. The second day will be devoted to an excursion on Seneca Lake, and a visit to the celebrated glens in the neighborhood.

In a letter from Paris, the following statement is made in reference to the Cooke automatic instrument. "In a practical experiment by competent persons, there was but one error in 15,000 words, which were set up ready for printing at the rate of 14½ words per minute. The rate of transmission is an average of 80 messages per hour, although capable of sending 120.

Lady Operators.

MR. EDITOR: Your "typo" makes me say *human* emigrants in my last, instead of *German* emigrants! He must have been studying the "humanities."

The practical hint of your correspondent, "W. W. K.," in No. 11, "puts me in mind of a little joke" sometimes played off by messengers. I mean, collecting twenty-five cents or so, more than the charges, or collecting charges, when the message was prepaid, of course pocketing the "sum of the difference."

It is very annoying to have an acquaintance return home, and ask you why his message had to be paid at *both ends*! But "such is life." Now, I think it might be prevented, by using two kinds of envelopes for delivering messages. On the face of those used for paid messages, have printed in plain type: "*This message is prepaid. No charges for delivery.*" On those used for "collect" messages, have printed: "*Charges on this message are ———. Do not pay the messenger more.*" If the recipient could read, and *did* read those notices, he could not well be "bled." Of course, in "collect" messages, the amount to collect would be plainly written on the blank space. I am very glad Mr. Editor, to see you take up the cudgels in defence of "Lady Operators." I think it is a poor indication of the "pluck" of our fraternity, to see a lot of six-footers (yes, some six foot three *and a half*) put their heads together, and say, "We do not consider a woman capable of becoming a good operator." We might say, in answer, "and if not, why not?" Because they won't give her a chance. But I don't think it is necessary to combat their assertion at all. Supposing (which I don't) that a lady, with the proper education and experience, could *not* become a proficient in the art, what need have the said six-footers to bother their heads about the matter? They are not asked to employ and pay them. It is the *Company* who must run that risk, and surely we must allow them to do their business as seems best to themselves. The true reason of the opposition is easily seen, and that is, the knowledge that lady operators can do the work cheaper than the sterner sex. And there is no denying that when female operators are more plentiful, and better acquainted with the business, that second and third-class operators will have more trouble in getting situations. But I do not believe that any one who can establish a reputation for steadiness, attention to business, and a fair amount of practical dexterity in the art, will ever want for employment; because in a business employing such a great number of persons, there always must be a great many who do not give perfect satisfaction, and when a good *reliable* man (or woman either) is known to be "in the market," superintendents will generally take the chance to work him in, and get rid of one of their makeshift men. But let us look at it in still another light, and I appeal to you, brother operators, as fathers, husbands, brothers, and as *men*. Look at the multitudes of poor women reduced to the verge of starvation, eking out a wretched existence by sewing, for wages that would not pay for *one quarter* of the cigars that an operator will use—at the numbers who are driven to worse, for want of *any employment at all*—at the still greater number who are forced to accept the most repugnant situations for want of any other kind, *all* because there are so very few employments in which a female can obtain a respectable living. Can we, in the face of all this, stand up and say, "*We will not allow females to become operators, lest they take the bread out of our mouths!*" I say, all honor to yourself, Mr. Editor, for having opened the door for their admission, and I hope you will see the time (and if you live long enough, you *will* see it) when female operators will challenge your champion key-holders, *and beat them*.

G. S.

FREDERICK, MD., May 5, 1868.

Delivery of Despatches.

MR. EDITOR: Will you permit one who has all along taken a lively interest in the telegraph, particularly in its relation to the business world, to occupy a little space in your valuable journal, upon a subject perhaps a little threadbare, but none the less important. I particularly desire to make your journal the medium through which to convey to the fraternity what I have to say, as it has come to be regarded as the standard for general information relative to the business. The subject to which I wish to refer, and to which my attention has been directed more than once of late, is no greater than the delivery of messages. To some this may appear as a trivial subject for a newspaper article, but when we reflect that after all the labor and money expended in furnishing facilities, and "getting messages through," we finally confide them to boys to finish, to deliver, the importance will be manifest.

The telegraph business is made up of details, and no part is too small not to deserve earnest and ample thought and attention. In the delivery of messages it is not possible to give too much care, nor too great attention. The rules of the Western Union Company one would think sufficient to guide all, yet it is often found that the managers are satisfied with simply entering messages in the messenger's book, and trusting to him for their delivery to the proper persons, procuring the proper receipt and the time. I do not mean to question the integrity of the messenger, for once in the life-time of the writer he "has been there," but his experience at that time convinced him that a little boy might be over-awed by a man, or that an unprincipled person might assure the messenger that he was the right man, in order to get possession of a message, or that his "watch had run down" as a reason for not writing the time. The foregoing brings me down to the statement of a few simple directions which in my opinion would prove beneficial if carried out. A "messenger's delivery book" should be kept in every office, no matter if not more than one message in a week, or a month is received for delivery—whether *paid* or *free* should always be entered in the delivery book, with the "time sent out," and a receipt taken with the "time delivered." The person receiving the message should write the "time" after his signature. Without such care what security would any telegraph company have? How many who read this article can remember six months back at what time any one particular message was delivered? If compelled to answer in Court it could only be done by reference to the messenger's delivery book, and if that was not in *good order*, and the "time" written in the same hand as the signature of the person receiving the messages, it is very doubtful whether it would be received in evidence. I know that at some offices where the man in charge serves in the triple capacity of Express agent, Ticket agent and operator, and deals with seemingly larger things, taking a receipt for a "little despatch," when he "knows everybody and everybody knows him," is not thought worthy of attention, but as cases are arising daily wherein proof is required that despatches were delivered promptly, and to the right person, it becomes necessary for every one to guard carefully against any failure to secure the company and themselves. When messages are delivered at hotels the clerk should be required to sign his own name, and not the name of the house. I have only touched on the leading points, and leave the subject to the reflecting to follow up. The whole may be summed up in this: managers and operators should always have by them, in their offices, good and sufficient evidence of having performed their part, and this can best be furnished by means of carefully preserved "messenger's delivery books," with messages entered under proper dates, and the signature and "time" of the person to whom they were addressed.

Mr. Reid—I hope the subject matter of this communication may strike you as favorably as it has me—I am not capable of writing a newspaper article, but the necessity of calling the attention of managers and others to the subject impressed me, and I ventured. Don't hesitate to cut it down, or tear it to pieces, only I hope the matter will not be lost sight of entirely.

Yours very truly,

WM. A. DAVID.

Automatic Telegraphing.

BOSTON, May 25.

BY M. F. ADAMS.

In a late number of the TELEGRAPHIC JOURNAL, I noticed a long and interesting article on improvements in Automatic Telegraphing, the innovation of M. M. Chaudassaignes and Lambricat, two French telegraphers. The system is similar to that of Mr. Alexander Bain (i. e.) the decomposition of salts upon chemically prepared paper, but has more of a resemblance to the system of Mr. Hummiston a New York gentleman, who in 1855 tried his apparatus between that city and Boston.

In this arrangement a long band of paper was punched out in Morse signals by means of a very complicated and ingenious machine, operated by a key board similar to that of a combination printing instrument.

This paper was passed between two metallic rollers moved by clock work, one of the rollers being in connection with a battery. The line wire was connected with a spring which pressed against the paper and was thus prevented from coming in contact with the roller beneath, but when a fissure in the paper occurred the spring came in contact with the roller and placed the battery upon the line which produced a blue mark upon the chemically prepared paper at the other terminal of a certain length, according to the length of the fissure in the transmitting paper. Owing to a defect in the machinery this invention did not prove as successful as expected.

The difference between this arrangement and that of the Messrs. Chaudassaignes and Lambricat is that they transmit the signals by means of a metallic band prepared with insulating ink which opens and closes the main line circuit and produces Morse characters upon chemically prepared paper at the distant station, but with the exception of their method of preparing the transmitting paper it will be seen that these two systems are identical.

The trouble of preparing the paper for transmitting signals and the translation of these signals has been the great drawback to the usefulness of this mode of Telegraphing, and I am of the opinion that these methods will never come into genuine use, at least not in America.

Mr. T. A. Edison of Boston, has recently invented a very practical automatic apparatus which is both ingenious and curious; the arrangement is very simple and not so liable to get out of order as the methods described above. The arrangement is as follows: A transmitting Morse Register is placed at one end of the line, and a receiving register at the other, the first register has no battery attached, but is merely used for the purpose of running the paper through. The front standard of this register is connected with a battery, and the armature with the line, the transmitting paper is prepared by operators upon registers placed in local circuits, and when thus prepared, they are cut off in suitable lengths and run through the transmitting instrument at a very rapid rate. This paper in passing between the rollers of the transmitting register by its thickness prevents the armature from touching the standard, but when an indenture in the paper occurs, the pen of the register passes into the groove which allows the armature to come into contact with the standard, and

places the battery upon the main line, reproducing the Morse signals at the other terminal; this paper is passed through as rapidly as it can be prepared by two operators upon registers as local circuits.

The indented paper at the other end of the line, is then cut off in suitable lengths and passed at a slow pace through two re-writing registers similar to the Morse line transmitting registers, with the exception that the armature and standards are connected with a sounder and local battery, and the writing is received by sound. It will be seen that the indentures in the paper depress the armature and act as a key upon a main or local circuit: thus nearly eighty words per minute can be sent and received upon sounders by two operators at each end of the wire, which is, I think a more convenient mode of transmitting and translating than of the Messrs. Chaudassaigne and Lambricat.

Don't like Automatics.

OPILEKA, ALA., May 8, 1868.

MR. EDITOR:—In your paper, May 1, you speak of Automatic telegraphing, and upon the subject I would respectfully ask your attention, not that I desire to suggest any improvements of the Automatic machines, but on the contrary to say that I don't want any such "mashcen" on my tables. The relay, the key and sounder answer my purpose, and my reasons are expressed thusly:

I learned the business on a Morse key, register and relay at old M. S. in Ky. You know the manager there, (J. B. G.) Well, after awhile I dispensed with the register, and took unto me a sounder, which was nicer, you know, and no trouble, saves the trouble of having high tables, big boxes of paper, and the whizzing and buzzing of cog wheels and taking machines to pieces and oiling it, as if you were running a locomotive. Now all you want is plenty of soft paper, good pencils or pens and good ink, and good clips and just say to the sender "wade in," (not President Wade when an operator runs all over Cleveland to find him), and there you have it. Your Automatic machine must be fed with paper, and must have a puncher, and no doubt other endless things, and may take strong battery, and be more expensive. No sir, Mr. R., some fellow has an axe to grind, let him furnish his own stone, I'll take Morse in mine all the time.

I merely express myself to you and not for the public, for I have no time to write, revise and hunt up classic language for publication, and have no ambition to see words in print.

Very truly, Yours,
JOHN H. PURNELL.

To the Journal of the Telegraph:

Sometime since wide publicity was given to the story that a gentleman in London wishing to obtain entrance to a telegraph office situated at the top of a high building locked inside on the ground floor, went to an adjoining station and sent word by the way of Glasgow, from which point there was direct communication back to London, and up to the above office for the man on duty to come down and admit them; but a little incident occurred here last week, which rather more ludicrously shows to what great lengths people will sometimes go for a very insignificant purpose. An operator working the Pittsburg wire, wishing some "Solace" from a brother operator on the Cleveland circuit, and being too busy (?) to step across the office, a distance of but 25 feet for it, sent the following despatch to Pittsburg, whence it went to Cleveland, thence back to his chum in N. Y.

To K——, N. Y.

"Send me over a chaw" Sam.

In about 3 minutes the latter was contented with his cud, and the boys wondered how long a paid message, in its usual course, would have occupied in going the same round.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JUNE 1, 1868.

The English Telegraph Control Bill will be brought before Parliament, Wednesday, June 3d. This we learn by cable in answer to an inquiry respecting recent newspaper announcements of the abandonment of the project.

We are compelled again to omit a large quantity of matter designed for this issue. The illustration of Mr. Gillespie's Key, which he notified us of having sent, and for which we provided, we have not received.

Protection of Despatches.

As the conduct of the Western Union Telegraph Company, in surrendering to a congressional committee certain despatches demanded of them, has been somewhat widely criticised, and exaggerated statements made thereof, the following explanation is deemed proper.

1. It is an error that the Congressional Committee called for or were furnished with the general files of the Telegraph Company's office at Washington. Certain despatches specifically described, so far as that was possible, were demanded by the committee, and were furnished upon written requisition.

2. The authority of that committee, or any other committee, constituted by Congress to examine persons and papers, is so unquestionable, and so much greater even than that asserted by courts of justice, which invariably claim of Telegraph Companies instant production of despatches when demanded, that compliance with their requisition was unavoidable, and refusal would have been useless contumacy. In the case of *Briggs vs. Mackellar*, Abbott's Reports, vol. 2, referring to the same power as held by the English Parliament, Mr. W. C. Noyes uses the following language:

"I do not refer to the power of Parliament as a court, but simply as to its legislative power; and in that respect it is said in these authorities (Cornyn's Digest, &c.), that its power is not limited, but is absolute as to all things and persons."

Judge Daly, in his response to the same counsel, says:

"I understand it to be well settled that either House in the British Parliament may examine witnesses for any purpose connected with legislation, either before the bar of the House, or by appointing a committee with power to examine the witnesses; that if a witness refuses to obey the order of the chairman of the committee, &c., application may be made to the House, and the witness committed for contempt, or imprisoned at the discretion of the House, &c. The same power is adjudged to exist in all municipal governments, modified, of course, by the particular constitution of each municipality and laws of the State. So potent is the power that a commitment by the House of Commons, without assigning any cause for it, except the party's contempt, cannot be enquired into. The Court of King's Bench invariably refused to discharge prisoners so committed. The Commons' Committees are the inquisitors for the whole realm, and they may inquire into all subjects and bring witnesses before them on matters of religion, justice, &c. (Com. Dig. Tit. Parliament, E. 6, 4; Inet. 11.) *Rex vs. Abbott*, 14: East. 148, 151; *Rex vs. Gaseett*, &c."

In the charge of Judge Daly in the same case, he uses the following language:

"In American legislatures the investigation of matters before committees, preliminary to legislation, or with the view of advising the House appointing the committee, is, as a parliamentary usage, as well established as it is in England, and the right of either house to compel witnesses to appear and testify before its committees, and to punish for disobedience, has frequently been enforced. The right of either House to examine witnesses before its bar, or before a committee authorized to send for persons and papers, or for a person authorized by a committee to take testimony, as well as the power to punish, for contempt, in case of disobedience, is expressly provided in the statute. (Rev. Stats. 376, 4 ed.: Pt. 1, ch. 7, tit. 5.)"

In Brightley's Digest of the laws of the United States, vol 1, page 190, the following extract from the act of January 54, 1859, is given:

"Any person summoned as a witness by any committee of either House of Congress, who shall wilfully make default shall in addition to the pains and penalties now existing, be liable to indictment as and for a misdemeanor in any court of the United States having jurisdiction thereof."

In volume 2, Brightley's Digest, page 92, power is given even beyond that of courts of justice, as follows:

"No witness shall hereafter be allowed to refuse to testify to any fact or to produce any paper touching which he shall be examined by either House of Congress or any committee of either House, for the reason that his testimony touching such fact, or the production of such paper, may tend to disgrace him, or otherwise render him infamous."

These citations should be ample vindication of the Telegraph Company for the delivering of the messages in question. It might have made capital for itself and earned a temporary eclat among portions of the people, had it defied the power of Congress and allowed its President to be immured in the vaults of the Capitol or the Tombs for contumacy; but prompt obedience to a power which invests all courts with whatever authority they have, and all of which claim the right concerning which complaint is now made, seemed the clear duty of the company, and to evade which would have only given another useless and mischievous example of disobedience to the laws of the nation. The despatches were given up after obtaining the advice of the most eminent counsel, none of whom hesitated to recognize the authority under which the demand was made.

The public may be led to believe from some of the recent publications on the subject under review, that the production of messages in the manner demanded by the Congressional Committee is new and unusual. The truth is, that it is a matter of almost daily occurrence, every court in the country claiming the right to order the production of despatches in connection with suits under trial.

The Telegraph Companies interpose every obstacle consistent with respect for judicial authority. The original is never left with even the judge, except on compulsion, and neither original nor copy is ever shown, except in court, to any one but the sender or the party addressed. Courts have gone so far as to demand the production of messages sent by third parties, and which the Western Union Telegraph Company, by employment of special counsel, has resisted, as dangerous to the interests of society. In no case, however, no matter how skillful the plea made by the Company, has it ever been able to evade the demand of any court for the production of despatches. In this it calls, on behalf of the people, for the highest legislative intervention. In a bill now before Congress having this object in view, the Telegraph Companies call for, and every where sustain the closing article, and which, we hope, may soon become a part of the public law.

"H. R. 846, Sec. 15.—And be it further enacted, That every message or despatch delivered for transmission to any such telegraph company shall be held and deemed a confidential communication made to such company by the person or persons so delivering the same; and it shall not be lawful for any such company, or the president, directors, officers, servants or agents thereof, or for any of them, either in pursuance of any order, subpoena, writ or process, or otherwise, to deliver, produce, exhibit, or allow inspection of any such message or despatch, or of any part of the same, or of any copy thereof, or to communicate or disclose the contents or

meaning thereof, or of any part thereof to any courts, judicial tribunals, officers, or persons, or any of them, other than the persons by whom the same shall have been delivered, or to whom the same shall have been originally addressed, or his or their agents; and it shall not be competent for any court officer or judicial tribunal, by any subpoena, writ, process, or otherwise, to compel such delivery, production, exhibition, inspection, communication, or disclosure: Provided, however, that in case of suit or other proceeding against any such telegraph company, its officers, agents or employees, or any of them, for damages for any fault, delay or failure in the transmission or delivery of any telegraph message, it shall be lawful for such telegraph company its agents or employees, to produce any message or communication which may be material or necessary to his or their defence."

This enacted, no improper exposure of despatches will thereafter be possible.

As the officers and offices of the W. U. Company have more or less intercourse with Canada, we are requested to remind all concerned, that the postage thereto has been reduced to six cents, if prepaid, and twelve cents if paid by receiver. Managers of Offices will please notice.

The advertisement of S. C. Bishop, offering to Telegraph Companies an insulated pole line cordage, and insulated outside office wires deserves serious attention. There must be an immediate deliberate effort made to remove existing difficulties to the working of lines in our large cities. An article which makes this possible is a valuable addition to the appliances by which perfection is made attainable.

Bliss, Tillotson & Co.

126 South Clark street, Chicago, Illinois.

A change in the advertisement of L. G. Tillotson & Co., gives us the opportunity of saying a word about that firm, which we have always been ready to say in private, but have been somewhat chary in committing to paper. There are some things we regard as taken for granted. We do not flatter the sun for his regularity, or the ocean for its profundity. It is of no use complimenting a fat man on his good nature, for epigastrical rotundity and heartiness are congenital. So when the name of a business firm has, by long years of carefulness and push, become a synonym for success and reliability, it seems like painting the lily to be reiterating what every body knows.

The establishment of the house of Bliss, Tillotson & Co., (a very happy conjunction of names), at 126 South Clark street, Chicago, however is an enterprise which calls for special note. It is one of the indications of the mighty advance of population in the west which demands a house in Chicago for the provision of Telegraph supplies and repairs without the necessity of sending to the seaboard. It will meet a great want and, for that reason, must be a success.

Its management will be in the hands of Mr. Geo. A. Bliss, an experienced electrician and a most worthy gentleman. We ask attention to their advertisement, and commend the two houses to the public with earnestness and cordiality.

The houses thus opened and co-operating, have their addresses as follows:

BLISS, TILLOTSON & CO, 126 SOUTH CLARK ST., CHICAGO, ILL.

L. G. TILLOTSON & CO., 11 DEY STREET, NEW YORK.

The latter being the new and more accessible premises recently opened in New York, to which we called attention in a former number, and which will remain under the personal management of Mr. Tillotson. The best way to appreciate that gentleman, is to "walk into his parlor" where he will give assurance of all the pleasant and courteous things which we spare his modesty from spreading more largely on paper.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

APRIL, 1868.

Receipts	\$602,257.05
Expenses	\$356,349.18
Net profits	\$245,907.87

A Great Want Supplied.

BISHOP'S CENTRAL TELEGRAPH DEPOT.

We commend Mr. Bishop and his very liberal enterprise. Both inventors and manufacturers can have complete confidence in his honor and liberality. We endorse him cordially.

BISHOP'S TELEGRAPH ROOMS,

113 LIBERTY STREET, NEW YORK.

TO MANUFACTURERS OF TELEGRAPH AND ELECTRIC INSTRUMENTS AND APPARATUS:

I have opened Rooms in the building now occupied by the BISHOP GUTTA PERCHA COMPANY, No. 113 Liberty street, N. Y. City, for the Reception and Exhibition of every kind of

TELEGRAPH AND ELECTRIC APPARATUS,

to be kept open Every Day, and properly attended to, and the articles on exhibition taken care of by me.

I invite you to send me any articles of your manufacture, properly labeled, with your name.

The charge for space and care of Instruments, etc., will be ten per cent. of your saleable price, for the year.

Insurance, if required, will be charged extra.

Exhibitors will at all times be admitted to the Rooms with their customers to show samples, and sell from them, free of charge.

N. B.—Battery power will be supplied for testing, etc.

Respectfully,

SAMUEL C. BISHOP.

New York, May 30, 1868.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE
THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spanishing "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,

Sole Proprietor, N. Y.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
June 1, 1868.

To all Offices on W. U. Lines—

The following changes have occurred since May 15th, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Anna, O., tariff same as Sidney, Ohio.
Chelsea, Vt., tariff same as South Royalton, Vt.
Chicopee Falls, Mass., tariff same as Chicopee, Mass.
Drakes Branch, Va., tariff 2 50 from Louisville, Ky., and 1 00 from Washington, D. C.
Fayetteville, Mass., tariff same as Marlboro, Mass.
Forester, Mich., tariff 20 more than to Port Huron, Mich.
Foster's Station, Pa., tariff same as Brady's Bend, Pa.
Hartland, Vt., tariff same as Windsor, Vt.
Highland, Ill., tariff 10 more than to Chicago, Ill.
Idaho, Col., tariff 25 and 2 more than to Central City, Col.
Lewistown, Mifflin Co., Pa., tariff 25 added to the rate to Harrisburg, Pa., or 30 added to the rate to Philadelphia or Pittsburgh, Pa. The rate which is found to be lowest after adding as directed, will be adopted.

Marion Junction, Ala., tariff same as Marion, Ala.
Morristown, Ind., tariff same as Shelbyville, Ind.
Point du Chene, N. B., tariff same as Shediac, N. B.
Port Sanilac, Mich., tariff 20 more than to Port Huron, Mich.
Reading, Mass., tariff 30 more than to Boston, Mass.
West Point, Ind., tariff same as Attica, Ind.

OFFICES OPENED ON OTHER LINES.

Blandville, Ill., tariff 85 and 4 from Chicago, check Chicago.
Clarkville, " tariff 75 and 4 from St. Louis, check St. Louis.
La Harpe, " tariff 55 and 3 from Chicago, check Chicago.
Onarga, " 85 and 4 from St. Louis, check St. Louis.
Russell, Iowa, tariff 1 05 and 5 from Chicago, check Chicago.
Utica, Ill., tariff 50 and 3 " " "
Union Springs, Ala., tariff 1 00 and 8 from Columbus, Ga. check Columbus.

OFFICES CLOSED.

Fort Morgan, Col., Ruffin, N. C., Scottsboro, Ala., and South St George, Me., business for the latter office will hereafter be checked to and delivered from Tenant's Harbor, Me. Milan, Tenn., (temporarily). Bufords, Va.

The following changes in tariff to points on line of Pennsylvania R. R. will take effect June 1st. The tariff from W. U. Offices will be obtained as heretofore, by adding the rate to Philadelphia, Harrisburg or Pittsburgh to the rate from those points, but instead of making the tariff by the "most direct route" as per circular of January 2d, 1868, the *cheapest* route will be adopted.

	From Philadelphia.	From Harrisburg.	From Pittsburgh.
To Overbrook	25	50	70
White Hall	25	40	70
Eagle	25	40	70
Paoli	25	40	70
Westchester Intersection	25	40	70
Steamboat	30	40	70
Downingtown	30	40	70
Catesville	30	40	70
Parkeburg	30	40	70
Gap	40	30	60
Leaman Place	40	30	60
Landisville	40	30	60
Mount Joy	40	25	60
Elizabethtown	40	25	60
Marletta	40	25	60
Bainbridge	40	25	60
Rockville	50	25	60
Marysville	50	25	60
Duncannon	50	25	60
Newport	50	30	60
Thompsonstown	50	30	60
Mifflin	50	30	50
McVeytown	50	40	50
Newton Hamilton	50	40	50
Mapleton	50	40	50
Bridgeport	50	40	50
Huntingdon	50	40	50
Spruce Creek	60	50	50
Tyrone	60	50	50
Beach Creek	60	50	50
Bellefonte	60	50	50
Milesburg	60	50	50
Snow-Shoe Intersection	60	50	50
Julian	60	50	50
Intersection	60	50	50
Tyrone Scales	60	50	50
Holidaysburg	60	50	50
Gallitzin	60	50	40
Cresson	60	50	40

Willmore	60	50	40
Conemaugh	60	50	40
Johnstown	60	50	40
Florence	60	50	40
Blainsville Intersection	60	50	40
Blainsville	70	60	30
Derby	70	60	30
Latrobe	70	60	30
Greensburg	70	60	30
Penn	70	60	25
Irwins	70	60	25
Brinton's	70	60	25
Saltsburg	70	60	25
Apollo	70	60	25
Allegheny Junc.	70	60	25
Freeport	70	60	25
Natrona	70	60	25
Springdale	70	60	25
Sharpsburg	70	60	25

The above-named offices are all in Pennsylvania.

Offices having "Special Sheet A" will check Lebanon, Reading and Pottstown, Pa.—Tariff, 35 added to the "special rate" to Philadelphia or Harrisburg, Lancaster, Pa., 25 added to the "special rate" to Philadelphia or Harrisburg, and Lewistown, Pa., 25 added to the "special rate" to Harrisburg or 30 added to the "special rate" to Philadelphia or Pittsburgh. The rate, after adding as directed, which is found to be the lowest will in all cases be adopted. Nashville, Tenn., 25 more than the "special rate" to Louisville, except Lexington, Ky., whose tariff to Nashville will be 50 and 4.

When notice of a new office is given, and you are directed to make tariff same as to an office to which there is a "special rate;" the special rate to *that* office is not to be used as the rate to the new office, unless so stated. The rate to be used will be the rate in force before the "special rate" was made.

GENERAL INFORMATION.

Allentown Junction, Pa., will hereafter be checked direct on all commercial business for that office.

Hereafter all business for Oleopolis, Pa., will be checked, via, Oil City, Pa., tariff 25 and 2 from Oil City.

WILLIAM ORTON,
President.

SITUATION WANTED BY A FIRST-CLASS SOUND OPERATOR. Best references.

Apply to "D," at Doctortown, Georgia.

STOLEN.

\$3,700.00 WESTERN UNION TELEGRAPH COUPON BONDS,

ON THE NIGHT OF THE 17TH OF APRIL,

NUMBERS AND DENOMINATIONS AS FOLLOWS:

No. 17,	\$800.00
" 48,	600.00
" 187,	500.00
" 188,	500.00
" 189,	500.00
" 203,	500.00
" 842,	500.00
	\$3,700.00

The public are cautioned against purchasing these Bonds, as payment has been stopped,

A reasonable reward will be paid for their return to the owner.

WM. HUNTER,
86 Liberty Street.

We regret to learn that by a disastrous fire which occurred on Thursday last, in Boston, the premises of Charles Williams, Jr., the widely and well-known manufacturer of Telegraph machinery, were so damaged as to involve him a loss of from \$3,000 to \$5,000, on which however there is ample insurance. The whole force of Mr. Williams' establishment is now engaged cleaning up and repairing his injured machinery, to which will be added new facilities for a largely increased business, and prompter supply of articles ordered. We gladly give publicity to this announcement, so that the many patrons of Mr. Williams may know why orders are delayed, and to say a kind word for a house which deserves well of the public. In two or three weeks the establishment will be again ready for business. By this fire, M. G. Farmer loses \$2,000. No insurance. W. H. Remington loses a large stock of Thermo Batteries. No insurance.

A Bill to Enable Her Majesty's Postmaster-General to Acquire, Work, and Maintain Electric Telegraphs.

Whereas the means of communication by Electric Telegraphs within the United Kingdom of Great Britain and Ireland are insufficient, and many important districts are without any such means of communication:

And whereas powers have been from time to time granted to certain companies and persons to lay down, maintain, and work lines of Electric Telegraphs within the United Kingdom of Great Britain and Ireland; but there is nothing obligatory upon such companies and persons to exercise their powers within any particular district or place:

And whereas it would be attended with great advantage to the State, as well as to merchants and traders, and to the public generally, if a cheaper, more widely extended, and more expeditious system of telegraphy were established in the United Kingdom of Great Britain and Ireland, and to that end it is expedient that Her Majesty's Postmaster-General be empowered to work telegraphs in connection with the administration of the Post Office:

May it, therefore, please your Majesty, that it may be enacted; and be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of Lords Spiritual and Temporal, and Commons, in the present Parliament assembled, and by the authority of the same, as follows:

It shall be lawful for Her Majesty's Postmaster-General and he is hereby authorized, with the consent of the Lords Commissioners of Her Majesty's Treasury, from time to time, *out of any moneys which may be from time to time appropriated by Act of Parliament and put at his disposal for that purpose*, to purchase for the purposes of this Act, the whole, or such parts as he shall think fit, of the undertaking of any company, and any undertaking, and all other property purchased under the powers of this Act, shall be vested in and held by Her Majesty's Postmaster-General, in his corporate capacity, and his successors: provided always, that no such purchase be made, and that no agreement for any such purchase be binding, unless the said agreement, accompanied by a minute from the Commissioners of Her Majesty's Treasury, in which the grounds of the agreement shall be set forth, shall have lain for one month on the table of both Houses of Parliament without disapproval.

Any Company, with the authority of two-thirds of the votes of their Shareholders present in person or by proxy at a general meeting of the Company specially convened for the purpose, may sell all or any portion of their undertaking to the Postmaster-General for such sum of money as may be mutually agreed upon between the Postmaster-General and the Company; and the execution by any company under their common seal of a conveyance to the Postmaster-General, duly stamped, of their undertaking, shall be sufficient to vest the same in the Postmaster-General for all the estate, right, title, and interest of the Company therein, with all incidental rights, privileges, and easements, and the same may be used, exercised, and enjoyed by the Postmaster-General in the same manner and to the same extent as the same respectively are, or if this Act had not been passed might be held, used, exercised, and enjoyed by any Company, and the receipt of two of the directors of any Company for the purchase money, endorsed upon the deed of conveyance, shall be a sufficient discharge for the same to the Postmaster-General, who shall not be bound to see to the distribution thereof.

The acts, charters, and grants of any Company, whose undertaking shall be sold and conveyed to the Postmaster-General under the powers of this Act, shall (except as far as they are by this Act expressed

to be varied or repealed, or are inconsistent with the provisions of this Act), remain in full force, and all matters to be done, continued, or completed, or which, but for the passing of this act, would, might, or could be done, continued, or completed by the Company so selling their undertaking, their officers or servants, shall, or may (as the case requires), be done, continued, or completed by the Postmaster-General, his officers and servants, and those acts, charters, and grants shall be construed as if the Postmaster-General had been named therein instead of the Company so selling their undertaking.

If the Postmaster-General shall acquire any one undertaking under the powers of this Act, he shall, upon the request, in writing, of any Company possessing an undertaking established by special Act of Parliament at the time of the passing of this Act, purchase the undertaking of such Company, upon terms to be settled (failing agreement) by an arbitrator, to be appointed by the Board of Trade, provided such request be made within *twelve* calendar months after the Postmaster-General shall have so acquired any one undertaking; and any Railway Company possessed of a Telegraph open to the use of the public on the first of January, one thousand eight hundred and sixty-eight, for transmitting messages for money, or possessing any beneficial interest in such Telegraph, shall be included in this provision, and any such Railway Company shall be entitled upon a like request, in writing, to require the Postmaster-General to purchase the right of such Railway Company to transmit such messages or other beneficial interest.

It shall be lawful for Her Majesty's Postmaster-General, with the consent of the Lords Commissioners of Her Majesty's Treasury, from time to time to lease any part or parts of the undertaking or property purchased or acquired by him under the powers of this Act.

The Postmaster-General, with the consent of the Commissioners of Her Majesty's Treasury, may from time to time make regulations for determining the hours during which the offices appointed by him to be places for the receipt and despatch of messages shall be open for the transaction of Telegraphic business, and for fixing the sums to be from time to time paid for the transmission of messages, and for services rendered in connection therewith, and for the general conduct of Telegraphic business: Provided always,

(1.) That the charges for the transmission of messages throughout the United Kingdom shall uniformly and without regard to distance be at a rate not exceeding *one shilling* for the first twenty words of each message, or part of twenty words, and not exceeding *sixpence* for each additional ten words or part of ten words:

(2.) That the names and addresses of the senders and receivers of messages shall not be counted as part of the words for which payment shall be required:

(3.) That the sums charged for the transmission of messages shall be held to cover the costs of delivery by special foot messenger, within *one* mile of the Terminal Telegraph Office, or within the town postal delivery of that office, when it is a head Post Office, and the town postal delivery extends for more than a mile from it:

(4.) That when the addressee does not reside within the above described limits, and the sender desires to have his message delivered by special foot messenger, the charge to him for portage by such special messenger, beyond such limits, shall not exceed *sixpence* per double mile, or any part thereof:

(5.) That when the addressee does not reside within such limits, and the sender does not desire to incur the cost of special delivery, his message shall be delivered free of extra charge by the ordinary pos-

tal delivery next following on the arrival of his message at the terminal Telegraphic Office.

The payments to the Postmaster-General for the transmission of telegraphic messages from one place to another within the United Kingdom shall (except for portage) be made in all cases by means of stamps, and the Postmaster-General shall cause a proper supply of stamps and stamped paper to be prepared for that purpose, and kept for sale to the public at such of the Offices under his control as he may think fit to appoint for that purpose.

Besides appointing Offices to be places for the transmission of Messages by means of the Electric Telegraph, the Postmaster-General may, if he thinks fit appoint Offices or Pillar Letter Boxes to be places of deposit for messages, and the messages deposited therein shall, provided they be written on stamped paper of the proper value, or on paper having stamps of the proper value affixed thereto, be conveyed to the Offices of Transmission without extra charge, at such times as the ordinary collections of Post Letters are made from the aforesaid places of deposit, and shall forthwith be despatched by telegraph from the Offices of Transmission.

Copies of all regulations from time to time made under the authority of this Act shall be laid before both Houses of Parliament within *fourteen* days from the date thereof if Parliament be then sitting, and if not sitting then within *fourteen* days from the next reassembling of Parliament, and all regulations so made shall be binding on the parties interested in the subject matter thereof to the same extent as if such regulations formed part of this Act.

HARTFORD CITY, May, 1868.

To the Editor Journal of the Telegraph:

SIR: Having noticed your intention to receive those contributions whose tendency is to elevate and edify, we send you the result of our observations. As a member of the great fraternity, we have observed that among us there is a want of attention to a better arrangement and disposal of surplus time. We are aware that our remarks cannot apply to all, but to say nothing of those who not only work early, but "see far into the night," are they not applicable to the majority whose loose estimate of time is shown in the dissipation of injurious literature. Are we living up to our opportunities? As one constituent part of society, we think we can furnish our *pro rata* of intelligence, but in proportion to our privileges we do not excel as we might. When removal has become necessary, have we not felt that the possession of the necessary qualifications to place us beyond the caprice of others, would be a source of strength to us? If Ferguson could study astronomy while a shepherd boy, and become a great astronomer, and Hugh Miller find time from the monotony of a stone mason's life, to make for himself an immortal name—shall we do nothing? The biography of great men prove that the genius of patience and perseverance is their motive power. If we display our latent energies in the right direction, and redeem the time, we may be able to stand in the day of our calamity independent.

Truly yours, &c.,

A. A. F.

The Shadows of Life.

The shadows of the mind are like those of the body. In the morning of life they all lie behind us; at noon we trample them under foot, and in the evening they stretch long, broad and deepening before us. Are not, then, the sorrows of childhood as dark as those of age? Are not the morning shadows of life as deep and broad as those of its evening? Yes, but morning shadows soon fade away, while those of evening reach forward into the night and mingle with the coming darkness.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.
W. O. LEWIS,
A. S. BROWN,
W. H. HILL,
Executive Committee.
J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them.

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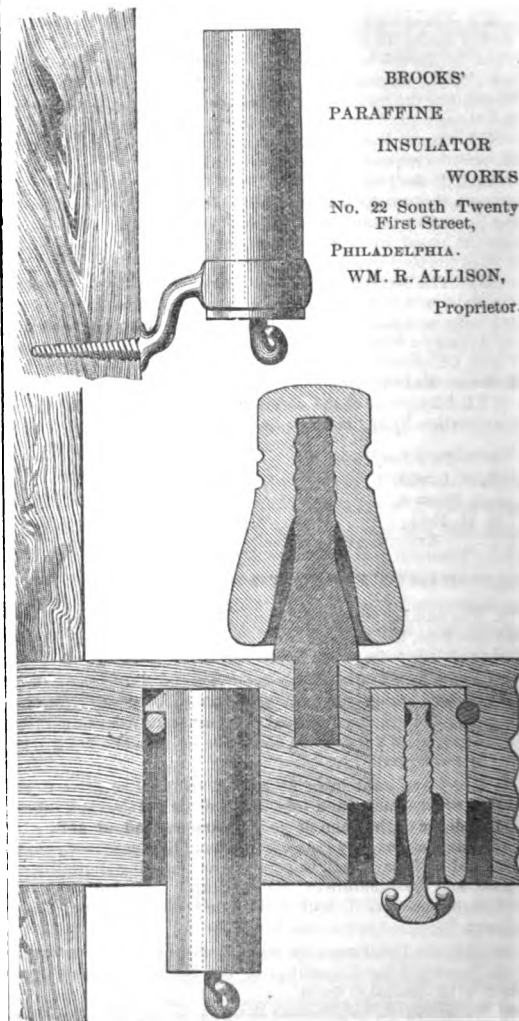
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JOURNAL OF THE TELEGRAPH.

NO. 15.

NEW YORK, JUNE 15, 1868.

VOL. I.

LOOK OUT!

Instruction in Telegraphing—Confidential Communication from the President of a Business College—How he secures situations for his Graduates.

The following letter will be read with much interest by telegraphers, and with much greater interest by the persons now studying at the Buckeye Business College. The utter baseness of the proposal to make engagements for students in the manner proposed should be enough to shut the doors of this Buckeye College for ever.

THE GREAT SYSTEM OF ACTUAL BUSINESS TRAINING.

OFFICE BUCKEYE BUSINESS, TELEGRAPH
AND PHONOGRAPHIC COLLEGE,
SANDUSKY, O., April 27.

To —, Superintendent Telegraph :

DEAR SIR—I have a practical telegraph college here, and have on hand about sixty students that I graduate at receiving twenty-five words per minute, and as you have been highly spoken of to me, I think I would like to make arrangements with you to give or get situations for my graduates. I have one young man that is now ready. I will give you \$10 for every situation you get for me. I care not whether it is a night or day office, what the salaries are, or if the student is not kept longer than a week, just so it is a situation.

I would like you to take the contract to furnish all of the whole sixty students employment as soon as they have graduated. I assure you I will not send you a man unless he is a No. 1 business man as well as a good sound operator. I have worked twelve years at telegraphing, and believe I know when a man is fit for a railroad or commercial office.

Hoping to hear from you very soon on this matter, I remain, sir, with much respect, very truly yours,
S. P. HARR, President.

THE PAGE PATENT.

A New Telegraph Patent for old Inventions.

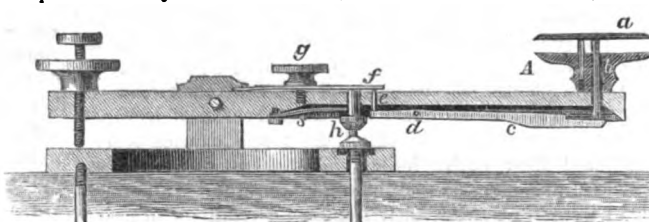
From the Scientific American.

The direct claim of Professor Page, as set forth in the law, was for the invention of the induction-coil apparatus, known among telegraphers as the Ruhmkorff coil; but the patent covers much more than this. It embraces the "employment of one electro-magnetic instrument to open and close the circuit of another electro-magnetic instrument, using either one battery for both or separate batteries for each," which is, in fact, the famous "local circuit" years ago patented to Prof. Morse; the "combination of an automatic or mechanical circuit breaker with either a primary coil alone or a primary and secondary coil combined," invented and patented by Royal E. House; the "employment of separate and independent batteries to operate an electro-magnetic circuit breaker and the circuit which is broken by it," which is the famous "repeater" patented by Mr. Hicks; and, indeed, covers all automatic closers, repeaters, local circuits, and all points of value known in the electro-telegraph business.

The bill and the patent founded upon it are outrageous impositions upon the public, and will not for a moment stand the test of the courts. It is singular that Prof. Page's name should never have been known and associated with these inventions,

and that as Examiner of Patents for many years he should have passed favorably upon the claims of those who have secured patents for these very discoveries, which he afterward claimed to have originated with himself. The Morse and House patents have expired long since, and by limitation of law their inventions have for years been public property. The Hicks patent has yet some years to run. The truth is, the bill bears upon its face evidence of having been the work of lobby legislation, and the patent is glaringly absurd, unjust, and illegal. We understand that an effort is being made to induce some of the telegraph companies to buy up the pretended rights of Prof. Page's heirs; but we advise them to keep their money in their pockets and to take no notice whatever of the claim.—*N. Y. Herald.*

[In connection with this subject we present a letter written by Prof. Page, only a few months before his decease, to the editor of the London *Scientific Review*, in which he frankly admits that priority of invention in respect to the circuit breaker belongs to Prof. McGauley.—*Eds. Sci. Am.*]



GILLESPIE'S SELF-CLOSING KEY.—See page 5.

Prof. Page, of the United States Patent Office, in a pamphlet recently published on the history of the induction coil, shows clearly, by documentary and other evidence, that Ruhmkorff has no claim whatever to any merit in respect to the invention of the coil which bears his name. Not only were all the principles on which the action of the coil depends, discovered long before Ruhmkorff embodied them, but even the details of the apparatus had all been invented and described, and not only so, but a complete, nay, a more powerful apparatus, had been made and exhibited in Paris. This apparatus was constructed by an American, Mr. Ritchie, who modestly attributes its merits to the researches and discoveries of Faraday and others, who had made electro-magnetism their study. It was exhibited in Paris to many scientific men, and was actually taken to pieces by M. Ruhmkorff, an instrument maker, so that its construction might be thoroughly understood. A few years afterward M. Ruhmkorff obtained the Imperial Prize of 50,000f. awarded by a commission of men eminent in science, to the author of the most important discovery concerning the application of electricity. Among the members of this commission were gentlemen who had seen Mr. Ritchie's coil, but who found it convenient to forget it. The French journals awarded to Ruhmkorff all credit for the invention, and refused to publish explanations of the real facts of the case, forwarded to them from scientific gentlemen in America. Du Moncel, Ganot, and other French writers on the subject of this in-

vention, though they were all fully conversant with the truth, and though some of them were present at the experiments with Ritchie's coil, and even at its dissection, have carefully ignored any apparatus of the kind as a competitor in merit with Ruhmkorff's.

In pleasing contrast to conduct like this, we turn to Professor Page's frank and honest acknowledgment of merit to those who had anticipated himself in some very valuable inventions relating to induction apparatus. Among the gentlemen credited with such inventions, the late Professor McGauley, who was so long connected with this journal, and whose recent death created so much and so well-merited sympathy among scientific men, is prominently mentioned. We remember that on several occasions Prof. McGauley mentioned in his modest, unassuming way, that he had invented what was called the Ruhmkorff coil, but we never had an opportunity of ascertaining the details of his claim. Now, some months after his death, information comes to us across the Atlantic, which connects his name with the history of induction apparatus, for it appears from the evidence furnished by Professor Page, that Professor McGauley was the first to invent and apply

the automatic contact breaker, the type of all now employed in such apparatus. A coil fitted with such a contact-breaker, was exhibited by Professor McGauley, at the meeting of the British Association in 1837, and a description of it was published in 1838, among the proceedings of that body. It appears that Prof. Page, who was himself engaged in working out induction apparatus, independently invented a similar but more complete contact-breaking apparatus early in 1838, having had no information as to McGauley's invention. Yet Prof. Page, with the true modesty of science, frankly awards to Prof. Gauley all the honor of priority in this matter. Not only so, but having heard of that gentleman's death, and of the exertions made on behalf of his bereaved widow and children, he has written to Sir David Brewster, the chairman of the McGauley Memorial Relief Fund, the following letter, which we now publish, and which will be read with the melancholy interest attached to all connected with the great name of him, now no more, to whom the letter was addressed:—

UNITED STATES PATENT OFFICE, Feb. 6th, 1868.

DEAR SIR:—Noticing the death of Professor McGauley, mentioned in the *Scientific Review*, I take the liberty of sending you a book on Induction I have recently published, in which I have had occasion to make honorable mention of his name, in connection with an invention of interest and importance, of which he was undoubtedly the originator. The hammer circuit-breaker, which has been so extensively used in connection with Induction Coils all the world over, has been in England, France, Germany, and Europe, generally attributed to Dr. Neef, of Frankfort-on-the-Main. In this country it has always been accredited to me, as I invented it at least six months in advance of its introduction by Dr. Neef. My investigations, however, have traced it to Professor McGauley as the original author, and it appears to me somewhat singular that Dr. Golding Bird omitted to mention the originator's name when he brought the apparatus before the London Electrical Society. He simply said "it was not his own invention." It cost me a considerable search to find it out, but I have proceeded upon the principle of according to every inventor and discoverer his just dues, regardless of personal and national consideration. If this discovery in his favor should be of any benefit in raising means

for his family, I shall rejoice and feel proud that my humble efforts to do justice to a co-laborer in the cause of science have met with such a reward.

With great respect and esteem, I am, very respectfully, yours,
 CHARLES G. PAGE,
 Chief Examiner of Patents.

Sir David Brewster.

Correspondence.

A School of Telegraphy.

To the Editor Journal of the Telegraph:

SIR,—The recent editorial notice which you made in regard to the establishment of a Telegraph School in one of the Western States, induces me to hope that the subject of professional education is not, as many would have us think, a subject for professional opposition. At the present time there are but few subjects which engross so large a share of the attention of distinguished scientists throughout the world as this of technical education; all nations, even our own, see and acknowledge that while the "race is not to the swift, nor the battle to the strong, both are to the *skilled*." Never before has appeared so pointed the application of the maxim that "Knowledge is power," truly while "Time is prejudice," "Intellect hath conquered Time." It has long been my earnest desire to see the standard of scientific acquirements among telegraph operators raised; for it is useless and foolish to disguise the truth that as a body, our profession is lamentably deficient in even the most elementary parts of electrical science; and this ignorance must necessarily be continued so long as the present system of education is persisted in. It seems to be taken for granted that the sum of the requirements of a perfect operator shall consist in his capacity to send and receive messages, and in making his copy plain and clear; but as lines *will* occasionally get into difficulties with each other, the superior intelligence of some is made available, and as "chief" operators they—do the best they know how.

As the battery constantly emits disagreeable fumes, and is extremely dirty and unpleasant to clean, it naturally, under this system, falls to the care of an Hibernian who, whatever may be said of his uncertainty as to the nature of his materials, is yet thoroughly awake to the fact that an insufficient supply of force on the line can almost always be remedied by the addition of cells. To this party is also frequently given the duty of the "reconstruction" of the line, and having usually a "policy" of his own, some of his repairs bear in them the impress of genius perhaps, but *not* electrical genius.

If we are in the future to have greater reliability and despatch in business, existing lines are to so reduce their expenses by superior economy in working as to defy competition; if telegraph lines are to be kept out of the hands of the government, they must be worked by educated men.

In the mere mechanical points, but little improvement can be hoped for. Reading by sound, originating in America, has been perfected here; if the trials of speed recently made had taken place five years ago, or were to take place five years to come, the results would be similar. It may, and perhaps will, be that mechanical transmission will be succeeded by mechanical reception, and that the human machines now employed in such service, will be turned adrift; but we must always have *Telegraphers*. To create *brains* is as impossible as to originate *force*.

I will pass over the many schools or so-called colleges that have professed to teach in three months the "Science of Telegraphy (by the way Telegraphy isn't a *science*, but an art; electricity is a science), because they have all done little but furnish the profession with a multitude of such indifferent graduates as has well earned for them the distrust of practical men, with, in many cases decided opposition, and, not to occupy too much of your space, I shall sketch as briefly as I can a plan of elementary

instruction, which if properly worked out, would, I am convinced, furnish a groundwork upon which subsequent study would found a most substantial superstructure of professional knowledge.

The basis of all, and perhaps the *only* true science is mathematics. Sir David Brewster used to laugh at the idea of a study of exact science not preceded by a knowledge of mathematics; and some of the hardest of Faraday's work, and it is said one of the very few of his mistakes, was due to his lack of the higher mathematics.

In the limited time which I propose for the school term (six months), I have reason to believe there could be taught with reasonable thoroughness, in algebra, to and through quadratic equations, including, of course, the binomial theorem and progressions. In geometry, the first four books of Legendre, with such parts of the remainder as should show the manner in which areas and volumes are determined.

In trigonometry, the use of logarithms and the solution of plane triangles and trigonometrical formulae.

In mechanics, rigid demonstrations of the laws of the composition and decomposition of forces.

That pupils should be able to express their ideas graphically, the elements of geometrical drawing, such as sections, side and end elevations, and plans, should be taught.

In experimental science the nature of matter and force with their mutual relations, the physics of heat and static electricity, should be followed by a course of illustrated lectures upon chemistry, which, in addition to general principles, should particularize and explain such of the elementary bodies and their compounds, as are commonest in use in telegraphy. Simultaneously with the chemistry should come the fullest exposition of the principles and laws of galvanic action that the time will permit. In this department no pains nor expense should be spared to have the illustrations as perfect and as *illustrative* as possible. It would be supplemented by magnetism and electro-magnetism, and these in their turn be followed by an exact and careful series of lectures to show the relation of all the forces to each other, and their entire indestructibility as *force*. These lectures should close the school term, but while they were in progress, their immediate relations to practical telegraphy should be shown in the largest possible explanations in telegraph engineering, in which that *reasons* may be taught, instead of mere facts, the lecturer should have the assistance of ample apparatus, and a full collection of all telegraph material in general use in the United States. Finally the school should be furnished with a small laboratory, and with a library that should contain *all* the works of standard merit, as well as the very much larger collection of indifferent books which can be readily obtained.

There are many I know, who will think that I have mapped out an amount of work, which it would be impossible to finish in the allotted time. To such I would say that the outlines merely, and the essential facts with their reasons so far as known, would be taught. No man's education can be finished in six months or six years, but in six months the course I have proposed could be gotten through; and I make this assertion not hastily nor unadvisedly, but after thought upon the subject, and in the light of some slight personal experience, both in teaching and being taught, in the majority of the very studies proposed.

It is, of course to be understood, that while the science of the profession is thus engaging the attention of the school, daily exercise in sending and receiving business would be had, and there are but few persons of proper age, who, after a carefully watched practice of six months, would be unable to take charge of an office, where messages are occasional and not continuous.

In conclusion, however, it is due to myself to state that I have no expectation of speedily seeing such a school in operation. The expense incident to starting and carrying it on, would not be slight, and but few young men would feel justified in spending six months of their life and half a hundred dollars of money for the prospects of determined opposition which would meet them upon graduation. If such a school is opened, it appears to me that it must be by a telegraph company itself, who possessing all the facilities for teaching, can at the same time ensure situations to such of their pupils as shall pass a satisfactory examination, securing, to their infinite advantage, trained skill to relieve mechanical stupidity.

With many thanks for your kindness in hearing me, I am, Mr. Editor,

Most respectfully,
 A TELEGRAPHER.

May, 30th, 1868.

The Anglo-Mediterranean Telegraph Company

Mr. Cyrus Field, whose name is imperishably bound up with the Atlantic cable, is now associated with some of the first men of the day for the purpose of securing a direct and thoroughly efficient line of telegraph to Egypt, and thus permanently establishing a substantial part of the direct telegraph line from England to India, recommended by the Parliamentary Committee on East India communications.

The prospectus of this Company is now before us, from which it appears that a contract has been entered into between the Company and the Telegraph Construction and Maintenance Company for the purchase, in perfect working order, of their special land line from Susa (where the French telegraph lines terminate) to Modica in Sicily, a distance of about 1,300 miles. This line, which is now on the point of completion, has been constructed under a concession of forty years from the Italian government, and will be worked throughout by the English clerks of this company.

The contract with the Telegraph Construction and Maintenance Company also provides for the making, laying, and delivery to this Company in perfect working order, within four months, of a deep sea telegraph cable, capable of transmitting messages at a speed equal to the existing Atlantic cables laid by them, having an external covering suited to the known requirements of the Mediterranean bed, from Malta to Alexandria, a length of about 900 nautical miles, where it will be connected with the existing land lines to Cairo and Suez, and includes a working arrangement for securing to this Company the transmission of the through traffic between the French frontier and Suez. The contract obliges the contractors to maintain the cables in an efficient state for twelve months.

The English government have promised, in consideration of an annual payment of £2,000, for a term of fourteen years (to be made by this Company), to pick up the present imperfect communication by the shallow water Shore Line between Malta and Alexandria, and so long as this Company's line is efficiently worked they will not lay any competing line from Malta to Alexandria.

The existing telegraph between Sicily and Malta is by a cable belonging to the Mediterranean Extension Telegraph Company, with whom a tariff for the transmission of through messages has been agreed, and negotiations are now pending for laying a duplicate cable between those points. The Telegraph Construction and Maintenance Company have agreed, if required by this Company, to lay the duplicate cable and also a duplicate line across the Straits of Messina, undertaking to maintain them in efficient working order for twelve months, for the sum of £10,000.

To the Editor Journal of the Telegraph:

PHILADELPHIA, April 28d, 1868.

DEAR SIR:—I was very glad to see in a late number of the Journal a favorable editorial notice of College Telegraphy, for I have lately been thinking of opening a School of Telegraphy myself. My plan would be to teach Telegraphy as a branch of Engineering—what it really is, and, having no influence with Telegraph Companies, I should not teach manipulations at all—depending for patronage upon those who being already Operators desire to become Telegraphers. Chemistry; electro chemistry; the physics of heat, static and dynamic electricity, and magnetism, and meteorology, telegraph engineering (construction and maintenance of lines and apparatus) and Electro-Engineering to be taught by lecture. Mathematics and geometrical draughting taught each man separately according to his capacity and need. In three months' time I should deliver rather more than one hundred and fifty lectures, illustrated copiously by experiments, and with students acquainted with the four fundamental rules of arithmetic, would finish arithmetic, the first four books of Legendre's Geometry; the solution of plane triangles and of Trigonometrical formulae, and in Algebra through Quadratic Equations, Drawing of sections, elevations, plans, etc., of telegraphic apparatus; something which every man who may have to describe machinery should always be able to furnish.

My idea is, you see, to put in a three months' term, a course of genuine Telegraph Engineering. To teach the causes of phenomena, and how their effects may be calculated, and sought or avoided, according as they would be favorable, or the reverse. Testing of lines, instruments and batteries by the measure of their resistance expressed in B. A. units; and of batteries by their voltametric and magnetic powers expressed in absolute units.

I believe there is no school in the world where an education in Telegraph Engineering is obtainable. The Science College of Chester, England, and one other Institute are recognized by the Secretary of State for India, as proper schools for applicants as assistant superintendents of the Indian Telegraph lines, but their course does not include Telegraph Engineering proper, but only the concomitant sciences, such as Chemistry, Electricity, Mathematics, etc., and the Engineering must be gained by an apprenticeship under a recognized Telegraph Engineer. What do you think of the matter?

I should be willing to start with half-a-dozen pupils, or even less, because I am convinced that after the first class graduates, Operators and the Companies will become convinced of the vast benefit of knowing something more than manipulation, which can, and is being better done by mechanism, than by the hand.

Very respectfully,

WM. T. SCHEIDE,
Civil Engineer.

It gives us sincere pleasure to publish Mr. Scheide's letter, which, though not designed for publication, we use to show that there is a future for the profession in which operators shall perform much more than now, an intelligent part. We regard Mr. Scheide's letter as one of the encouraging signs of the times and trust that his example may stimulate others in a like direction. We also hope that the Telegraph Companies may come so to appreciate such a course of education as to encourage it by every means in their power, and give facilities for its attainment.

The writer of the above has since notified us of the postponement of his enterprise.

A physician of Breslau announces to the Academy of Sciences in Paris, that he has succeeded in illuminating the cavities of the living human body by means of electricity, so as to render their interior visible to the physician.

The Page Patent.

We give on our first page articles from the *N. Y. Herald* and the *Scientific American* on the Page Patent, of which so much has recently been said. Neither of these articles touch the question in dispute, except that it is a most strange procedure on the part of the Government to order a patent issued to an expert, however worthy, who has, as the Government's own agent, granted innumerable patents to other parties in which the same idea was involved. Concerning the hammer in the Ruhmkorff coil, telegraph companies care nothing; one of the claims connected with this would place, however, all electro-magnetic machines—the “shocking” instruments so much used by electropathists and others under control of the patentee. The item affecting telegraph companies is that in which claim is made for the alternate action of the magnet and spring which, in 1837, Prof. Page claims to have created by means of a weight, the equivalent of a spring, which released the armature on the arrest of the current.

On this subject we have various interesting articles written by men whose contrivances are imperilled by this extraordinary grant, but which have been delayed so long by the crowded condition of our columns as to make them comparatively untimely. We hope ere long to learn from the best authorities the whole condition of this startling claim, which we cannot believe will be allowed, under any circumstances, greatly to embarrass the owners of devices in which the principle claimed is employed. We do not believe a single dollar therefor will be collected.

Sunnyside.

The following circular from Porter's Telegraph College, Chicago, gives a very rosy side to the life of a Telegraph Operator. Who would not be a Telegrapher?

Enterprising young men can obtain a good salary in a shorter space of time than in most any other business. The salaries of operators on commercial lines range from sixty to one hundred and twenty-five dollars per month. Students have graduated directly into positions paying as high as one hundred dollars per month. From three to four months spent in the telegraph college will enable young men of ability to manage a telegraph office. The telegrapher may select his place of business and residence in accordance with his fancy, either in the great metropolis, the quiet village, the fashionable watering-place, or the isolated cabin on the plains. In many instances the telegraph is connected with other business, and thus advantages of great value are secured. Some operators do a thriving business in this way. Railway companies, express companies and manufacturers offer a premium, by way of large salaries, for the services of telegraphers, to act as agents, bookkeepers, or to fill other responsible positions. Telegraph operators not unfrequently have the opportunity afforded them of traveling to distant parts of the country. The principal of this institution has rejected invitations of visiting Russia, Cuba, Salt Lake City, San Francisco and other distant points. In addition to being in advance of the printer in the reception of the latest news, telegraphers enjoy the privileges of railroads, steamboats, express, and not unfrequently of hotel living and public entertainments. The study and practice of telegraphy is not tedious, but, on the contrary, to those having leisure hours, it would serve as a pastime rather than as a task.

In Congress—Security of Despatches.

Mr. Eldridge, offered a proposition declaring that the seizure of private and personal telegrams was violative of the Constitution, which provides for the right of the people to be secure in their persons, houses, papers, and effects against unreasonable searches and seizures, and that no warrants shall issue but upon a probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized, that such seizure is an outrage upon personal liberty to which no free people can tolerate or submit.

Mr. Eldridge moved to suspend the rules, which was disagreed to, and so the resolution went over until next Monday.

Ood to Spring.

The following gem from John Phoenix, upbraiding a backward spring, has peculiar point to the year 1868:

Well, Spring, youv cum at last, hev you?
The polt sez youv bin a sittin in Old Winter's
Lap—now aint you ashamed of yourself?
I spose the old feller's bin a bussin you;
I should think he had from your breth
A beln so cold—but that's the way them
Old feller's hev a doin.

Well, as I was sayin,
Youv cum at last with your “bamy
Breth” a blowin from the Northwes—
Wesconstant or Nebraska, I spose,
Great countries for bam I reckon.

Now youv cum wen
Everybody's feed and Korn and things
Hev all bin fed out! Now luk at
Our Krittlers, will ye? See our Kat!
On the lift, a hevvin to be steaded by
Thur tales when they gits up a mornings!
Luk at our hosses wat's all rejuced
To skeletons a weepin over a trofft;
A hull trofft full of kobs!
A hull trofft full of bitter rekleckashuns!

Luk at them shepe allen in
The fence corners a waitin for grass!
Yis! and they've bin a waitin some ov
Them weex! And if they wasn't
Puld theyd a bin “shakin their lox
At yu an sed—U dun it!” (That thur
Is from Hamlet, won of Shakespur's plais.)
As another polt sez—“Grass refused makes
The stumak ake.” So these shepe will
Never open thur i onto grass agin—no.

Now luk at them hogs as has bin
A follerin them katel wat hev bin
Stuft with ha! See em, will ye, a creepin
Round as if theyse tetchted with korns.
Luk at thur eyes, will ye—bigger nor
Enny cabbitch lefe!

See the shotes
A lenin on the fens to squele!
Luk at them mity eres “a hangin pendint”
Onto such little hogs! See a hundrid
Gnd shotes rejuced down to a even
Korn basket full!
Yes, that thurs ol yer doins, U
Tardi, lolterin Spring!—a hangin back
As youv bin a doin,

But now youv cum!
We feel your cheerin presenz when we
Git round onto the south side ov the barn!
We heer the hens a kaklin when they've
Laid an egg! We see the horse-radish
A startin up along side the garding
Fens! The wimmin is a lukin into
The old teapot after garding seeds,
And all these things make me think youv cum!

Ef so be I've riled
Ye Spring, a showin up ov yer short cummings
Jest set it down to havin polts lissens,
(Tho I haint taken one out, yet I 'low to.)

The Telegraph Project Abandoned—Postal Matters.

The House Postal Committee to-day (June 5) had up Mr. Washburn's bill to build a Government line of telegraph between Washington and New York. The Committee agreed, by a unanimous vote, to report it adversely. They regard all schemes to draw the Government into any such business as utterly impracticable. The Committee will report in favor of changing the postal money order system, so that orders will be issued for any amount from \$1 to \$50, for the first \$20 a fee of 10 cents; from \$20 to \$30, 15 cents; \$30 to \$40, 20 cents; \$40 to \$50, 25 cents. Also, a provision to allow weekly newspapers to be deposited in the post-office nearest to the office of publication, and delivered free of postage to regular subscribers at the office, but not to be served by carriers. Also a provision to return all letters to writers free of postage, when any card or address is upon the outside of the letter, and when such letters are not called for within 30 days.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JUNE 15, 1868.

THE SABBATH.

To the President and Directors of the Telegraph Companies of America.

We, your employees, respectfully call your attention to the fact that the communications sent over the wires upon Sunday are, in the majority of cases, of a commercial nature, and that this profanation of the sacred day of rest by business men is steadily increasing, and we desire to offer our united protest against the consequent infringement upon the world-wide privilege of one day's rest, which this business is more and more entailing upon us.

The morality and refinement of the nineteenth century protest against all labor upon the Sabbath, which is not strictly that of necessity or mercy, and we cannot but feel confident that when the subject is brought to your consideration, you will readily appreciate the justice of allowing us the privilege, enjoyed by yourselves, of engaging in the devotions of the Sabbath, and, in the quiet of home circles, renewing our energies for the duties of the coming week.

We are aware that there are men in your employ who are willing to break the Divine Commandment, and work upon the Sabbath for pay. With such men we do not sympathize. We wish no premium offered us as a temptation to do wrong. We take our stand upon a rock, a firm foundation, the Command of Almighty God, who is rightfully our Lawgiver and our Judge, and His command is equally binding upon the rich and the poor, the employer and the employed.

If the subject is looked upon from a financial point of view, we claim that you are losers, and not gainers, by imposing this work upon us. The business which is now done upon the Sabbath would be deferred until the following day, but it would not be lost to you; while you cannot reasonably expect your employees to be faithful in the discharge of their duties, and to consult the interests of their employers, if they are forced, perhaps by threats of discharge if they refuse to do that which is against their consciences and against all principles of right and of justice.

We, therefore, one and all, Telegraph Employees from Canada to Mexico, from Newfoundland to California, do hereby earnestly and respectfully request that you will cause to be discontinued the practice of opening your respective offices upon the Sabbath, excepting in cases of absolute necessity or of sudden emergency.

Your compliance with this request will be gratefully received by us all, and cannot fail to inspire in our hearts sentiments of great respect for our employers, and renewed devotions to their interests.

THE call above is respectful, and deserves, as it will no doubt receive, careful attention. We regard, however, the reference to those engaged on necessary Sabbath labor as a blemish to the petition, and

uncalled for. The assertion of the right to the Sabbath, needed no expression of personal virtue. Yet this is a matter of taste at which we do not wish to cavil.

The Sabbath is, in its origin, a Divine institution. It was instituted for rest. Its design was like sleep, to arrest the wear of toil, and render existence healthful and joyous. Its necessity has been attested by the civilized world. It has thus a double claim, man's wants demanding what God's wisdom has ordained. Many men want say this because it sounds religious. Yet all enjoy it and would not alter the civil law which recognizes it if they could.

While we acknowledge all this, and have made ourself obnoxious in its assertion, we recognize in the telegraph an agent of mercy, affording the medium of that mitigation of suffering and relief from anxiety which, to some extent, opens to its use even the hours of the day of rest. There seems a necessity for opening the offices on the Sabbath for a period long enough to enable the communication of despatches of the kind indicated to be made. That period should be brief as possible. Inasmuch as the usual facilities for travel are stopped on the Sabbath, and despatches of a social character largely relate to circumstances requiring a speedy presence, the opening of offices may be properly limited to those regulating the Post office, and would meet every ordinary necessity.

There is a service, however, now created by the extension of the wires nearly round the globe, which, by the variation of time and delay in transmission, must encroach more or less on the Sabbath rest. The files of Saturday must be cleared and transmission made complete. We hope this may not grow to any serious destruction of the day's designs, and trust the Companies, while they seek to meet public wants on the one hand, will on the other, determine to place every possible guard around an institution which has so much to do with the happiness of our homes, and the public welfare.

Return of Professor Morse.

We gladly welcome back again to his native land the world-renowned, the genial and gentle gentleman who calls us his children, and whom, on that account, we should call father. Professor Morse is old enough, it is true, to bear a more patriarchal name, for he is now in his seventy-eighth year, having been born at Charleston, Mass., April 27, 1791. But, except that mass of flowing snowy hair and venerable beard, there seems no signs of the decrepitude which is supposed to follow the allotted threescore years and ten of human life. His head is as erect, his eye as clear, his step as brisk as if at the meridian, and there seems that elasticity and succulence about him which would lead one to expect of him to crown a century with the lustre of his name, graduating perhaps to be considered grandfather, and surrounded by a million operators to whom his name will even then be associated with the simplest and most successful instrument of any age.

Mr. Morse's sojourn in Europe during the past two years has been a constant ovation. Everywhere he has been received with the most distinguished honor. Everywhere is his instrument recognized as meeting the popular necessities for communication from its simplicity, cheapness, and capacity. Never before was an inventor so completely victor. The refinement of his manners, the kindness of his heart, the purity of his tastes, the genial Christianity which distinguish Mr. Morse's Life, give an enviable radiance to his well earned fame.

Prof. Morse sent us from Paris a copy of a partial vindication of himself against errors in telegraphic histories which have done him injustice, and which he designs making much more voluminous. Our columns have been too crowded to use the facts thus acquired, although we have them in store for that

purpose. Mr. Morse's reputation can afford delay. The world has given him, by common consent, all he claims. He can afford to let pass the detractors of the envious, although it is his duty to correct history. We shall do our full duty in aiding him so to do. We write this merely to say—WELCOME HOME.

GREAT BRITAIN.

The Atlantic Telegraph Company.

LONDON, June 12.—The Directors of the Atlantic Telegraph Company have this day declared a dividend, payable on the first day of July, of six per cent. on their preference stock and three per cent. on their original stock.

WESTERN UNION TELEGRAPH Co.
TREASURER'S OFFICE, 145 Broadway, N. Y.
June 10, 1868.

DIVIDEND No. 25.

The Board of Directors have this day declared a dividend of two per cent. on the capital stock of this Company, from the earnings for the six months ending June 30, instant, payable at the office of the Treasurer, on and after July 20, 1868, to the owners of the said stock as shown by the books of the Company, at the close of business on the 20th (June) instant. The transfer books will be closed on the 20th instant, and opened on the morning of the 21st of July, proximo.

O. H. PALMER,
Treasurer.

Superintendent E. D. L. Sweet.

We regret more than we can well express in an article like this to learn of the resignation of the worthy gentleman whose name heads this announcement. We are sure that the knowledge of it will cause equal regret wherever Mr. Sweet is known, and especially by the men connected with that large section of telegraphic territory over which he has had so long the chief direction. It is a loss of a man whose integrity of character, whose kindness of heart, whose skill in management, whose resources of both head and heart rendered him peculiarly valuable to the Company he served, and which commanded from them their confidence and esteem.

The sphere into which Mr. Sweet now enters indicates the reason for his resignation. As a Christian man he prefers more direct identification with the great religious enterprise under the auspices of the young men of Chicago, which, in its present condition, requires the best executive skill, and that measure of integrity and tone of character which will unite the public of Chicago in its progress and success. The Young Men's Christian Association of that city, whose buildings were recently destroyed by fire, are now engaged in their re-erection on a more extensive scale, and with a wider purpose of beneficence to the people. They have selected Mr. Sweet to conduct the enterprise, and have elected him, we believe, President of their organization. This selection is the best proof of the soundness of the work and the beneficence of its character, which, in his hands, will be conducted with prudence, with quiet but unflinching zeal, and with scrupulous conscientiousness. This will secure its success.

While, therefore, we utter our heartfelt regret that a Company which needs just such men to carry out its work loses one so worthy of their confidence, and that his companions in what we regard as one of the great labors of the age are no longer to have him associated with them except in the kindest remembrances, we bid him God speed in his new duties, trust that long life and much usefulness is in store for him, and assure him that the hands which have ever been his in past labors will be his wherever in the future he may be.

A Telegrapher Turned Governor.

We had the pleasure a few days ago of taking by the hand, his excellency Governor Bullock, of Georgia, who, not many years ago, was one of our telegraphic fraternity, doing good steady service at one of the original House printing machines. Young, rotund, and massive, with a flowing beard, and an eye full of the *bonhomie* of a contented mind, and a generous nature, our old companion in labor is every inch a governor, without being lost to his old friends amid the dignities of his office. We hope he will be able to unite the elements of Georgian society by a wise, just, and careful administration. It is a grand opportunity to serve the country and cement society into peace. Governor Bullock was one of two of our number, who, during the spring canvass were candidates for gubernatorial honors. Marshall Jewell, of Hartford, Conn., failed to be elected although supported by his party with enthusiasm, and every way worthy of the honor designed for him.

THE annual meeting of the stockholders of the Western Union Telegraph Company will be held at the Executive Office of the Company (145 Broadway) on the second Wednesday (8th) of July, 1868, at noon of that day.

Charles T. and J. N. Chester.

Nothing is more surprising than the large force constantly at work in the manufacture of telegraphic machinery. Notwithstanding the Western Union Telegraph Company has large facilities of its own, hundreds of men are engaged elsewhere turning out in large numbers the different appliances of the telegraph. We confess to a feeling of surprise in finding at the establishment of Charles T. and J. N. Chester, on a casual visit there a few days ago, forty skillful men all engaged on the construction of telegraphic machinery. Much of the work done by the Chesters is on machinery the product of their own skill, Mr. Charles T. Chester being one of our finest electricians and practical mechanics. Like the firm of Tillotson & Co., this house has a national reputation, and is known for the beauty of its workmanship, and the high character of the brothers who compose the firm. The firm of Partrick Chester & Co., of Philadelphia, is a co-operative branch, and has a large and increasing trade.

The Brooks' Insulator.

An English test of this insulator is crowded out of our columns this week, but will be given in our next. It gives the startling result in comparison with Mr. Varley's double porcelain cup, of two degrees deflection with the Brooks' insulator to 4,500 of Varley's, in another test of 2 to 37,500, and in a third of 4 Brooks to 50,000 Varley. These are evidences of extraordinary perfection, and in every step to attain which we congratulate inventors. A recognized standard insulator is a great want. The above tests were made by Mathew Gray, Engineer and Manager Gutta Percha Works, Silvertown, Essex, England. W. R. Allison, Esq., 22 South 21st Street, Philadelphia, is the maker and proprietor of the Brooks' insulator.

We find we have to surrender our claim to having made the first appointment of a lady operator, in favor of our dear departed friend, James Eddy, formerly Superintendent of the American Telegraph Co., one of the best men to whom authority was ever given. In the fall of 1850, he appointed Miss Emma F. Livermore, operator at Augusta, Maine, a few months before the appointment of Miss Emma Hunter, at Westchester, Pa. Both of these ladies are skillful operators, though not now under appointment as such. Mr. D. P. Livermore is manager at Hallowell, Maine, and finds it very convenient to occasionally delegate his duties to his intelligent and skillful daughter.

For Tariff Circular, see Page 6.**Gillespie's Self-closing Key.**

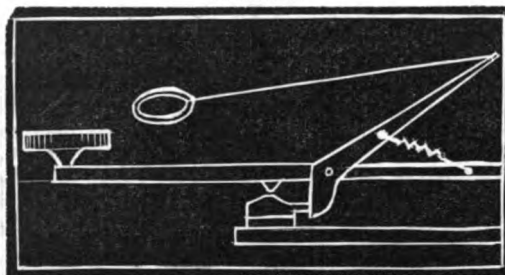
We have received from Mr. A. J. Gillespie formerly of Ashley, Illinois, and now of Ottumwa, Iowa, a specimen of a self-closing key, an illustration of which will be found on our first page. The arrangement is very simple and a great improvement on the one first sent us, to which we called attention in a former number. The inventor says:

"Any one who holds the finger plate in any shape cannot fail to operate with this successfully, as it gives a solid finger plate same as any other when in use. All the difference is you cannot *pound* it, but can write with it in any other manner. After the plate is pressed together, a finger held on one side or in front is all that is necessary to keep it in position.

"The way to open the key is to first press the plate *downward* with the fore finger, then hold it in any desirable manner. It is also provided with a thumb screw for the purpose of regulating the strength of the spring, and also, if for any cause (which is sometimes the case) it is desirable to leave the key open. Also, in sending a Press report or any very long message where it may be desirable to *pound* the key, a turn of the screw changes it to operate same as any other key, but the screw must be turned back again when done."

The description of the key is simple. The hammer *h*, which, as will be seen, is a movable pin, is held down when at rest by a stout short spring *f*, closing the circuit. When in use, the upper finger plate, which, as will be seen is in two parts, when pressed down by acting upon a lever *c* pivoted at *d*, releases the spring *f*; the hammer *h* is lifted from contact with the anvil by the spring *s* and the circuit opened. While operating, the finger plates are kept together by the thumb and finger, although with care the key may be worked by the simple regular pressure of the finger on the upper plate.

ANOTHER.



Here comes a model of yet another self-closer from our genial-faced friend, S. C. Jones, of Albany, which has given us and others the occasion of a good hearty laugh. This key is of the Western Union style, with a lever pivoted on the side of the arm a little back of the anvil, having its short end touching the upper brass plate which ordinarily receives the circuit closer, and the long end standing upward and backward, about two inches above. In this contact it is kept by a spring affixed to the long arm and attached to the key arm behind. To the upper extreme end of the arm a string is attached terminating in a ring large enough to receive easily the third finger, and which is short enough when so placed to draw forward the lever when the index and second fingers are on the finger plate, thus opening the circuit. The feeling of the check-rein apparatus is rather pleasant. It makes one feel like driving a small pony, and when manipulating with it, one almost instinctively says, hey! get along! especially as the ring Jones sends us is evidently taken from some horse gear, and the reins are of red string. So don't despair boys; you are sure of a self-closer by and bye.

Mr. Jones says he made his own key. We are even with him, for we made our own cut. It is our first attempt.

A Great Want Supplied.**BISHOP'S CENTRAL TELEGRAPH DEPOT.**

We commend Mr. Bishop and his very liberal enterprise. Both inventors and manufacturers can have complete confidence in his honor and liberality. We endorse him cordially.

BISHOP'S TELEGRAPH ROOMS,

113 LIBERTY STREET, NEW YORK.

TO MANUFACTURERS OF TELEGRAPH AND ELECTRIC INSTRUMENTS AND APPARATUS:

I have opened Rooms in the building now occupied by the BISHOP GUTTA PERCHA COMPANY, No. 113 Liberty street, N. Y. City, for the Reception and Exhibition of every kind of

TELEGRAPH AND ELECTRIC APPARATUS,

to be kept open Every Day, and properly attended to, and the articles on exhibition taken care of by me.

I invite you to send me any articles of your manufacture, properly labeled, with your name.

The charge for space and care of Instruments, etc., will be ten per cent. of your saleable price, for the year.

Insurance, if required, will be charged extra.

Exhibitors will at all times be admitted to the Rooms with their customers to show samples, and sell from them, free of charge.

N. B.—Battery power will be supplied for testing, etc.

Respectfully,

SAMUEL C. BISHOP.

New York, May 30, 1868.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 3OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,

Sole Proprietor, N. Y.

S. S. STAFFORD'S COMBINED

WRITING AND COPYING FLUID,

Labelled by me, for the last ten (10) years, ARNOLD'S FLUID Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33 1/3 per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD,
Chemist, N. Y.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
June 15, 1898.

To all Offices on W. U. Lines—

The following changes have occurred since June 1st, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Coalport, N. J., tariff same as Bordentown, check Bordentown.
Berkely Springs, W. Va. (re-opened), tariff same as heretofore, or 15 more than Sir John's Run.
Big Thompson, Col., tariff same as Laporte, Col.
Dresden, O., tariff same as Newark, O.
Edwardsville, Ill., " " Bunker Hill, Ill.
Edwardsville Crossing, Ill., tariff same as Bunker Hill, Ill.
Georgetown, Col., tariff 50 and 3 more than Central City, Col.
Laramie City, Dakota, tariff same as Fort Sanders, Dakota.
Living Springs, Col., (re-opened,) tariff same as heretofore.
Liverpool, Pa., (re-opened,) tariff same as heretofore, or 30 and 3 more than to Harrisburgh.
Monument Sta., Ks., Tariff same as Cayotte, Ks.
Palestine, Ind., " " Indianapolis, Ind.
Slatington, Lehigh Co., Pa., (re-opened,) tariff same as heretofore, or same as Catawauqua, Pa.
The following summer offices have been re-opened:
Caldwell (Lake George), N. Y., tariff same as heretofore.
Churchville, N. Y., tariff same as Batavia, N. Y.
Cornwall, N. Y., tariff same as heretofore.
Cozzen's Hotel, West Point, N. Y., tariff same as heretofore.
Lake Mahopac, N. Y., tariff same as heretofore.
Trenton Falls, N. Y., tariff same as Booneville.

OFFICES OPENED ON OTHER LINES.

Plank Road, Ill., 25 and 2 from Chicago, check Chicago.
Mount Vernon, Iowa, 85 and 4 from " "
Pueblo, Col., 150 and 10 from Denver, Col., check Denver.

OFFICES CLOSED.

Cayotte, Ks., Fort Morgan, Col., Fort Sanders, Col., Elizabethtown, Ind., and Barton, Md. Business for Elizabethtown, Ind., will hereafter be mailed at and checked against Columbus, Ind. The following offices have been closed temporarily—Doctortown, Greensboro and Tebeauville, Ga., and Lake, Miss.
On and after June 15th the tariff to the following offices on the Philadelphia and Reading R. R. Telegraph Line will be 35 and 8 from Philadelphia or Harrisburgh.
Offices whose tariff to Harrisburgh is less than to Philadelphia will check Harrisburgh on business to these points. All other offices will check Philadelphia.

Aramingo,	Myerstown,
Ashland,	Mount Carbon,
Auburn,	Navigation Landing,
Broad M. Scales	Palmyra,
Cressona,	Palo Alto and Port Carbon,
Gordon,	Phoenixville,
Hummelstown,	Pine Grove,
Locust Junction,	Port Clinton,
Mahanoy City,	Pottsville,
Mahanoy Plane,	Ringgold,
Mahanoy Tunnel,	Robesonia,
Merion,	St. Clair,
Mill Creek Scales,	Schuylkill Haven,
Minersville,	Sinking Spring,
Middleport,	Swatara,
M. H. Crossing,	Tamaqua,
Mohrsville,	Tremont,
Monocacy,	

The above named offices are all in Pennsylvania.

GENERAL INFORMATION.

The name of the office heretofore known as Middletown, Ill., has been changed to Inka, Ill. Penataquit, L. I., has been changed to Bay Shore, and Brown's Track, N. Y., to Moose River. Tariff to the latter 15 cents more than to Port Leyden, N. Y. The post office address of Bulls Island, N. J., is Raven Rock.

In the last Journal the notice respecting business for Allentown Junction should read as follows: All commercial business sent to and received from Allentown Junction, Pa., should be checked against Allentown. For Blainsville Intersection and Blainsville, read Blairsville Intersection and Blairsville; for Catesville read Coatesville, and for Derby read Derry.

WILLIAM ORTON,
President.

TRACK laying, which was suspended on the Kansas City branch of the Union Pacific Railroad, during the winter, is again resumed. On the first of June the cars were running to Fort Wallace, three hundred and eighty-five miles west of Kansas city.

Philadelphia City Delivery.

All telegrams to points within 1,000 numbers, or ten blocks of the main office, (No. 250 Chestnut street and 101 and 103 South Third street), delivered free.

PRINCIPAL HOTELS.

Continental,	Free Union,	Free
Girard,	" St. Charles,	"
LaPierre,	13c Black Bear,	"
American,	Free Montgomery,	"
Merchants,	" Davis'	"
Washington,	" Eagle,	"
St. Lawrence,	" Barley Sheaf,	"
Ashland,	" Ridgon,	"
Bingham,	" Red Lion,	"

RAILROAD DEPOTS.

Philadelphia, Wilmington & Baltimore R. R.	10 & 1
New York depot. West Philadelphia,	15 & 1
" Kensington,	15 & 1
Pennsylvania Central R. R.	15 & 1
Westchester, Media & Baltimore Central R. R.	15 & 1
Philadelphia & Reading R. R.	15 & 1
North Pennsylvania R. R.	15 & 1
Philadelphia, Germantown & Norriston R. R.	15 & 1

Rates to points in vicinity of Philadelphia, add to Philadelphia tariff.

Arsenal, Bridesburg	50 & 1	Holmesburg	25 & 1
Arsenal, Grass Ferry	25	Harrowgate	50 & 1
Avenue Drove Yards	10 & 1	Hestonville	50 & 1
Alms House	25	Huddington	50 & 1
Bustleton	200' & 1	Kingessing	100 & 1
Brideburg	50 & 1	Kirkbride's Ins. Asylum	50 & 1
Blue Bell	100 & 1	League Island	100—
Branchtown	150 & 1	Laurel Hill	75—
Conshohocken	25 & 2	Lazaretto	1.00
Chestnut Hill	100 & 2	Mount Airy	75 & 2
Columbia Bridge	50 & 1	Moyamensing prison	25
Darby (upper)	125 & 1	Milestown	150 & 1
Darby (lower)	150 & 1	Mantua	15 & 1
Eastern Penitentiary	25	Mount Pleasant	75 & 2
East Kensington	15	Manayunk	25 & 2
Falls of Schuylkill	75 & 2	Nicetown	75 & 2
Frankford	15 & 1	Naval Asylum	25
Fox Chase	200 & 1	Navy Yard	15
Fisher's lane	75 & 2	" to vessels in river	75
Fairmount	15	Point Breeze	1.00 & 2
Fairmount Locks	1 & 1	Port Richmond	25 & 2
Fort Mifflin	1.50	Roxborough	50 & 2
Gloucester, N. J.	50	Red Bank, N. J., on Del	
Gilson's Point	25 & 2	river	75
Greenwich Point	50 & 2	Riesing Sun	75 & 2
Germantown	25 & 2	Woodland Terrace	25 & 1
Spring Mills	50 & 2	Wayne Station	50 & 2
Shoemakerstown	1.50	West Philadelphia	15 & 1
Tioga Station	75 & 2	" west of 46th st	25 & 2
Forresdale	1.50 & 1	West Kensington	15
Union Drove Yards	10 & 1	Whitehall nr Frankford	50 & 1

A pamphlet of 96 pages, entitled "The Resources of Missouri," by Sylvester Waterhouse, has been placed in our hands. It is, as its title indicates, an exposition of the resources of a State so situated geographically both in relation to other States, to our great rivers, and to climate, and with a soil of so rare richness, as to predicate for its future a career of greatness and power not excelled by any of its sister States. What Missouri needs is men. "Her present industrial force is not equal to the developments of her resources. She seeks the co-operation of the self-reliant laborers of New England, and of the 200,000 sturdy immigrants who are annually landing at the port of New York. Millions may accept the proffered hospitalities, without exhausting the ample board which Missouri spreads upon her tablelands."

AN INTERESTING ELECTRICAL EXPERIMENT.—M. Becquerel, in making some researches into the subject of the dialysis of the electrical currents, lately found that in passing discharges from an induction coil, between the upper surface of a saline solution, contained in a glass tube, and the extremity of a platinum wire fixed at a short distance, the spark was surrounded with a cloud colored, according to the sort of salt used in the experiment.

WANTED—SITUATION BY A FIRST-CLASS SOUND Operator. Has had 5 years experience. Best of reference furnished. Apply to

L. G. W.,
Box 152,
Berea, Ohio.

Boundaries of Districts—Central Division.

THE WESTERN UNION TELEGRAPH COMPANY
OFFICE OF THE GEN. Supt. OF THE CENTRAL DIVISION
CLEVELAND, O., March 11, 1898.

THIRD DISTRICT.

North.	South.
Corry, Pa.	Pittsburgh, Pa.
New Castle, Pa.	Wheeling, W. Va.
Sandusky, O.	Marietta, O.
	Gallipolis, "
East.	West.
Altoona, Pa.	Columbus, O.
Bedford, "	Chicago, Ill.

FIFTH DISTRICT.

North.	South.
Whitehall, Mich.	Wellsville, O.
Detroit, "	Columbus, "
Saginaw, "	Dayton, "
Lexington, "	
Cleveland, O.	West.
East.	Chicago, Ill.
Buffalo, N. Y.	State Line, Ind.
Salamanca, "	

SEVENTH DISTRICT.

North.	South.
Lafayette, Ind.	Jeffersonville, Ind.
New Castle, "	Maysville, Ky.
Toledo, O.	Cincinnati, O.
East.	West.
Marietta, O.	East St. Louis.
Columbus, "	
Zanesville, "	

EIGHTH DISTRICT.

North.	South.
Chicago, Ill.	Jeffersonville, Ind.
Logansport, Ind.	Vincennes, "
Peru, "	New Albany, "
Mich. City, "	Madison, "
State Line "	
East.	West.
Columbus, O.	East St. Louis.
Crestline, "	
Richmond, Ind.	

NINTH DISTRICT.

North.	South.
St. Louis.	Pilot Knob, Mo.
	Rolla, "
East.	West.
East St. Louis.	Coyote, or end of track U. P.
	R. R., Eastern Division.
	Also a point on C. B. U. P. R.
	R. 100 miles west of Atchison, K.
	St. Joseph, Mo.

ELEVENTH DISTRICT.

North.	South.
Helena, Mo.	Denver, Col.
	St. Joseph, Mo.
Chicago, Ill.	St. Louis, Mo.
Dunleith, "	Cairo, Ill.
East.	West.
St. Joseph, Mo.	Central City, Col.
Council Bluffs, Ia.	Denver, Col.
Omaha, Neb.	Cheyenne, Ark.
	Salt Lake, U.
State Line, Ind.	Keokuk, Ia.
	Quincy, Ill.

THIRTEENTH DISTRICT.

North.	South.
Milwaukee, Wis.	Lewiston, Ill.
Janesville, "	Quincy, "
Beloit, "	Pekin, "
East.	West.
Chicago, Ill.	Council Bluffs, Ia.
	Iowa Falls, "
	Harmonies, "
	Muscataine, "
	Woodburn, "

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

J. D. REID, Treasurer.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

Western Union Telegraph Company.**BOARD OF DIRECTORS.**

Moses Taylor, New York.
E. D. Morgan, New York.
W. E. Dodge, New York.
Francis Morris, New York.
C. Livingston, New York.
E. S. Sanford, New York.
W. Orton, New York.
N. Green, Louisville.
D. N. Barney, New York.
W. G. Hunt, New York.
Geo. Jones, New York.
John J. Cisco, New York

O. H. Palmer, New York.
Hiram Sibley, Rochester, N. Y.
D. A. Watson, Rochester, N. Y.
Isaac Butts, Rochester, N. Y.
B. R. McAlpine, Rochester, N. Y.
G. H. Mumford, Rochester, N. Y.
E. Cornell, Ithaca, N. Y.
J. H. Wade, Cleveland, O.
G. Walker, Springfield, Mass.
R. S. Burrows, Albion, N. Y.
Alfred Gaither, Cincinnati, O.
John Butterfield, Utica, N. Y.

Le Grand Lockwood, New York.

OFFICERS.William Orton, *President.*

Hiram Sibley,

N. Green,

B. R. McAlpine,

*Vice-Presidents.*O. H. Palmer, *Secretary and Treasurer.*W. H. Abel, *Auditor.*R. H. Rochester, *Assistant Treasurer.*Marshall Lefferts, *Engineer.***SUPPLY DEPARTMENT.**William Hunter, *Superintendent of Supplies and General Purchasing Agent, New York.*A. H. Watson, *Storekeeper, New York.*M. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.***CENTRAL DIVISION.**Anson Stager, *General Superintendent.*

Residence, Cleveland, Ohio.

ASSISTANTS.*Superintendents of Districts.*

		<i>Residence.</i>
District 5—E. P. Wright,	- - -	Cleveland, O.
" 6—T. B. A. David,	- - -	Pittsburg, Pa.
" 7—George T. Williams,	- - -	Cincinnati, O.
" 8—John F. Wallick,	- - -	Indianapolis, Ia.
" 9—R. C. Clowry,	- - -	St. Louis, Mo.
" 11—W. B. Hibbard,	- - -	Omaha, Neb.
" 12 J. J. S. Wilson,	- - -	Quincy, Ill.
" 13—E. D. L. Sweet,	- - -	Chicago, Ill.

EASTERN DIVISION.Thos. T. Eckert, *General Superintendent.*

Residence, New York City.

ASSISTANTS.*District Superintendents.*

		<i>Residence.</i>
District 1—Jesse Hoyt,	- - -	New Glasgow, N. S.
" 2—Robert T. Clinch,	- - -	St. John, N. B.
" 3—James S. Bedlow,	- - -	Portland, Me.
" 4—George W. Gates,	- - -	White River Junction, Vt.
" 5—Charles F. Wood,	- - -	Boston, Mass.
" 6—George B. Prescott,	- - -	Albany, N. Y.
" 7—S. B. Gifford,	- - -	Syracuse, N. Y.
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" 8—Geo. W. Trabee,	- - -	Nashville, Tenn.
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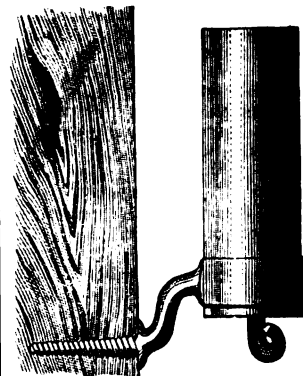
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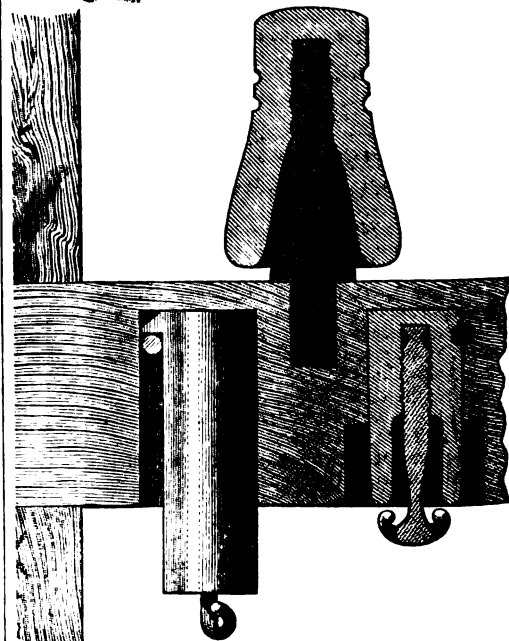
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JOURNAL OF THE TELEGRAPH.

NO. 16.

NEW YORK, JULY 1, 1868.

VOL. I.

The East India Telegraph Company.

Executive Office, Nos. 23 and 25 Nassau St., N. Y.

CAPITAL, - - - \$5,000,000.
SHARES, - - - \$100.

DIRECTORS.

ALEXANDER HOLLAND, ISAAC LIVERMORE,
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NICHOLAS MICKLES, *Vice-President*.

GEO. CONANT, *Secretary*.
GEORGE ELLIS, *Treasurer*.

The East India Telegraph Company is incorporated under a special charter granted by the Legislature of the State of New York, to construct and operate telegraphic lines in the Chinese Empire.

The Chinese Government has granted, through the Hon. Anson Burlingame, late U. S. Minister at the Court of Peking, permission to the Company to connect the great seaports from Canton to Tientsin, the port of Peking, by submarine cables. The initial enterprise, and to which the Company now propose to bend its energies, is to lay these nine hundred miles of cable, to be followed in due time by the continuation of the line to Peking, and the building of other lines in the interior of the country.

It is proposed to construct this first line at once, to connect the following great seaports, along a coast line of about nine hundred miles:

Canton having a population of 1,000,000.			
Thence to Macao, having a population of 60,000, a distance of 70 m.			
" Hong Kong, "	250,000, "	75 "	
" Swatow, "	300,000, "	130 "	
" Amoy, "	250,000, "	115 "	
" Foo-Chow, "	1,250,000, "	190 "	
" Wau-Chu, "	300,000, "	120 "	
" Ningpo, "	400,000, "	125 "	
" Hangchean, "	1,300,000, "	60 "	
" Shanghai, "	1,000,000, "	80 "	
	5,910,000	895 m.	

These are the principal Chinese ports now open to foreigners, and their foreign commerce alone amounts in value to \$900,000,000. But that trade, enormous and important as it is, is of far less consequence to a telegraphic line connecting these great seaports, than the fact that from these ports the immense internal commerce of the whole empire spreads through its vast system of multitudinous canals and navigable rivers. The domestic trade of the 6,000,000 of people in these cities alone is enormous, and their aggregate foreign and domestic commerce—undoubtedly larger than that of the United States—must necessarily avail itself immediately of the facilities of telegraphing the moment a line is established. There is no postal system in China, and correspondence has to be carried on by special messengers where the importance of business justifies so expensive a method, by the irresponsible medium of transient vessels, or the regular foreign steam packets. A new channel of intercourse, speedy, certain, and trustworthy, must absorb, there as everywhere else, the despatches of Government, of commerce, and of social life.

The Meteorograph.

Among the scientific instruments on exhibition at the Paris Exposition, none attracted more attention than the "meteorograph," an invention of the celebrated Italian astronomer, Father Secchi. This wonderful instrument records, automatically, the time of day, the changes in the temperature, pressure, moisture and motion of the atmosphere, etc. The distinguished inventor was in Paris, and passed the most of his time at the Exhibition, carefully noticing and studying everything new and valuable. The instrument of which he is the inventor moves by clock-work, and marks down upon a long strip of paper, which is unrolled at one end and rolled up at the other, the time of day, the changes in temperature, the direction and intensity of the wind, the height of the barometer, the hygrometric state of the atmosphere, and the quantity of rain which may have fallen within a given time. All this is effected by a pencil for each separate work, kept constantly in motion, and moved by nicely-adjusted machinery, which performs its task with unerring certainty and fidelity. The diagrams made by this instrument, as well as the instrument itself, were objects of great interest among the scientific as well as curious portion of the visitors.

Testing Wrought Iron by Magnetism.

When a wrought iron bar is placed in the magnetic equator, that is in a direction at right angles to that of the magnetic north and south, it becomes temporarily magnetic, one side having a north, the other a south polarity. If now a magnetic needle be placed in front of the bar and moved along parallel with the latter, it will not be disturbed in pointing due north and south as long as the iron of the bar is homogenous; but whenever there is the slightest flaw its polarity will be affected and it will deviate from a proper direction opposite the affected part. Repeated experiments have been made with bars supposed to be homogenous, and examination at the point of disturbance always revealed a defect. A small pin of steel inserted longitudinally in a four-inch wrought iron bar and welded up, was accurately indicated by the needle.

Process for Covering Iron or Steel with Copper without a Battery.

This process, due to Herr Graeger, is described in a recent number of the *Polytechnisches Notizblatt*. The objects are first well cleaned, and then painted over with a solution of protochloride of tin, and immediately afterward with an ammoniacal solution of sulphate of copper. The layer of copper thus produced adheres so firmly to the iron or steel, that the different objects can be rubbed and polished with fine chalk without injuring the deposit. The tin solution is prepared with 1 part of crystallized chloride of tin, 2 parts of water, and 2 parts of hydrochloric acid. The copper solution, with 1 part sulphate of copper, 16 parts of water, ammonia sufficient to re-dissolve the precipitate formed when it is added. Zinc and galvanized iron can be treated, according to Boettger, directly by the copper solution, without using the tin salt.

West Point—The Telegraph Drill.

Correspondence of the N. Y. Tribune.

West Point, June 30, 1868. 1

Perhaps the most interesting feature of the exhibition at the Military Academy was the telegraph drill to-day, interesting from the fact that it was the first practical drill of the new system, and officers and visitors were alike astonished at the rapidity with which a telegraph line could be established, ready for the transmission of messages. To Gen. Grant, Pitcher, and Schriver the nation is indebted for introducing a branch of study at the Academy, the want of the actual execution of which was often experienced by those Generals during the late war, and to Gen. Meyer belongs the honor of having arranged and perfected that system until now one mile of wire can be laid, with apparatus attached and ready for work, in seven minutes. The cadets are instructed, not only in all the duties of locating the lines, but in the attaching of instruments and the transmission of messages. Passing slowly along the road in review is the Flying Telegraph Train. First came the wire wagon. In the rear of this vehicle, on an adjustable stanchion, is a reel of wire with a crank to wind the wire when the line is taken up, extra reels of wire, insulated wire to be used when rivers are to be crossed, naked wire for ordinary uses, and the "sounder." The cadets are so thoroughly trained in this branch that they can both receive and transmit messages by sound. In this wagon is also a patent reel made to fit on the back of a horse in case a point is reached where it is impossible to go on in the wagon. Followed by the lance wagon in which are placed the poles for the wire, crowbars, a tool-chest, pins, nails, and ladders, so if necessary to have the line run through dense woods, the wire can be fastened to the limb of a tree. Followed by the telegraph station also on wheels containing the batteries so arranged to be almost impossible to be broken, a very ingenious contrivance made by the firm of Charles T. & J. N. Chester of New York. The improvements made in military telegraphy by this firm have received warm comments from military officers and the insulator for naked wire is admitted by foreign offices to be the finest in the world; and I would here state this fact gratifying to every American, that officers from other nations are now in this country, for the purpose of learning our military telegraphic and signal system. The batteries run along the side of the wagon, and can be easily removed and with the instruments carried into a house, and have only to be supplied once a fortnight. In this wagon are desks, stools, and all the appliances for four telegraph lines. These three wagons constitute a Flying Telegraph train. After passing in review the wagons halted near the barracks, about three quarters of a mile from the hotel. The signal was given and the drill began. First came on the double quick a non-commissioned officer bearing a flag and marking off the points with a pin where the poles or lances are to be set. Next followed the wire wagon also on the run, reeling out the wire, next the lance wagon on the double quick, the men inside throwing out a lance at every pin, and a squad of men with crow

bars made holes in the ground, taking up the pin, setting the lance and laying the wire. Then followed the station wagon with instruments set, and in seven minutes three-quarters of a mile was ready, and a message was passing over the wire, and an answer received from headquarters. A station was opened at Fort Putnam, on the hill, within sight of the hotel, and a signal officer was sent up with a flag. Now the two systems were combined, a message was sent to the fort with instructions to answer by the flag, and in a few seconds the waving flag spelt out the answering words. The great importance of the signal system to the united service cannot be too highly appreciated when land and naval forces unite in attack or defense. One of the most interesting features of the presence of the fleet is the conversation carried on by signals between the middies on board and the cadets on shore. The movements of a train can be likened, in some respects, to those of light artillery, and lines can be ordered to any point and stations established with as much ease and certainty as a gun can be ordered to any position. The average rate of speed in building a telegraph line, putting it up and setting it at work, when without emergency, is one hour to three miles of line. The drill yesterday was to exhibit the working with the greatest possible speed. The men attached to the field electric telegraph, or the flying telegraph train, are drilled with as much precision as soldiers in any other branch of the service. It is the object of the train organization to be able to erect lines and establish stations rapidly along roads on which the army is moving, or to run out lines and make communications anywhere between forces actually engaged upon the field—to be able, in fact, to send orders by electricity almost as soon as issued by the Commander-in-chief, instead of mounted couriers to be lost in the woods or aids galloping under the enemy's fire. After testing the telegraph to the satisfaction of all—the ladies sending messages to the barracks and the fleet—the order was given to take down the line. This movement was also executed on the double quick, and in a few moments the wagons, with the wire reeled up and the lances in the wagon, passed slowly along the road to quarters, and no trace remained of the military telegraph line.

Correspondence.

Another Atlantic Cable.

Correspondence of the N. Y. World.

PARIS, June 5.

The efforts of Mr. George Law, of New York, backed by the original French Company, under Eugene Delessert, have finally resulted in obtaining an official document from the Minister of the Interior which will enable the company to carry out their intentions of laying a transatlantic cable between Brest and New York. In April, 1867, an act was passed by the Legislature of the State of New York, at Albany, granting to C. C. Leigh, and others, the exclusive right to lay cables between France and New York for the term of twenty years. The French Government has decided to receive the joint tender of Messrs. Delessert, Law, and Leigh on the 15th of June, subject to the following conditions:

ARTICLE 1. The line will set out from Brest to terminate at one of the points on the coast between Boston and New York, without touching at any foreign shore. It must be ready for service by the 1st of September, 1869.

ART. 2. The Government engages itself not to make another contract during fifteen years from the 1st of September, 1869.

ART. 3. The rules of the International Convention of Paris, or of any other convention which may be decreed to replace it, shall be applied to the use of these lines.

ART. 4. The price of the despatch of twenty words cannot exceed \$12.

ART. 5. The Government reserves to itself the right of exercising on the service of the cable the control which it may judge fit. For this purpose, the service of the line shall be installed in one of the rooms of the Telegraphic Bureau at

Brest, which must be rented by the holders of the grant from Government; the employees of the Bureau of the Government only to be employed to transmit and receive despatches by the cable.

ART. 6. The contractors cannot unite with any other French or Foreign company of the Transatlantic cable, nor sell out their interests without the authorization of the Government.

ART. 7. If during the term of fifteen years which the Government engages itself not to grant any other permission to lay a transatlantic cable a single cable should become insufficient, owing to the increase of correspondence or to any other cause, the contractors shall be forced to lay another cable within thirteen months from the time from which notice is given them, unless they prefer to renounce the privilege granted them in Article 2.

ART. 8. If during the fifteen years of the cable service communications should be intercepted for a consecutive period of six months, the privilege established in favor of the holders shall be null and void, and the Government will resume the power of granting concessions to other parties.

ART. 9. No parties shall be admitted to this contract who have not first been accepted by the Minister of the Interior, nor until they have paid as security to the "Caisse des Depots et Consignation" of Paris the sum of one million of francs (\$200,000).

ART. 10. Within the three months which follow the 15th of June the contractors will be summoned to show the existence of an anonymous society, regularly constituted in stocks, with a capital of \$5,000,000.

ARTS. 11 to 13. Contain stipulations as to interests of administrators.

ART. 14. The convention of which the present stipulations regulate the conditions will not be final until it has been signed by the Emperor. Signed by the Director General of the Telegraphic lines of France, and approved by the Minister of the Interior.

The Corps Legislatif has been engaged in making new telegraphic regulations during the present week, the most important of which is the reduction in the price of the despatch between any two bureaus in the same department. The department of the Seine, for instance, includes Versailles, St. Germain, and several other small towns—the price of the despatch of twenty words, 20 cents; that of Paris has been 1 franc—it has been reduced to 10 cents, the price remaining the same for the interior of Paris. It is proposed in the new law to lay the wires underground near cities. The renewal of old wires will require an expenditure of several millions of francs.

CANTON, Miss., June 5, 1868.

Mr. Editor:

I do most heartily sympathize with you and your correspondent "G. S.," from Frederick, Md., in your championship of lady operators; and I am surprised and grieved that there should be one operator in the land so purely selfish as to wish to bar women out from an employment so entirely suitable for them. One of the great wants of the age, and especially in this country, is the enlargement of the field of remunerative labor accessible to woman.

Do this, and you free her from the debasing influences and manifold temptations which surround a life of poverty and want, and thus elevate her moral status, and, through her, that of the nation; for the moral status of a community or a nation is ever graduated by that of its women.

Alas! how many hapless women now wander through the streets of our cities ruined and outcast, who might have been shedding the light of virtuous woman around happy homes, had a revolution in this regard only taken place years ago.

Here, in the South, laborers being scarce, and labor sufficiently remunerative, we but lightly feel this great want; but let one travel further North, where the laborers are many and employment scarce and poorly remunerative, and he will be made painfully sensible of this great defect in civilization; and when similar circumstances surround us we will see it likewise here.

I cannot but think that if those gentlemen who have arrayed themselves against female operators will but for a moment consider how many occupations are open to them, and how very few are open to women, and how much women, and through her the community, suffers by this privation, they will join with me in advocating the turning over of not

only telegraphing, but every genteel indoor employment, as far as practicable, into the hands of woman. So mote it be.

JUSTICE.

Extraordinary Eclipse.

The total eclipse of the sun which is to take place on the 18th of August next, will present such a long duration of darkness that astronomers are anticipating it with unusual interest. From near Aden the central line of the eclipse extends to the southern coast of New Guiana, crossing Hindoostan, the Bay of Bengal, the Malayan Peninsula, and the Gulf of Siam on the way; and at certain places on this line the duration of total darkness will be at 6:46. At the date in question the moon will not be more than six hours from its perigee, while the sun will not be far from its apogee; a twofold condition which increases the apparent diameter of the moon, and shows the apparent diameter of the sun, nearly at the smallest. Hence the prolonged darkness. Such a chance occurs but rarely, and we cannot wonder that a strong desire exists to make the most of it in endeavors to solve certain highly important questions in physical science. Unluckily, the southwest monsoon will be at its full blast on the 10th of August, which, with its heavy clouds, will render observation either uncertain or impossible, except on the eastern side of the mountain ranges.

Pneumatic Tubes.

Governor Fenton has signed the bill authorizing the formation of a Pneumatic Despatch Company in this city for the transmission of letters and light merchandise. A pneumatic tube was exhibited at the American Institute Fair last fall, and attracted much attention. The method of propulsion is very simple. A hollow tube is laid, a car which exactly fits the bore is placed at one end, and the air is then exhausted from the opposite end of the tube, when the atmospheric pressure on the car forces it through the tube. It is said that cars can be safely run by this method at the rate of forty or fifty miles an hour. The first line will be constructed immediately, and if successful, similar lines will be built to all parts of New York and Brooklyn for the transmission of letters and light packages.

A charter for a pneumatic railway has also been granted by the New Jersey Legislature, and it is expected that a large tube will soon be laid between Jersey City and Newark for transmitting both light and heavy freight. If this line should prove successful, the company will build a passenger pneumatic railway through the State. This system is a great improvement over the present railroads. A much higher rate of speed can be obtained without danger to life or limb, and it is claimed that by this method cars can be run at much less expense than at present.

Pacific and Atlantic Telegraph Company.

The annual meeting of the stockholders of the Pacific and Atlantic Telegraph Company of the United States was held May 5th, at the Board of Trade Rooms. A. F. Marthens was called to the chair when the President and Treasurer read their reports. From these reports it appears that the company have at present 1,853 miles of line, 3,244 miles of wire, and have no debt beyond that arising from the current expense of the lines, and that the treasury has in it a handsome sum of money.

An election of officers for the ensuing year was then gone into. The election resulted in the unanimous election of the following board of officers:

For President—George H. Thurston, of Pittsburgh.

For Directors—John W. Ellis, of Cincinnati; Robert J. Anderson, Edward J. Allen, James L. Shaw, William Varnum, and David McCandless, of Pittsburgh.

The American Type Writing Machine.

Heretofore, the very first requisite of the Telegraph Operator, has been *rapid penmanship*, but by a recent and novel invention, called the American Type Writing Machine, the operator is enabled to produce "copy" more rapidly, compact and legible than the very best penman. By the use of this instrument, the students of Porter's Telegraph College may become first class Telegraph Operators, without regard to their capability as penmen. This machine has been perfected, and is now being introduced on Telegraph lines, solely through the agency of the Principal of this Institution, a separate department having been fitted up for this especial purpose.

I remain, very truly and respectfully yours,

E. PAYSON PORTER,

Principal Porter's Telegraph College.

We would be glad of more information on so important a subject. Will Mr. Porter enlighten us.—ED.

Telegraph Line to Camden, Arkansas.

It is now well-settled that the proposed telegraph line from Monroe to Camden will be built and that speedily. The company which was about organized will, however, retire from the management, having transferred its claims to the Western Union Telegraph Company, which has already forwarded the necessary material from New York to build and equip the line.

We congratulate the business men of Trenton, who were the first to give this enterprise a tangible shape, upon the certain success of their efforts in this matter. It will prove an important step in insuring the success of the New Orleans and Ouachita Valley Packet Line which extends to Camden and is built upon the regular and unsurpassed Trenton and New Orleans packets. Our young friend Mr. G. L. Herndon likewise deserves credit for the energy and devotion he has displayed in getting telegraphic communication extended to Camden. We believe it was through his efforts the transfer was made to the Western Union Company, for which interest in its behalf the Company might well afford to make a handsome return.

A general telegraphic Congress is about to be held at Vienna. It will be proposed to reduce the tariff on despatches between Italy and Germany to 4fr. and to lower the rate in Italy itself very considerably, so that a telegram of fifteen words will only cost 1fr., and 10c. for every additional word. The idea entertained some time ago in Italy, and which had taken the form of serious negotiation, of transferring all the telegraphs from the Government to private enterprise and superintendence, appears to be quite abandoned.

Interesting Facts.

A legal stone is fourteen pounds in England, sixteen pounds in Holland. A fathom, six feet, is derived from the height of a full grown man. A hand, in horse measure, is four inches. An Irish mile is 2,240 yards; a Scotch mile is 1,984; a German, 1,806; a Turkish, 1,626. An acre is 1,840 square yards, 1 foot and 3½ inches, each way. A square mile, 1,760 yards each way, contains 640 acres. The human body consists of 240 bones, 9 kinds of articulations or joinings, 100 cartilages or ligaments, 400 muscles or tendons, and 100 nerves, besides blood, arteries, veins, etc. Potatoes planted below three feet do not vegetate; at one foot they grow thickest, and at two feet they are retarded two or three months. There are no solid rocks in the arctic regions, owing to the severe frosts. The surface of the sea is estimated at 150,000,000 square miles, taking the whole surface of the globe at 190,000,000 square miles. Its greatest depth is supposed to be equal to the height of the highest mountain, or four miles.

An Air-tight Galvanic Battery.

Mr. Chester, electrical instrument maker, describes in the pages of a contemporary a new form of galvanic battery, the beauties of which are cleanliness, portability, and power, besides entirely dispensing with acids, preventing evaporation and the generation of gas, and obviating the removal of the exciting fluid when the battery is not in use.

The battery is made up of glass cells three inches long and one inch in diameter, inserted in a wooden block; a zinc cover is provided for each glass, and a projection from this zinc cover, running down into the glass, forms the zinc element. The other element is carbon, carefully connected with platinum, and well insulated from the zinc cover. This cover has a plate of soft rubber interposed between it and the glass top, and the packing is made completely air-tight and water-tight by the pressure of two rubber springs pulling the cover firmly down. Connection from one cell to the next is quickly made by short pieces of spiral Springs. The battery is charged by filling the glasses half full of water, adding some bisulphate of mercury, and a little shred of cloth is interposed between the plates so as to retain moisture. To use this battery it is necessary to invert it, and thus allow the fluid to flow over the plates and saturate the piece of cloth. Restoring the battery, the fluid leaves the plates, though a drop remains in the cloth shred, and in this state, simply from these drops of moisture, powerful intensity currents, producing violent muscular contractions, are given off, and this is the case even forty-eight hours after the immersion of the plates. It is evident that if we can employ these currents, resulting from the simple expenditure of one drop of the fluid, usefully, that we have exhausted a very small portion of the force in reserve, and it is also evident that we can, after use, place the battery out of use for an indefinite time, ready, by the expenditure of another drop of fluid, to give off the desired currents. Properly constructed, we cannot see any reason why the arrangement should not last in good power a year or more for occasional effects; and it can be completely renewed at the rate of fifty cells in one hour. One hundred and fifty cells exceed in intensity one hundred cells of Grove. The parts are all quickly replaced, no acid is used, and no gas generated.

A modification of the construction is made use of when it is wished to employ a fluid of greater energy, but which in decomposition produces gas from which the tight cell must be relieved. Insert a tube through the cover, the opening being just half way down the cell, and the surface of the fluid below. Care being used in inverting the battery, this tube orifice is always in the air space of the cell, whether upright or inverted. When, for convenience, a battery of large quantity is desired to be used occasionally, large glasses and elements are employed; but bolts are substituted for the rubber bands to bind down the zinc covers. An exceedingly convenient battery is thus formed for electric cauterization, where the operation is not too extended. The use of rubber bands, however, in batteries of high tension, is far preferable to bolts, or their equivalents. The very high insulation of this packed battery is evident from the retention of its power for forty-eight hours and more, where the exciting power is derived from a mere drop of fluid.—*Scientific American.*

Servile and timid, superstitious and indolent, the Quichuans have not half the spirit of our North American Indians. It has passed into a proverb that "the Indian lives without shame, eats without repugnance, and dies without fear." Abject as they are, however, they are not wholly without wit. By a secret telegraph system, they will communicate between Quito and Riobamba in one hour. When there was a battle in Pasto, the Indians of Riobamba knew of it two hours after, though eighty leagues distant.

A New Electric Clock.

A novelty in electric clocks has just been invented in France by M. L. De Combettes. It consists of a long pendulum, on the lower portion of which is fixed the clock face. The weight is a sort of box containing an electro-magnet and armature, which, on being attracted, disturbs the equilibrium of the pendulum, and consequently gives it motion. The movement of the armature is made to transmit motion to the hands of the clock in a manner somewhat similar to the mechanism of the alphabet dial telegraph instrument.

In order to make and break the electric circuit, the movement of the pendulum is made use of, one pole of the battery being connected permanently through the axis of suspension to one end of the electro-magnet, while the other pole is connected to a metal plate, against which a point of the pendulum, in connection with the electro-magnet, makes contact at every beat, thus completing the circuit, and causing the electro-magnet to attract the armature. It is stated that only a weak battery is required, and that two Daniell's cells will keep it working for several months.

Electric Gas-Lighting.

Mr. Edward E. Bean exhibited before the Institute of Technology last evening, a new process of lighting street lamps by electricity, which has recently been invented by Mr. Frank Bean, of this city. Mr. Bean's instrument works on the principle of the Morse telegraph, there being an electro-magnet attached to each burner, which is made to operate as a valve to shut off and let on the supply of gas as wanted, and the same power that in telegraphing is used in marking the paper is here exerted on a wheel which turns the valve. By adding together the amounts of pulsation there can be obtained about 50 pounds of power to each valve. Two sets of wires are used, over one of which the "quantity" electricity passes which manipulates the valves, and over the other the "intensity" electricity, which produces the spark. The plan was tried with perfect success last evening, and will soon be publicly exhibited on a larger scale. On Monday next a company will be organized, the Legislature having given them a right to incorporate on a capital of \$300,000. By a new process fifty or more street lamps can be lighted almost instantaneously from a central office, and turned off, when necessary, with equal facility, thereby saving an immense expense.—*Boston Post.*

New Manganese Battery.

A battery, composed essentially of peroxide of manganese and a single liquid, chloride of ammonium, has been recently constructed by M. Leclanche, and, according to *Les mondes*, has been already somewhat extensively adopted, or, at least, taken on trial by several telegraph companies on the Continent. It has been long known that peroxide of manganese possesses an electric conductivity similar to that of metals. The author only uses the natural crystalline peroxide of the purest quality. This is broken up and placed in a porous vessel, where it surrounds a carbon plate, forming the positive pole of the battery, the negative plate outside the porous vessel is simply a thick rod of zinc; the liquid which bathes both plates is a concentrated solution of sal-ammoniac. It appears to be a very constant form of battery, and exceedingly economical.

THE wire of a telegraph line just put up between Dover, N. H., and Lake Winnepiseogee, is made of a steel core surrounded by copper. By this construction, it is claimed, the following advantages are secured: superior conducting power with less weight of metal, durability, and a less number of poles on the line.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address— JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JULY 1, 1868.

Our issue of to-day is 9,000 copies. The official monthly financial statement of the Western Union Telegraph Company is published regularly in the JOURNAL. Every Stockholder should be a subscriber. Terms one dollar per annum.

Banquet to Cyrus W. Field, Esq., to be held at Willis's Rooms, 1st July, 1868.—The Duke of Argyll, K.T., to preside.

57 PALMERSTON BUILDINGS,
OLD BROAD STREET, E. C. }
11th June, 1868.

DEAR SIR: I have the honor to inform you that arrangements have been made to give a banquet to Cyrus W. Field, Esq., as an acknowledgment of the eminent services he has rendered to the New and Old World by his devotion to the Interests of Atlantic Telegraphy through circumstances of protracted difficulty and doubt.

The Banquet will be held at Willis's Rooms, on Wednesday, the 1st of July, under the presidency of His Grace the Duke of Argyll, K.T., the Right Hon. Sir John Pakington, Bart., M.P., the Right Hon. Sir Stafford Northcote, Bart., M.P., John Bright, Esq., M.P., Charles Dickens, Esq., and other gentlemen will take part in the proceedings.

Signed on behalf of the Executive Committee.

JAMES ANDERSON.

EXECUTIVE COMMITTEE.

Sir James Anderson.	The Hon. E. Lyulph Stanley.
Capt. Sherard Osborn, R.N., C.B.	Robert Dudley, Esq.
W. Fothergill Cooke, Esq.	F. W. Chesson, Esq.
Philip Rose, Esq.	Charles Burt, Esq.
Capt. Douglas Galton, C.B., R.E.	J. W. Bushby, Esq.

This proposition to honor Mr. Field has been responded to by the leading men throughout Great Britain, and will be one of the most flattering ovals ever given to a private citizen. It is well deserved. Mr. Field has given a lesson of hope and pluck and courage to the world which it is well and wise to honor. Many in America will join in the banquet given to-day to our countryman and friend.

British Telegraphs.

The proposition to purchase the lines of the Telegraph Companies in Great Britain has been referred to a committee after the bill authorizing the Government to make the purchase had passed a second reading. We still doubt the consummation of the projected purchase, although it would be much more natural for the system to be absorbed by the British Government than our own, and is within so narrow limits as to be easily and unlaboriously controlled. We believe that the committee now appointed will show its wisdom by allowing the system to be worked by those who have so zealously opened it to public use, and thus encourage the private enterprises of the people. That government weakens the nation it governs when it assumes those labors which stimulate the enterprise and strengthen the manhood of the citizen.

The Ocean Telegraph between the United States and the West Indies.

THE project for connecting South America and the West Indies with the United States by an Ocean Telegraph meets with great favor in the Antilles, and the Legislatures of the several colonies which are to participate directly in the benefits of this new enterprise are promptly and cordially responding to the application of the International Ocean Telegraph Company for assistance in the shape of subsidies, and the concession of privileges and immunities to facilitate the execution of the work. The Legislative Council of Jamaica are about to pass a bill in aid of the undertaking; and the Demerara Court of Policy has passed a resolution pledging that Colony to contribute a subsidy of \$15,000 per annum for ten years to the Company.

DEMERARA.

Advices from Georgetown, Demerara, to the 6th inst., have been received.

On the 27th of May, at a meeting of the Court of Policy, a memorial from the International Ocean Telegraph Company was presented, praying for a subsidy in aid of the establishment of telegraphic communication between the United States and the Colony, touching at several of the West India islands. The memorial was supported by resolutions adopted at a meeting held in the morning of the same day, at the rooms of the royal Agricultural and Commercial Society, when the whole question was fully discussed.

His Excellency, the Governor, spoke at some length on the subject, in favor of the memorial, and remarked that under the arrangement now proposed the Colony would have daily communication with the United States, as to the markets and other matters of importance. But one stipulation, he said, which the Imperial Government had suggested, was that no payment should be made until after the completion of the work, and another should be, that the line should be extended to New Amsterdam.

In accordance with his Excellency's views, it was, on motion of the Attorney-General, unanimously resolved "that, it being understood that the British Colonies of British Guiana, Trinidad, Barbadoes and Antigua, and the French Colonies of Guadeloupe and Martinique are requested to contribute toward the expenses of maintaining telegraphic communication between Florida and South America, in certain proportions amounting in the aggregate to \$67,500, this Court pledges itself to recommend to the Combined Court to grant to the Ocean Telegraph Company a subsidy equal to 28½ per cent of the aggregate amount to be contributed by the other colonies, for the period of 10 years, upon condition of the telegraph being completed within three years, and of public information being furnished gratuitously daily, priority being given to Government messages." The action of the Court in this matter meets with the approval of all the intelligent portion of the inhabitants.

More Telegraphic Honors.

We see by our exchanges that A. B. Cornell, Esq., son of the Hon. E. Cornell, is spoken of as a candidate for the Lieutenant-Governorship of the State of New York in connection with Gen. Sickles as the candidate for Governor. Mr. Cornell was not long since manager of the New York office of the New York, Albany and Buffalo Telegraph Company. We have no doubt he would fill gracefully the position proposed for him.

We have had a perfect shower of self-closing keys rained upon us, which will have full notice in our next number. Keys and many other things of interest are crowded out by the semi-annual statement of the Western Union Company, which appears on the following page.

The Telegraph in New Mexico.

FORT UNION, June 27.—Telegraph lines are completed to Fort Union, New Mexico, and will reach Santa Fe next week.

L. G. TILLOTSON & Co., as will be seen by their advertisement, offer for sale a new wire, combining the conductivity of copper with the strength of steel. Thus, one by one the appliances of the telegraph are being brought to perfection. With a good conductor and a good insulator, indoor arrangements are rendered simple and effective. By its superior qualities as a conductor, less weight of this compound wire is required, thus economizing its cost. Read the advertisement.

THE two sons of Dr. R. Ogden Doremus, the well known chemist, while playing in a wooden playhouse at the back of their residence, a few mornings ago, accidentally set it on fire. They were unable to escape immediately, and the younger of the boys perished in the flames.

WE call attention to the advertisement of S. S. Stafford, whose inks and mucilage are already well known.

The circular of the TARIFF BUREAU will be found on the 7th page.

BORN.

In Springfield, Mass., June 24th, a daughter, to George B. Prescott, Esq.

MARRIED.

At the residence of Thomas Chapman, Esq., Brooklyn, N. Y., E. Prentice Bailey, Esq., of Utica, N. Y., to Miss Hannah Chapman.

At St. Paul's Church, by the Rev. Morgan Dix, George W. Roberts to Nettie, daughter of the late Samuel F. Criss—all of this city.

In Macon, Ga., Tuesday, June 16, 1868, at Christ Church by the Rev. H. B. Rees, Mr. Wm. A. Benton to Miss Estella E. Stark.

THE English Test of the Brooks' insulator is again crowded out, although we have already given its main features. We publish the following certificate of the value of that insulator:

BROOKS' PATENT PARAFFINE INSULATOR.

HARRISON BROS. & Co., PROPRIETORS OF THE GRAY'S FERRY AND KENNINGTON WHITE LEAD, COLOR AND CHEMICAL WORKS, CONNECTED BY 125 MILES OF PRIVATE TELEGRAPH WIRES WITH THEIR OFFICE, No. 16 BURLING SLIP, NEW YORK.

105 SOUTH FRONT ST., PHILA., May 27, 1868.

MR. DAVID BROOKS:

DEAR SIR—In reply to your favor requesting us to state our opinion of the BROOKS' PATENT INSULATOR upon our private line between this and our New York Office, we are happy to bear testimony to the perfection of your invention. When our short factory lines, embracing a circuit of about 12 miles, insulated by the ordinary glass insulator, have on many occasions during bad weather almost completely failed, our New York wire, 113 miles, with your insulator, has been in excellent working condition.

We have had much wet weather this spring, but during the hardest rain storms we have had perfect and uninterrupted communication with New York, with little or no escape.

Yours, very respectfully,

HARRISON BROS. & Co.

S. S. STAFFORD'S COMBINED WRITING AND COPYING FLUID, Labeled by me, for the last ten (10) years, ARNOLD'S FLUID Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 38½ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD, Chemist, N. Y.

FINANCIAL REPORT

OF THE
WESTERN UNION TELEGRAPH CO.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 BROADWAY, NEW YORK.

June 29, 1888.

To the Stockholders of the Western Union Telegraph Company:

In pursuance of a resolution of the Executive Committee, the Treasurer herewith submits to the Stockholders his financial report made to the Board of Directors on the 10th instant.

As comparatively few of the Stockholders attend the annual meetings in person, it is deemed proper to give to them, through the JOURNAL, such facts and statements relative to the affairs and business of the Company as will be of interest, and enable them to understand the condition and value of their property. This method is not as satisfactory to the Management as to report to them in person, and answer inquiries and make explanations where needed; but it seems to be the only practicable way of communicating with the great body of Stockholders so widely separated.

In submitting these tables, it is proper to state that the advance made to the Russian Extension Company was upon property of that company in possession of this Company, which is ample to repay such advances, and a portion of which has recently been repaid.

No. 1.

PROFIT AND LOSS ACCOUNT, Dec. 1, 1887, to May 1, 1888.

	Gross Receipts.	Working Expenses, including Paid Other Lines, Rents, Taxes, Re-construction, &c.	Net Profits.
December, 1887.	\$576,135 19	\$379,291 35	\$196,843 84
January, 1888.	539,794 00	366,446 02	173,347 98
February, "	600,183 32	345,855 52	254,327 80
March, "	587,962 23	336,947 65	251,014 58
April, "	602,267 05	356,349 18	245,917 87
Total.	\$2,906,331 79	\$1,783,889 72	\$1,122,442 07
Net Profits, 5 months, to May 1, as per table.			\$1,122,442 07
Miscellaneous Profits.			1,931 45
Surplus, Dec. 1, 1887, as per published exhibit.			174,944 79
Total.			\$1,399,318 31

Of this total there has been appropriated for:

Construction Account, 5 months, to May 1	\$103,592 13
Purchase of Telegraph Stocks	23,806 66
" Real Estate	3,011 14
Sinking Fund, 5 months, at \$20,000 per month	100,000 00
Interest on Bonds, 6 months	171,167 50
Back Dividends on U. S. Stock	432 00
	\$402,009 43
Balance Unappropriated Profits May 1, 1888.	\$897,308 88

TABLE OF ASSETS AND LIABILITIES, MAY 1, 1888.

	Assets.	Liabilities.
Cash	\$560,358 61	
Loans on Call	183,636 77	
Bills Receivable	66,141 24	
Government, Press and Express Accts	40,095 73	
Due from Russian Extension Co. (advances)	325,443 01	
Due from Railroad and Telegraph Companies	5,830 39	
Due from Offices and Superintendents	177,969 61	
Supplies of Wire	81,068 27	
Due on Dividend and Interest Account		\$211,349 26
Due Railroad and Teleg. Companies		127,449 01
Due for Internal Revenue		16,150 98
Due Offices and Superintendents		19,526 80
Sinking Fund, balance unexpended		67,888 70
		442,264 75
Balance Assets over Liabilities, equal		
Balance Unappropriated Profits		897,308 88
	\$1,389,573 63	\$1,389,573 63

No. 2.
CAPITAL STOCK.

At the date of the Report of January 1, 1888, the Capital Stock of the Company, issued, was	\$41,008,800 00
It has since been increased as follows:	
By Exchange for U. S. Teleg. Stock	\$10,800 00
" " American "	2,400 00
" " House "	100 00
By Fractions converted	600 00
	13,900 00
Total Capital Stock issued May 1, 1888.	41,022,700 00
Of this there is owned by the Company	675,000 00
Balance on which Dividends are payable	\$40,347,700 00

No. 3.
BONDED DEBT.

Bonds outstanding December 1, 1887	\$4,946,800
Bonds of 1875 since purchased and cancelled	56,300
Balance of Bonded Debt, May 1, 1888	\$4,890,500
Maturing as follows: In 1873	\$89,500
In 1875	4,801,000
	\$4,890,500

No. 4.
PROPERTY ACCOUNT.

Telegraph Lines and Property, Dec. 1, 1887	\$47,722,640 68
Since added,	
By exchange of Stocks, as per Stock Account	\$13,800
By Application of Profits, Construction Account	\$103,592 13
Purchase of Tel. Stocks	23,806 66
Purchase of Real Estate	3,011 14
	\$130,409 93
	\$142,709 93
Total Property Account, May 1, 1888	\$47,877,350 61

No. 5.
STOCK, BOND, AND PROPERTY BALANCES, MAY 1, 1888

	Assets.	Liabilities.
Telegraph Lines, Equipment, Franchises, etc.	\$47,051,258 49	
Western Union Telegraph Stock owned by Company	667,342 50	
Productive Stock in other Telegraph Companies	53,471 81	
Real Estate	106,177 81	
Capital Stock		\$41,022,700 00
Fractional Shares		15,110 00
Bonded Debt		4,890,500 00
Bond and Mortgage, Buffalo Property		15,000 00
Profits used for Purchase of Property, and Redemption of Bonds		1,384,040 61
	\$47,877,350 61	\$47,877,350 61

No. 6.
STATEMENT OF REVENUE AND EXPENSES FOR SIX MONTHS, ENDING JULY 1, 1888.

Month.	Gross Receipts.	Current Expenses.	Net Profits.
January	\$539,794 00	\$366,446 02	\$173,347 98
February	600,183 32	345,855 52	254,327 80
March	587,962 23	336,947 65	251,014 58
April	602,267 05	356,349 18	245,917 87
May, estimated*	576,000 00	350,000 00	226,000 00
June, "	550,000 00	350,000 00	200,000 00
	\$3,455,196 60	\$2,104,598 37	\$1,350,598 23
Total Net Profit, 6 months, to July 1, as per table			\$1,350,598 23

OF WHICH HAS BEEN APPROPRIATED FOR

Construction, 6 months, to June 30 (3 months estimated)	\$125,563 69
Purchase of Telegraph Stocks	42,586 00
Sinking Fund, 6 months, @ \$20,000 per month	120,000 00
Interest on Bonds, 6 months	171,000 00
Purchase of Real Estate	3,011 14
	\$472,161 49
Balance of Net Profits for the 6 months, over all expenses	\$878,436 74

* Since this table was put in type, the accounts for May business have been made up by the Auditor, and exhibit the following result:

Gross Receipts	\$597,374 47
Expenses	349,165 41
Profit	\$248,209 06
Showing an excess of profit over the estimate of \$23,209 06.	

O. H. PALMER,
Treasurer.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY.

LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Day Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

112 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have new the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1888.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spanning "or any other name." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, SOZ. CONE, SOZ. FLAT, SOZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,
Sole Proprietor, N. Y.

Patents.

No. 76,960.

Copy.

THE UNITED STATES OF AMERICA.

To all to whom these Letters Patent may come.

Whereas, C. F. Varley, of New York, N. Y., has alleged that he has invented a new and useful improvement in insulators for telegraphs, and has made oath that he is a subject of the Queen of Great Britain; that he verily believes he is the original and first inventor or discoverer of the said improvement, and that the same hath not to his knowledge and belief been previously known or used; has paid into the treasury of the United States the sum of thirty-five dollars, and presented a petition to the Commissioner of Patents praying that a patent may be issued therefor.

These are therefore to grant to the said C. F. Varley, his executors, administrators or assigns, for the term of seventeen years, from the twenty-first day of April, one thousand eight hundred and sixty-eight, the full and exclusive right and liberty of making, using and vending to others to be used, the said improvement, a description whereof is given in the annexed schedule and made a part of these presents.

In testimony whereof I have caused these [SEAL.] Letters to be made patent, and the seal of the Patent Office to be hereunto affixed.

Given under my hand at the City of Washington this twenty-first day of April, in the year of our Lord one thousand eight hundred and sixty-eight, and of the Independence of the United States of America the ninety-second.

Countersigned and sealed with the seal of the Patent Office.

W. T. ORTO,
Acting Sec. of the Interior.
A. M. STOUT,
Acting Com'r of Patents.

UNITED STATES PATENT OFFICE.

CROMWELL FLEETWOOD VARLEY, of New York, N. Y.

Letters Patent No. 76,960, dated April 21, 1868.

Improvement in Insulators for Telegraphs.

The Schedule referred to in these Letters Patent, and making part of the same.

To whom it may concern:

Be it known that I, Cromwell Fleetwood Varley, a British subject residing in New York, in the County of New York and State of New York, have invented certain new and useful improvements in the method of and means for renovating or increasing the insulating powers of insulators for electric telegraphs; and I hereby declare the following to be a full, clear and exact description of the same.

My invention consists of improving insulating materials or insulators by saturating them either by boiling, washing, or rubbing with coal tar, naphtha, petroleum, or paraffine oil or paraffine wax. The latter is of necessity applied hot. The former may be applied either hot or cold, but preferably hot. In this way the insulating power of surfaces rendered defective by exposure or other cause can readily be renewed.

I likewise prepare the wooden supports of insulators, viz.: arms, brackets, or wooden pins by saturating them with the above-named material. This is best done by boiling them in it before they are fixed upon the telegraph poles, at a temperature above that of boiling water, so as to expel the moisture; but in the case of arms already fixed to the poles the hot fluid is applied on a dry day. In the case of cracked or otherwise damaged insulators the oil will be found best, as it penetrates the pores and cracks, and resists the rain or moisture.

Having described my invention, what I claim and desire to secure by letters patent is,

1. The use of petroleum or paraffine oil, coal tar naphtha, or paraffine wax for renovating the insulating power of surfaces rendered defective by age, exposure, or other cause as set forth.

2. The use of the above named materials for increasing the insulating power of porous or otherwise imperfect insulators, as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

C. F. VARLEY.

MARCELLUS BAILY,
EDM. F. BROWN,
Witnesses.

78,547.—TELEGRAPH APPARATUS.—Joseph B. Stearns, Boston, Mass.

I claim, 1st, In an electro magnet coil, constructed of two opposing or neutralizing conductors, making each of the conductors of the same length, and giving them each an equal number of turns, as and for the purpose set forth.

2d, A key or other circuit breaker, the back stop of which is connected with the ground by a wire, in which is placed a rheostat or other resistance, and for the purpose set forth.

3d, Combining an electro-magnet constructed as described, or in any other manner, to produce either complete or partial neutralization of its cores, with a key or circuit breaker having a connection between the back stop, or its equivalent, and the ground, through a rheostat or other resistance, as and for the purpose described.

4th, Combining an electro-magnet constructed as described, or in any other manner, by which either a complete or partial neutralization of its cores is produced, with a key or circuit breaker having no connection between its back stop and the ground, as specified.

5th, In combination with an electro-magnet constructed substantially as described, the key, A, the key or circuit breaker, C, local battery, B, and rheostat, F, all constructed and operating substantially as and for the purpose set forth.

78,548.—TELEGRAPH APPARATUS.—J. B. Stearns, Boston, Mass.

I claim, 1st, The combination of a relay consisting of two electro-magnets, so arranged as to act upon the same armature post, in opposite directions, with a key that shall close one circuit before or at the same time that it opens another, when the same are constructed and made to operate substantially as described.

2d, The combination of the relay constructed substantially as described, the sounder key, S, and rheostat, R, when the whole are connected and made to operate substantially in the manner and for the purpose set forth.

3d, In combination with the rheostat, R, the double relay, when the latter is so constructed as to effect the finer adjustments of the forces acting upon the armature or armatures, as set forth.

4th, So arranging the several parts of the apparatus that the resistance offered to the current from the battery at either end of the line is always the same, whatever may be the position of the key at the opposite end.

5th, In combination with the key, S, constructed as described, the rheostat, R, inserted between the key and the ground, substantially as and for the purpose described.

78,478.—TELEGRAPHIC REPEATER.—W. G. Bronson, Wellsville, Ohio.

I claim, 1st, So combining the local circuit, influencing and operating a registering, repeating, or signal instrument in an electro-magnetic telegraph system, with a receiving or relay instrument on a main circuit in said system, as that said local circuit shall stand open when the main circuit is closed, and *vice versa*, all substantially in the manner and for the purpose herein set forth.

2d, An electro-magnetic telegraph relay or receiving instrument, so constructed as that the contact of its armature lever with a suitable connecting point to close a local circuit, shall be broken, and the local

circuit thereby opened when the receiving magnet becomes excited, all substantially in the manner and for the purpose herein set forth.

3d, The combination and arrangement of the armature lever of a telegraphic repeating instrument with the wires of the local circuit, and a connecting or conducting post in said circuit, so as that the local circuit shall be closed through said lever and post when the magnet attracting said lever is inactive, all substantially in the manner and for the purpose herein set forth.

4th, So combining the connecting device in a repeating instrument, whereby the main circuit is closed, with an insulated pin upon the armature lever thereof, as that said main circuit shall be opened when the magnet of the instrument is excited, all substantially in the manner and for the purpose herein set forth.

5th, The improved connecting and conducting post, M, in my repeating instrument, when constructed with a horizontal arm, s, carrying an adjusting screw and connecting pin, r, and combined with an elastic metallic strip, p, from a second conducting post, L, to open and close an electrical circuit, all substantially in the manner and for the purpose herein set forth.

6th, The telegraphic switch, P, constructed of an insulated pivoted plate, provided with metallic strips, each so disposed thereon as that, by a proper alignment thereof, a connection may be formed thereby between any two detached pins or points beneath the plate communicating with the wires of electro-magnetic batteries, to be broken by turning the plate upon its pivot, so as to change the alignment, all substantially in the manner and for the purpose herein set forth.

7th, My improved key or circuit breaker, so constructed as that, when at rest, the main circuit connected therewith shall be closed thereby through its lever, its base plate, and an insulated anvil, substantially in the manner and for the purpose herein set forth.

78,534.—GALVANIC SPECTACLE.—Judah Moses, Hartford, Conn.

I claim the combination with the temples or front of a pair of spectacles, of an electric battery or batteries, so arranged and connected therewith that an electrical current may be caused to pass through the same, substantially as and for the purposes herein specified.

78,495.—TELEGRAPHING.—C. F. Varley, London, England.

I claim, 1st, So arranging telegraphic apparatus as to work by the variation of the increment and decrement of electric potential, and not by the direct action of the electric current itself, as and for the purposes set forth.

2d, The use of an induction coil at the receiving end of the cable, one of its wires being connected between the cable and the ground, and the other or secondary wire, connected with the receiving instrument, as and for the purposes set forth.

3d, The use of a condenser or condensers between the receiving end of the cable and the earth, with or without resistance coils between the cable and the earth, as and for the purposes set forth.

4th, The use of a condenser at the sending end of the cable, with or without resistance coils connecting its two armatures, as and for the purposes set forth.

5th, The use of a condenser at each end of the cable, the cable being connected with the ground through a resistance coil and a battery, so as to keep the cable always negatively electrified, as and for the purposes set forth.

As an experiment, several streets in the city of Edinburgh are being illuminated at night by means of the lime light.

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Alms House	25	Laurel Hill	75—
Bustleton	200 & 1	Lazaretto	1.00
Bridesburg	50 & 1	Mount Airy	75 & 2
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Branchtown	75 & 2	Milestown	150 & 1
Conshohocken	25 & 2	Mantua	15 & 1
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Chelton Hills	150 & 2	Manayunk	25 & 2
Columbia Bridge	50 & 1	Nicetown	75 & 2
Darby (upper)	150 & 1	Naval Asylum	25
Darby (lower)	125 & 1	Navy Yard	15
Eastern Penitentiary	25	" to vessels in river	75
East Kensington	15	Point Breeze	1.00
Friends Insane Asylum	50 & 1	Port Richmond	25 & 2
Falls of Schuylkill	75 & 2	Roxborough	50 & 2
Frankford	15 & 1	Red Bank, N. J., on Del	75
Fox Chase	200 & 1	river	75
Fisher's Lane	75 & 2	Rising Sun	75 & 2
Fairmount	15	Spring Mills	50 & 2
Fairmount Locks	15 & 1	Shoemakerstown	1.50
Fort Mifflin	1.50	Tioga Station	75 & 2
Gloucester, N. J.	50	Torresdale	1.50 & 1
Gibson's Point	25 & 2	Union Drove Yards	10 & 1
Greenwich Point	50 & 2	Woodland Terrace	25 & 1
Germantown	25 & 2	Wayne Station	50 & 2
Holmesburg	125 & 1	West Philadelphia	15 & 1
Harrowgate	50 & 1	" " west	25 & 2
Hestonville	50 & 1	of 40th street	25 & 2
Haddington	50 & 1	West Kensington	15
Kingsessing	100 & 1	Whitehall near Frank-	50 & 1
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Sulphuric Acid and Platinum.

One of the most valuable attributes of platinum, according to the text-books, is that it is unacted upon by acids, yet M. Scheurer Kestner, of Thaur, has shown that not only are the platinum alembics acted upon when used in the manufacture of sulphuric acid, but he has also determined the amount of waste. In an apparatus yielding 8,800 pounds of concentrated acid daily, this production, he found, was attended with a loss of one-quarter ounce of platinum, even when the acid was nearly free from nitrous vapors, and as much as two or three times this amount when the acid was no freer from these vapors than it ordinarily is. New alembics suffer less than those which have been in use for a long time, because of the superior compactness of the metal when freshly hammered. For a remedy, he recommends adding sulphate of ammonia to the acid in the platinum vessel, that salt being decomposed by the nitrous vapors, and its base combining, thereby renders them inert. A still better remedy lies in the discovery that platinum containing iridium is much more durable than the former metal alone, and with a knowledge of this fact, all the platinum worked into alembics on the Continent, is now alloyed with a small portion of iridium.

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
July 1, 1886.

To all Offices on W. U. Lines—

The following changes have occurred since June 15th, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Allegheny Springs, Va., Tariff same as Christiansburg, Va.
Apoahqui, N. B., tariff same as Norton, N. B.
Bloomfield, N. J., tariff same as Orange, N. J.
Downingtown, Pa., tariff same as Lancaster (offices having "special sheet A" will use "special rate" to Lancaster for Downingtown).
Florence, Mass., tariff same as Northampton, Mass.
Hawkesbury (also called Ship Harbor), Cape Breton, tariff 12 and 1 more than to Plaister Cove, C. B.
Huntingdon, Pa., tariff same as Altoona, Pa., or 30 and 3 added to rate to Pittsburgh or Harrisburgh. Offices having "special sheet A" will use their "special rate" to these points in computing tariff to Altoona, and offices between Pittsburgh and Philadelphia the rate to Altoona given on printed sheet of rates for Penn. R. R.
Morrisania, N. Y., tariff same as Fordham, N. Y.

THE FOLLOWING "SUMMER OFFICES" HAVE BEEN RE-OPENED:

Atlantic City, N. J., } tariff same as heretofore, or
Cape Island, N. J., } 50 more than to Philadel-
Cape May Court House, N. J., } phia.
Catakill Mountain House, N. Y., tariff same as heretofore.
Schooleys Mountain, N. J., tariff same as heretofore, or same as Hackettsown, N. J.

OFFICES OPENED ON OTHER LINES.

Calumet, Mich., tariff 310 and 18 from Chicago, check Chicago.
Cimarron, New Mexico, tariff 250 and 17 from Denver, Col., check Denver.
Eagle River, Mich., tariff 340 and 20 from Chicago, check Chicago.
Hancock, Mich., tariff 265 and 18 from Chicago, check Chicago.
Trinidad, Col., tariff 200 and 18 from Denver, check Denver.
The following are "Summer Offices":
Clifton House, Ont., tariff same as Hamilton, Ont.
Pequot House, Conn., tariff 25 and 2 from New London, Conn., check New London.

OFFICES CLOSED.

Foster, Pa. Loda, Ill.

GENERAL INFORMATION.

The name of the office heretofore known as Clarksville, N. J., has been changed to Spruce Run, N. J., and Calumet, Ind., to Coffee Creek, Ind. Tariff to Pleasantville, Pa., will hereafter be same as Titusville, Pa.

WILLIAM ORTON,
President.

Underground Telegraphs.

The system of underground telegraph lines insulated with an asphalt compound, noticed so favorably in the Paris Exhibition, has lately been tried with highly satisfactory results by the Royal Engineers in the yard of the Brompton Barracks, at Chatham, England. This system, the invention of Mr. Donald Nicoll, consists in laying down a series of rigid sections, or rods of asphalt containing the wires, in trenches in the earth, as lengths of iron gas-pipe are laid. These sections are in about twelve feet lengths, the conducting wires protruding at the ends, and being alternately left straight and twisted into "cork-screws." In planting the lines, the straight ends of one section are pushed into the "corkscrews" of the next, and so on. The blow of a hammer upon the "corkscrews" ensures perfect contact, and when the junction is filled in with melted asphalt perfect insulation is also effected. In this way a dozen joints may be insulated at once. A prominent feature of this system is that the insulating material is poured in at a temperature considerably above that of boiling water, so that if any moisture settles upon the ends of the sections it is driven off in the form of steam as soon as the melted insulator reaches it. The cost of laying is \$100 a mile.

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THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them.

Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

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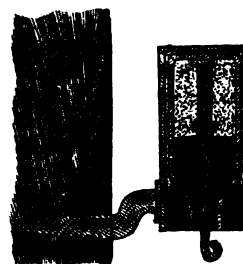
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JOHN POLHEMUS, Printer and Stationer, 102 Nassau St., N. Y.

JOURNAL OF THE TELEGRAPH.

NO. 17.

NEW YORK, JULY 15, 1868.

VOL. I.

THE COURTESIES OF SCIENCE.

We published not long ago a letter from Prof. Page acknowledging, in the most graceful and disinterested terms, that although he had supposed himself justly entitled to the credit every where accorded to him in America of the invention of the hammer circuit breaker, yet on finding that Prof. McGauley, formerly of *The Scientific American*, had made the discovery previous to his own, at once gave him the credit, although it cost him considerable labor to ascertain the facts. The frank and manly language of that letter cannot be too often repeated in these days of selfishness and rapacity.

He says:

"I have proceeded on the principle of according to every inventor and discoverer his just dues, regardless of personal and national consideration. If this discovery in his favor should be of any benefit in raising means for his family, I shall rejoice and feel proud that my humble efforts to do justice to a co-laborer in the cause of science have met with such a reward."

Such is the fruit of a truly honorable mind, and worthy of universal imitation.

In a somewhat similar spirit is a recent acknowledgment by Sir W. Thompson, of Glasgow, to the Royal Society of England, that his claims to being the inventor of the reciprocal-electrophorus machine, by which mechanical force is converted into electricity, are properly due to Mr. C. F. Varley, who had discovered and patented an instrument for this purpose eight years before. He says:

"The reciprocal electrophorus principle, which seemed to me a novelty in the communication to the Royal Society and in the *Philosophical Magazine* of last January referred to, had, as I now find, been invented and published by Mr. Varley long before, in his patent of 1860, when it was, I believe, really new to science.

POSTSCRIPT.—Glasgow College, March 20th, 1868.—In looking further into Mr. Varley's patent, I find that he describes an arrangement for making spring contracts instead of the narrow air spaces for sparks, and that he uses the spring contracts to enable him to commence with a very small difference of potentials, and to magnify on the compound interest principle. He even states that he can commence with such a very small difference of potentials, as can be produced by a single thermo-electric current, and by the use of his inductive instrument can multiply this in a measured proportion until he reaches a difference of potentials measurable by an ordinary electrometer. Thus it appears that his anticipation of all that I have done in my "Replenisher" is even more complete than I supposed when writing the preceding."

The history of the apparatus, and how Mr. Varley came to construct it, is somewhat interesting. In the beginning of 1859 he was investigating the cause of the source of electrical power in the ordinary frictional machine, and in the course of a long walk discovered the principle of the instrument now under notice. On his return home he made the following simple experiment, which anybody may perform without difficulty. Two gold-leaf electrometers were used both as stands and to show what was going on. Any glass insulating vessel will do, when the object is only to get sparks from the apparatus. Two tin saucepans of one pint capacity were then placed upon the electrometer, and a cylindrical tin biscuit canister, 3in. in diameter, had a stick of sealing wax attached to it to form an insulating handle. The canister was first inserted in the saucepan, and made to touch the bottom, so that

any minute charge of electricity it might contain was, by the well known law of Faraday, conveyed to the exterior of the saucepan. The canister was then elevated about half an inch from the bottom of the saucepan, and touched by the hand to connect it with the earth. Suppose now the saucepan to have been positive, it imparted to the canister, by induction, a negative charge, without giving up any of its own electricity. The canister was then removed and placed inside the other saucepan, to which it yielded up its negative charge on coming in contact therewith. The canister was next lifted, as before, half an inch from the bottom, and then touched with the finger to connect it with the earth. The negative charge thus produced in the second saucepan by induction caused the canister to take up a positive charge from the earth. The canister was now placed in the first saucepan, to which it immediately imparted its new charge. These operations were repeated again and again, the charge in the canister each time increasing in proportion to the charges in the two saucepans. It was not until the operation had been repeated seventy or eighty times that any divergence of the gold leaves became visible. They now began rapidly to open with each fresh insertion of the canister, and soon sparks half an inch long were readily obtained from the saucepans, the movements of the canister being kept up. The inventor, delighted with his success, in running off to bring Mrs. Varley to witness it, upset the apparatus, and smashed one of the electrometers.

In a very few minutes, however, a very simple insulating stand was made to take the place of the electrometer. A quart wine-bottle was made hot before the fire; its cork was cemented with sealing wax to the bottom of the saucepan, and on inserting the cork in the mouth of the bottle, the apparatus was once more in order.

Care must be taken in repeating the curious electrical experiment just described, not to touch the saucepans with the finger during the operations; neither must the canister come in contact with the saucepan again after it has been touched by the finger. It may take three or four minutes to get sparks by the operations just described, but the matter may be expedited by rubbing a stick of sealing wax, and giving one of the saucepans a small charge to begin with. When the saucepans are worked up to full intensity, the operator, with very little further work may continue taking sparks *ad libitum*.

FARADAY has shown that if a small cubical space be inclosed by arranging square bar magnets, with their like poles in opposition, so as to form a chamber, within that space all local magnetism inferior in power to the magnets employed will be neutralized. The same effect may be obtained with electro-magnets as with permanent magnets, and it is proposed in the *Merchants' Magazine* thus to enclose the compass of an iron ship, as a remedy for the deviation by local attraction. A battery might be constructed to be excited by the sea water flowing through it, requiring no attention as long as the zinc plates lasted.

The Late Matthew Vassar—Closing Scenes of His Life—His Annual Address.

[Correspondence of the Evening Post.]

VASSAR COLLEGE,
POUGHKEEPSIE, June 23, 1868.

Death has to-day entered this institution for the first time. The trustees of the college had begun their annual session at 11 o'clock, and some preliminary business had been transacted, when the venerable founder, Matthew Vassar, proceeded to read his annual address, in which he was in the habit of making suggestions to the Board concerning the management and general interests of the institution. He was in his usual good spirits, scattering kindly words like pearls, but appeared more feeble in body than common, having been afflicted for several months with a functional affection of the heart. He usually stood at the side of the chairman of the Board of Trustees (William Kelley) when reading his yearly address, but to-day he sat in his chair, with a peculiarly benevolent expression of countenance. He had almost finished reading his communication, when a sudden pallor overspread his face, his voice faltered, his arms fell at his side, and his paper dropped upon the floor. The gentlemen near him sprang to his chair, others gathered around, and he was placed near an open window. Miss Avery, the resident physician of the college, was sent for, and appeared in a few minutes, but the spirit had just departed, at ten minutes before twelve o'clock.

The scene was sublime. God put into the heart of this good old man a desire to give half his fortune which he had been for fifty years in accumulating, for the holy purpose of providing the means for the thorough education of women. He did it, and he had labored cheerfully, lovingly and arduously with the trustees in carrying out his noble design. For nearly three years it had been a prosperous seminary of learning. He had lived to see the desire of his heart accomplished, and to be greeted, year after year, on "Founder's Day," by the sweet voices of more than three hundred young women in song, calling him "father," and welcoming him to the temple of instruction he had prepared for their benefit. To-day these loving ones gathered in tearful groups around his lifeless form in the parlor of the Lady Principal, into which it had been conveyed from the library.

An hour before he had been in the same relative position to the chairman and Board of Trustees of the college, which he occupied more than seven years ago, when he handed to them the key of a strong box on the table, containing over four hundred thousand dollars, for the establishment of the college, and said: "And now, gentlemen, I transfer to your possession and ownership the real and personal property which I have set apart for the accomplishment of my designs." He had read nearly all of his suggestions for the enlargement of the sphere of usefulness in which the college is engaged, when the angel of death summoned him to the spirit land. Had a few more moments of earthly life been given him he would have read the following now remarkable closing sentences of his address:

"And now, gentlemen, on closing these remarks, I would humbly and solemnly implore the Divine Goodness to continue His smiles and favor on your Institution, and bestow upon all hearts connected therewith His love and blessings, having peculiarly protected us by His Providence through all our college trials for three consecutive years, without a single death in our board, or serious illness or death of one of the pupils within the college walls. Wishing you, gentlemen, a continuance of health and happiness, I bid you a cordial and final farewell. Thanking you kindly for your official attentions and services, and not expecting, from my advanced years and increasing infirmities, to meet with you officially again, I implore the Divine goodness to guide and direct you aright in all your councils."

Mr. Vassar lived to enjoy the fruition of his labors in a great work of benevolence, and it seemed fitting that he should die among his fellow toilers in the field of highest culture of the head and heart of woman, with the implements of that blessed labor in his hands. The death of that good man, whose name is immortal among men, seen in the light of surrounding circumstances, was truly sublime.

B. J. L.

Correspondence.

Batteries and their Composition.

To the Editor Journal of the Telegraph:

SIR,—I have been waiting for Mr. Fitch to fulfil the promise made in his last letter and point out some more of Mr. Varley's errors, which he claims to have found.

As in my former letter I was careful to say that I disclaimed any intention to *criticise* Mr. Varley's statements, so I desire now to state that my purpose is not to *defend* them; either the one or the other might perhaps be considered uncalled for and impertinent. However, as Mr. Fitch holds himself "open to criticism" (as his letter certainly is), I have thought that a few remarks from "one of those who deem it necessary to refer to foreign authors to substantiate scientific truth," might not be inappropriate.

In the first place, the "deposition of hydrogen upon the surface of the copper," does render the copper almost "as positive as the zinc," and the diminution of the electric force, is due to this polarization and not to the insulation of the copper as Mr. F. states; because hydrogen has an affinity for oxygen vastly superior to copper and nearly equal to zinc; if this affinity was equal to the affinity of the zinc, then under the theory most generally accepted, the decomposition of water being impossible, no current of force would result, whereas we know that there is a slight current, in the proper direction, equal to the difference of the affinities. "The copper plate in the Daniell's battery" is not "absolutely negative," but is held in a negative condition by the superior tension of the zinc. When the ship owners came to Sir Humphrey Davy, it was not to tell him that copper was indestructible, but the reverse; and Sir Humphrey told them how to save their copper by rendering it negative with metallic zinc.

Shall we rob Bunsen by giving all the praise for constant batteries to Daniell and Grove? asks Mr. Fitch. Certainly we shall not, and do not. Bunsen had nothing to do with solving the question of *permanence* in galvanic batteries. Five years after Grove had read a description of, and exhibited his battery to the chemical section of the British Association, and seven years after Daniell's paper had been published in the Philosophical Transactions, Bunsen showed that when bituminous coal from which the hydrocarbons had been driven, was mixed with a portion of the coal in its natural state, the bituminous matter in the latter would, when certain conditions were complied with, act as a cement to produce a denser form of carbon than either charcoal or coke; but what this has to do with the constancy of the battery, I am at a loss to understand.

It is merely a process for the *manufacture* of a material for the negative electrode; not a *new* material, for graphite or plumbago had already been used with success, and coked coal and wood had only failed because of their porosity and bulk.

To suppose that Mr. Grove was ignorant of the value of carbon is absurd, and in reality Bunsen deserves of us very little, as he discovered neither the conductivity of carbon, nor its powers of resisting the action of nitric acid when cold. To call the battery by Bunsen's name is really doing Grove as much injustice, as though we should call it O'Shaughnessy's, because that enterprising surgeon used gold for his negative plate when in a country where no platinum could be obtained; or Collan's, because he, taking up Dr. Schœnbein's discovery of the passive state of iron in strong nitric acid, made powerful batteries in which that metal was negative. The amount of fame Bunsen has received for this mechanical *invention* is extraordinary, and far exceeds that which he more properly deserves for his really great *discoveries* in chemical and physical philosophy. That Mr. Varley will "yet be convinced that when the Grove battery is newly filled, the surface of the nitric acid acts as the negative plate, and the platinum only as a conductor," I think very doubtful, as he has thought so for a long time, for here is what Mr. Grove himself says (L. and E. Phil. Mag. Vol. 15-290), "If the operation of the battery be watched, the nitric acid as we should expect, changes color, assuming first a yellow, then a green, then a blue color, and lastly becomes aqueous; after some time, nitrous gas, and ultimately hydrogen, are evolved from the surface of the platina."

Mr. Fitch goes a little out of his way to say that "nitric acid is always used in *Grove's* battery," and thus unfortunately stumbles again. The first battery of Mr. Grove consisted of one metal, gold, and two electrolytes, nitric and muriatic acids. Mr. Grove's battery, as used by himself, was of nitrosulphuric acid "formed by previous mixture of equal measures of the two acids." But as a subject for discussion, Grove's nitric acid bears no comparison to Grove's *gas* battery; hence Mr. Varley's prefix, "the *nitric acid* form of Grove's battery" was eminently proper.

There is, however, one expression of Mr. Varley's in which he apparently runs counter to facts, and that is in asserting that if the platinum be immersed in a solution of its chloride an increase of power will result. I say apparently, because if he means that the chloride of platinum is to be used in a Daniell's battery instead of the cupreous sulphate, the negative electrode being platinum, *then* he is right; but, if instead of this, is meant the substitution of the chloride of platinum for nitric acid in the Grove form of battery, he is wrong; Mr. Grove says that the "above arrangement (the substitution of Pt 2 Cl for CUOSO₃) is *not* the most perfect possible, nor nearly so; that it is very inferior to the nitric acid," &c.

Passing over Mr. Fitch's ideas of the meaning of quantity and intensity, we come to the assertion that he has "obtained a current of electricity by the decomposition of a carbonated alkali without the acid of any metal or material which has an affinity for oxygen," all of which is rightly enough put in italics, for it is thoroughly mysterious, and, probably, vastly important. By a stretch of the imagination, we might understand a "carbonated alkali" to mean a *carbonate* of an alkali, but I, at least, cannot comprehend the latter part, and I will be obliged to Mr. Fitch if he will describe his experiment as well as its result, in his promised "future communication."

And now a few words in regard to "anonymous correspondence." What possible good can it do the readers of the JOURNAL to know the name, birth-place, age, general appearance and residence of a

correspondent? Supposing he does give a name, how do they know it is not fictitious? How, for instance, do they know that "Inventus" really is D. H. Fitch of Oil City, Venango County, Pennsylvania? How do they know, unless like me, they have had quarrels with him, that there is such a person?

In a discussion professed scientific, it appears to me that the name of the party writing is entirely superfluous. To be sure, if the writer happens to be distinguished for his attainments, we will read his article the sooner, but we should not be convinced the sooner. Of two papers by Michael Faraday and Michael Jones, I will surely read Faraday's first, but if after reading them both, I find Mr. Jones' to be the more important, will I hesitate to think so because I had not previously heard of him? Are the letters of Junius the less able that their author is unknown? and, to come a little nearer home, would Maud Muller and Barbaric Frietchie be not so inexpressibly sweet did we not know that our grand old Quaker Poet had written them?

Resp'y your ob't servant,
A TELEGRAPH OPERATOR.

June 20, 1868.

The Indo-European Telegraph.

We understand that five cargoes of stores, consisting of Siemens' iron posts and insulators and of wire left England last week for Persia. These stores will be transhipped at St. Petersburg into smaller steamers which will take them through the Neva and the Volga to Astrachan, where they will again be transhipped for the ports of Rescht, Lencoran, and Astara, on the north coast of Persia. From these ports they will be conveyed into the interior by mules. It is expected that these stores will arrive at their destination (about 5,000 miles distant) in the month of October, when the erection of the line will at once be proceeded with. The work is to be finished before the end of next year, by Messrs. Siemens Brothers.

The cable of the Black sea is to have three insulated conductors, enclosed by a copper sheath to protect it from oxydation and marine insects.

The Russian and Prussian governments have formally declared that in case of war, the transmission of commercial messages over the new line will not be interrupted.

ENGINEERING.

Belgian Telegraphs.

Mr. Washburn, the broadly *marked* Congressman from Illinois, in a fine exordium on the superior enterprise of Europe in at once identifying the telegraph with the postal system, gives some data by which the extent of that enterprise is shown. In 1851, after thousands of miles of American lines had been worked for five years, and thousands of messages were passing over them daily, the Belgian lines were opened for the people. During that entire year the prodigious number of twenty-one messages in the whole kingdom of Belgium, at a cost of \$1.25 a piece were sent daily—or about one message a piece for her commercial towns! Is not that enterprise worthy of a greater people! May not an American Congressman brag of such a government?

And after this enlightened and liberal and enterprising government had worked their telegraph lines for five years, the average number of messages had only reached fifty-five per day for all Belgium, less than is taken in a day by some of our small villages. And yet this is paraded in a government paper as an evidence of the growth of an enterprise under a paternal government, and as a proof of how telegraphs grow thereunder!—Bah!

FREDERICK CITY, MD., JUNE 17, 1868.

To the Editor Journal of the Telegraph:

DEAR SIR: In the northern limits of the Green Mountain State lives a wealthy old farmer named Alpha Allen, a queer specimen of the hard fluted Yankee, who had in some unaccountable manner accumulated quite a little fortune. I never could imagine *how*, unless it was by turning the envelopes of his correspondents inside out to mail his replies in and other similar economical contrivances. Whether he is a lineal descendant of the redoubtable Ethan deponent saith not.

Soon after the completion of the Alton and St. Louis Railroad, via Grand Trunk Railway, and its necessary adjunct the telegraph, Allen came in the Telegraph office to investigate the wonder.

He was anxious to see a message come in, and desired me to show him where the wire was. I pointed out the main wire under the high table, which was adorned with one of Chubbucks Registers, and the old gentleman crept under the table to watch for the first message. He had not long to wait till I received a "call" and gave him notice to look sharp. After copying the message I called out to him and he jumped up very much excited, saying it came so fast he could not see it. "Why," said he, examining the writing, "it has come so quick the ink isn't dry yet!"

H.

WANTED—A SITUATION BY A PAPER OPERATOR.

Address,

"T," Aiken, S. C. office.

June 30th, 1868.

CLEVELAND, June 27, 1868.

Editor Journal of the Telegraph:

In the JOURNAL of June 15th is a synopsis of a test of the Brooks' and Varley's insulator, giving the former the best results.

Is this to be taken as a dry test? If so, what is the good of testing in this manner, and what does such a test demonstrate? Are we in want of a dry weather insulator? I believe that a bare wire if laid along a dry rail fence for a distance of 800 miles, would work fully as well as if strung to 9,000 dry Brooks' or any other insulator. I cannot see why such pains are taken in searching for substances and combinations of substances for the purpose of producing an insulator with greater resistance, since any of the common articles used as insulators are sufficiently good if kept dry. In wet weather, Brooks' insulator, as I believe, is superior to others, not because the solid substance thereof has a greater resistance than any other, but because it is more thoroughly protected from the direct wet and indirect moisture between where the wire touches it and the cross arm, on account of its *form* than any other insulator. If any one can devise a plan to keep *always* a perfectly dry circle over some ordinary substance used for insulation between the wire and the pole, he will have invented a perfect insulator, or rather one that will insulate the line as well in wet as dry weather. Am I right?

Yours truly,

N. O. SCHOOLING.

Democratic Convention Busted by a Woodpecker.

July 8.

To Editor Journal:

Yesterday, in the midst of the great press of business which the democratic convention has given rise to, three of our most valuable Boston wires suddenly gave out. On receiving the lineman's report, we learned the misfortune was caused curiously enough. A woodpecker had built her nest in a pole, weakening it so that it broke.

D.

It is not the first time that a weak and insignificant thing has thwarted the best laid schemes of men and mice.

ST. LOUIS, JUNE 24, 1868.

Dear Journal:

Like the clown in the circus — "Here we are again!" Please give your Western scribe an audience.

Up to within a week past, we have had some pretty severe storms in this vicinity, which have kept the repairers unusually busy. Poles were prostrated in all directions. Two telegraph masts on the Missouri river were blown down—one at St. Charles, the other at St. Joseph. They were each upwards of one hundred and fifty feet high. A cable was immediately laid across the Missouri at St. Joseph, but it is feared will not work long in that exceedingly treacherous stream. The masts at Weston, Mo., and Atchison, Ka., stood the blast bravely. Several miles of wire actually melted by lightning on the North Missouri road, but now everything is in apple pie order again.

The Western Union Company is about to extend its line on the Union Pacific Road, E. D., in advance of the track to Fort Wallace. The present terminus of the road is Monument Station, situated 387 miles west of Kansas City, and distant 870 miles from St. Louis. From this it will be observed that the contractors are pushing forward the work very rapidly. The same company has also commenced work on the line between Pilot Knob, Mo., and Columbus, Ky., along the route of the Iron Mountain Railroad; distance 124 miles. The line from here to Edwardsville is now in working order.

Dick Tracy, for many years a favorite operator in this office, visited us a few days ago. Dame Rumor hath it one of our St. Louis belles returned to Kansas with him. May their lines be cast in pleasant places. Our pleasant Superintendent, Col. Clowry, has been on a visit East the past few days, but is expected home soon. The Colonel has detailed Vigus of Topeka to assist Tracy in Atchison. Mr. Hard, of Lawrence, takes place vacated by Vigus at Topeka, and George Parmalee has gone to Lawrence as report operator. Mr. Sam'l Allen has resigned his position in Springfield, Ill. Jim Bay has accepted job of night report operator in Cincinnati. C. M. Knox, the veteran, has also accepted a situation in the Queen City. Jack Conner is working in Indiana.

The operators in this office have, with commendable spirit, taken advantage of the beautiful long summer evenings and formed themselves into a Base Ball Club. By this means they have a couple of hours good out-door exercise every evening. They have gone into this thing with a vim, and with their energetic chief, Mr. J. H. French, who, by the way, is as great a favorite on the ball field as during the more strict discipline of office hours—at the head of it, the club will probably remain a firm, fixed fact for time to come. So let your Eastern clubs beware of Electricity and the knights of the key, when they come this way. Now Mr. Reid, so that those who run may read, don't you think it would be a good idea for other large offices to follow our example? How much better it would be to return home after an hour or two exhilarating enjoyment in the pure, fresh air, than to knock about billiard saloons and bar-rooms till the "wee sma" hours, as some (I was going to say many) of our profession do. Try it boys, just once, and see how different you will feel when waking in the morning with the prospect of a trying day's labor before you. This is penned by one who has "been there" and therefore should be a good judge.

One of our boys, who is a paragon of virtue himself, received a message for a chief divine the other day, commencing "Keno is correct, etc." Judge of their mutual surprise to find it should have been "John is" and so forth. Taking the circumstances into consideration, this is, I think, the best yet.

Eh Bien, un autre fois.

VOYAGEUR.

No Don't Insure.

Good morning, Mr. J. D. R.,
And to THE JOURNAL, too;
I've just dropped in while passing by,
To say a word to you.
Don't move, I'll occupy this chair,
(How very warm to-day!
Ah! lad, just let me have that fan.)
I have not long to stay.
"Ice water? Yes, (no, I prefer
To take the croton pure.)
Indeed, such days one's tempted most
To try a water-cure.
You know the friend I've always been
To our Insurance Co.?
(At least I think you do, because
I've always told you so.)
At last I've found the reason why
Men will not be insured,
And hence I feel almost despair.
Can selfishness be cured?
Not quite an hour ago I met
A brother O. P. R.,
He looked so ill I felt alarmed,
And helped him in the car.
He has a wife and children too,
And as we rode I sought
To gently find out if of death
He ever had a thought.
I found he had, and he told me
He never should be cured;
And after while I asked him if
He had his life insured?
He turned on me his large dark eyes,
And half amazed he said—
"Insured? why no, what earthly use
Is money when I'm dead?"
I found my impulse half divide
Between a smile and sigh,
But earnest thought was uppermost
In what I did reply.
I told him all the benefits
That he might thus obtain,
And with rhetorical pathos,
Touched off to make it plain.
That is, I told the kindnesses
That he might give in life
To brothers who would after death
Return them to his wife.
He listened gravely, tearfully,
To every word I said;
But as I finished, raised his eyes,
And gravely shook his head.
"No, no," he answered earnestly,
"I do not like the plan,
For she may marry when I'm dead,
And then some other man
Would share the money with her, and
I'd rest not in my grave,
With spirits eyes I'd rather see
Her working like a slave."
I scarce believed the words I heard,
And vainly tried to speak—
I felt as if I had "been struck,
And turned the other cheek."
I left the car at the next street,
Still dumbly wonder'ing, then
I thought I after this would speak
Only with single men.

LOGANNE.

New York, July 6, 1868.

PARISIAN ELECTRICAL JEWELS. — M. Trouve has made several new and ingenious applications of electro-magnetism in ornamental trinkets, so that now it is quite common to see at fashionable balls in Paris a diminutive butterfly or humming bird perched upon a lady's head, and fluttering its wings as naturally as possible. The owners of these toys carry concealed in their chignons a small battery and minute Rhumkorff coil, the former composed of zinc excited by a solution of sulphate of mercury, the whole inclosed in vulcanite cells, so that the existing solution cannot escape to the damage of the owner.

Our esteemed correspondent, "Voyageur," whose letters are always welcome, will find his last, designed for the issue of July 1, in our present number. It came just as the forms were locked up. Could we have done so it should have appeared at the time desired.

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Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JULY 15, 1868.

A Large Business.

The following shows the business done by the Western Union Telegraph Co. at the New York City office, July 6th to 9th inclusive:

Date.	Commercial Messages, No.	Press Messages, Words.
July 6th.....	9,660	151,569
" 7th.....	8,169	147,074
" 8th.....	8,984	136,266
" 9th.....	7,143	147,918
Total.....	33,946	582,827

Commercial messages estimated at 25 words each, including No., date, address, signature and check.....848,660

Total number of words transmitted.....1,431,473

Or about 15,000 words per hour day and night during 4 days and nights! The great bulk of the Press business was done between 10 A. M. and 5 P. M., and notwithstanding its enormous amount, there never was more than 200 words on hand unsent! It was taken fresh from the reporters and sent as rapidly as they could prepare the matter. It was in the printer's hands at distant cities long before it had left Tammany Hall for the New York City papers. On the 8th, in addition to the above, 8,000 words were received from the Convention at Syracuse.

The highest number of operators on duty at any one time at Tammany Hall and at the central office was 47.

During the same period the number of messages sent from and received at the "city line" room, under the management of Miss Snow, in addition to that above stated, was as follows:

July 6.....	2,827
7.....	2,608
8.....	2,708
9.....	3,000

On Friday previous, July 3, the number sent and received in this room was 3,135. The greatest number of operators on duty at one time was 12.

Great credit is due Mr. Brown, Manager; Mr. Marks, Night Manager; Messrs. Downer, Smith and Dolan, Chief Operators, and all their subordinates, and equal credit to Miss Snow, Manager of the City Line Room, and all the young ladies employed under her direction.

Indian Telegraphs.

From 1857 to 1866, the length of telegraphs in British India increased from 4,162 to 18,890 miles. In the latter year the total expenditure for telegraphs amounted to £253,191, £48,067 of which was for cost of construction; £163,392 on account of working and maintenance, and £41,782 spent in England for stores, freight, &c. The total receipts for the same year amounted to £112,944, £101,306 of which were derived from private messages and other sources, and £11,638 from service messages of all kinds. There has been a large progressive increase of receipts year by year since 1857. 172 offices are now open.

Election of Directors—Western Union Telegraph Co.

At the annual meeting of the Stockholders of the Western Union Telegraph Company, held in New York, July 8th, the following Board of Directors were unanimously elected:

D. N. Barney,	O. H. Palmer,
R. S. Burrows,	E. S. Sanford,
John J. Cisco,	Hiram Sibley,
Ezra Cornell,	Moses Taylor,
Wm. E. Dodge,	J. H. Wade,
Alfred Gaither,	George Walker,
Norvin Green,	D. A. Watson,
Wilson G. Hunt,	Le Grand Lockwood,
George Jones,	John D. Caton,
Cambridge Livingston,	Z. G. Simmons,
B. R. McAlpine,	Robert A. Lancaster,
Edward D. Morgan,	A. B. Cornell,
Francis Morris,	M. Lefferts,
George H. Mumford,	Edward Creighton.
Wm. Orton,	

At a subsequent meeting of the Board of Directors the officers of the preceding year were unanimously elected.

The New Board.

We give the names of the new Board of Directors of the Western Union Telegraph Company, from which will be missed that of our old and true friend John Butterfield, Esq., who is fast sinking and cannot long be among living men. When that day comes which brings us news of his decease, we shall feel the right to mourn with many thousands more who have felt the power both of his enterprise and friendship.

Angle-France Telegraphs.

The recent important reduction in the price of telegraphic communication between France and England is another step toward the increase of commercial and business intercourse between those countries. Since the Cobden Treaty their mercantile relations have constantly been growing closer and more extensive; and, though there has been a good deal of opposition to the various steps in that direction, there is no doubt that they have been greatly for the advantage of both peoples. The new and reduced telegraphic tariff came into operation on the 1st inst., and it provides that for twenty words between London and any part of France or Corsica eighty cents is to be paid, while between any other station in England and France and Corsica the charge will be \$1.20. The English papers give the credit of this measure to the energy and activity of the French Government.

This should be added to Mr. Washburne's paper to Congress. The average distance of transmission will be much less than between New York and Buffalo, on which the charge is 50 cents. Europe is now, after so long a time, learning to accommodate tariffs to the condition and ability of the people, as in America. We are somewhat surprised, however, to find that after all Mr. Washburne has said about European Governmental magnanimity, the charge was more than 10 cents, a sum for which he seems to have an especial reverence.

Col. Serge Abasa, well known for his connection with the Russian Extension Telegraphs, leaves the United States for his home in Russia in a few days. We have rarely met a gentleman who combines so harmoniously the vigor peculiar to his nation, and the quiet and modest refinement of manner which has gained for him a wide-spread and lasting friendship among all who have met him.

Col. Abasa will probably take with him the closing papers of the Alaska purchase.

All letters to persons or officers in 145 Broadway, New York, should show plainly in the address, Box 3393.

East India Telegraph Co.

This company has sprung into new life under the presidency of Alexander Holland, Esq., a sure sign of progress and success. It seems far away for an American company to operate telegraph lines in India. But all places are near now. The world begins to look small to us—and all men our neighbors.

What the Girls Can Do.

Over our sanctum is a room where about 15 young ladies may daily be found engaged in telegraphic duties. The room is secluded, airy and agreeable. It is presided over by Miss L. H. Snow, a lady of superior executive ability, and a first-class operator.

On Friday last, July 8d, ten of these young ladies sent and received 3,135 messages between 8 A.M. and 4½ P.M., or an average of 314 messages each. On the following Tuesday the same young ladies sent and received over 3,000. The work was done well, neatly, correctly and to their very great credit. With such a record there is no use in doubting the capacity of ladies for this service. The daily number averages about 2,200.

In the above statement there is a very curious commentary on the recent paper of Mr. Washburn to Congress in which he illustrates the immense use of the Swiss telegraphs by reason of cheap rates. Yet the number of messages for the whole kingdom does not average half of the business done in this one small room by 10 intelligent Yankee girls, at 145 Broadway, N. Y.

In Congress.

Mr. Townsend introduced a bill July 10th to incorporate the United States Postal Telegraph Company, and to establish a postal telegraph system. Referred to the Post Office Committee. It incorporates Gardner G. Hubbard, Samuel W. Bates, Estes Howe, and their associates, in a body politic and corporate, with a capital stock of \$400,000; the Postmaster-General to make a ten years' contract for the transmission of messages. The eighth section provides that if the company shall not make the contract within six months, its incorporation shall be void.

There is not the remotest possibility of Congress passing the bill introduced to-day for the so-called "Postal Telegraph." The Committees of both Houses are unanimous in the belief that the Government cannot profitably or judiciously enter into or meddle with any such business.—*Sun*.

Central America Telegraph Co.

The following Board of Directors have been elected:

Gen. E. S. Sanford,	Cambridge Livingston,
Hon. Wm. Orton,	Chas. B. Hoffman,
Gen. W. F. Smith,	Wm. G. Fargo,
Alex. Hamilton, Jr.,	Wilson G. Hunt.
Gen. M. Lefferts,	

The following Officers were elected:

Gen. E. S. Sanford, President.
Gen. Wm. F. Smith, Vice-President.
Cambridge Livingston, Secretary.
Marshall Lefferts, Engineer.

The Engineer says it is interesting to watch the behavior of the steam engine used to drive Wylde's electro-magnetic machine, while the machine is employed in heating lengths of rod or wire introduced in the circuit. The engine slackens speed when the wires or rods grow hot, and the resistance increases as the metal increases in heat, and it is only by constant care on the part of the driver that a uniform rate of motion is maintained.

Tariff Bureau Circular, See 7th Page.

How a Shrewd Man was Swindled.

"I under pretence of friendly ends,
And well-placed words of glassy courtesy.
Baited with reason not unplanable,
Wind me into the easy-hearted man
And hug him into snares."

A pleasant story is told of a stock speculation in which a well known citizen of Springfield, who is usually cautious as to such matters, has burnt his fingers a trifle. Some time ago a new telegraph project was broached to him by a fellow townsman, who merely paved the way for a New York speculator. The latter, in a very persuasive manner, informed the gentleman first mentioned that he desired to obtain the co-operation of just such men as he, at the same time representing that he (the speculator) was doing him a great favor in permitting him to take a stock that was sure to be of such great value to the possessor. Without reflecting on the matter at any great length, the gentleman appealed to subscribed \$5,000. Several other Springfield men put down their names, confident that they were making a brilliant investment. Then came ten and five per cent calls, one after another, and the subscribers generally responded to them. Not so the \$5,000 subscriber. He was satisfied, on a little reflection, that the scheme was a swindle, and allowed the "calls" for cash to go unheeded. The certificates of stock were to be issued when 50 per cent. was subscribed, but after 45 per cent. had been demanded the call ceased, and to this day the subscribers have obtained no certificates. The stock is now offered for half its paid-in value with the promise of certificates—when they are issued. The Springfield capitalists who dipped into it long ago wished they hadn't, and the one who stood out is only too happy to defend the law suit which will probably be brought against him because he subscribed and didn't pay. What makes the "investment" rather more interesting in his case is the fact that he has usually had a remarkably keen scent for swindles, and a few years ago warned a great many of our citizens against risking money in the Charter Oak coal company, and in the various bogus oil companies, which afterwards proved to be rotten, just as he prophesied they would. His advice was first rate; the only trouble was he forgot in a single instance to heed it himself.—*Springfield (Mass.) Republican.*

It is the old, old story, "Will you walk into my parlor, said the spider to the fly?" There may be round soon a genteel-looking man with a postage stamp on his hat, and the figure of mercury in his hand, inviting participants in the great "Postal Telegraph Company." Walk in, gentlemen, and pay your money. But do it on high-minded principles—loan it—looking not for reward or return. Then all will be delightful.

We welcome to our columns the advertisement of our old friend Chubbuck, of Utica, N. Y., whose name is connected with the earliest days of telegraphing in the United States. The first "pony sounders" were made by him, and his work is always good and beautiful. We have before us the photograph of a very neat sounder by him enclosed in a brass case with glass face, mounted on a bronze statuette.

The first lightning rod put up in this country by Dr. Benjamin Franklin is now to be seen on the old house, 52 Daniel street, Portsmouth, New Hampshire.

MARRIED.

On Sunday, June 21st, 1868, at the residence of the bride's father, in Nevada, O., by the Rev. W. H. Painter, Mr. W. S. Evans, Manager W. U. Telegraph Office, Oarville, O., to Miss Celia Painter, of Nevada.

At the residence of the bride's father, at Hazelwood, Pa., on June 29th, 1868, by Rev. Samuel J. Wilson, Mr. Frank Lehmer, of Omaha, Neb., to Miss Irene Phillips.

Lines open to Santa Fe.

The following dispatches were received by the President to-day:

SANTA FE, New Mexico, July 9, 1868.

To His Excellency the President of the United States:

SIR: The capital of New Mexico sends to your capital, and through you to the world, her greetings over the first telegraphic line erected within her territory. Its completion is another advanced step of an enlightened age, bringing an old into instantaneous communication with newer though more advanced sections of our blessed Union, and with mankind in all civilized lands.

(Signed)

H. H. HEATH, Acting Governor.

SANTA FE, New Mexico, July 9, 1868.

To the President of the United States:

To-day the telegraph line from Denver, Colorado, to this city is completed. We, the citizens of Santa Fe, greet you as President of the Republic on the consummation of this work, a sure evidence of our determination to keep pace with the spirit and progress of the times.

(Signed by)

MANY CITIZENS OF SANTA FE.

The President replied to the despatches as follows:

WASHINGTON, D. C., July 9, 1868.

To H. H. Heath, Acting Governor, and Citizens of Santa Fe, New Mexico:

I thank you for your kind greetings, and congratulate you that the capital of New Mexico is in telegraphic communication with the capital of the nation. May the wires serve to render yet more indissoluble the bond that unites the people of your Territory with their fellow citizens of the States.

(Signed)

ANDREW JOHNSON.

THE following dispatch was received by Messrs. L. G. Tillotson & Co.:

SANTA FE, New Mexico, July 9.

To L. G. Tillotson & Co., 11 Dey Street, New York:

Line completed yesterday, and working splendidly. Your magnets are O. K.

(Signed)

B. F. WOODWARD, Gen'l Supt.

This evidence of the superiority of Tillotson's instruments was not needed, as they are now universally known; still we are glad to record it.

Central Division.

The Central Division under the general superintendence of Gen. Stager, is now divided into seven districts:

J. S. Wilson, Superintendent 1st District, Chicago, Ill.		
R. C. Clowry, " 2d " St. Louis, Mo.		
W. B. Hibbard, " 3d " Omaha, Neb.		
T. B. A. David, " 4th " Pittsburg, Pa.		
E. P. Wright, " 5th " Cleveland, O.		
Jno. F. Wallick, " 6th " Indianapolis, Ind.		
Geo. T. Williams, " 7th " Cincinnati, O.		

Gen. Stager will probably before long carry out his long cherished design of making Chicago his home. It is the natural centre for so large and important a field as that under his care. Chicago must remain the great metropolis of the west.

Telegraphic Suspension of Thought.

Man is merely a machine; even the telegraph can get the best of him without his own knowledge. Individuality is nothing, in comparison with the mighty independence and overpowering mastery of the electric fluid. The human brain may vibrate the mystic chords of memory and all that sort of thing, but the keys of the telegraph can do more. We had evidence of all this ponderosity of what-you-call it over mind, yesterday. Our telegraphic sheets from the Western Union office, containing the usual dispatches from all parts of the country, sandwiched between which was a dispatch from Hartford announcing that a man had been run over by the cars in this city the night before. This dispatch had been telegraphed from New York, to the way papers between that city and Boston, and the operator wrote it off mechanically, without knowing that he did it. We mention the fact as an important illustration of another fact that when the mental hobocism ceases to hyfatum on the carnivorous rinctum, the fusileer of the diaphragm controls the undisturbed forces of the diabolical ashpian. See it?—*Hartford Post.*

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE
THICK, CLEAR AND ADHESIVE
Who has not used
STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 80Z. CONE, 80Z. FLAT, 30Z. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES
S. S. STAFFORD,
Sole Proprietor, N. Y.

Our National Schools of Science.

An interesting article in the *College Courant*, published at Yale, sums up the work done in the different states of the Union to establish Schools of Science. We copy:

"Time enough has not yet passed to show in what manner the several States have accepted the grant of Congress, or how they will accomplish the prescribed end. We have before us as we write the legislation pertaining to these colleges in twenty-two northern States, and catalogues or circulars from seventeen of the twenty-two, containing some announcements of the various courses of study. The diversity is very great. In several states, chiefly at the West, the name 'State Agricultural College' is alone employed; several more have retained the congressional phrase, 'College of Agriculture and Mechanic Arts.' In Illinois there is an 'Industrial University;' in Massachusetts, an 'Institute of Technology;' in Connecticut and New Jersey there are 'Scientific Schools;' and in several other states the State University covers up and includes the newly established college, so that it appears only as a department more or less submerged in the comprehensive whole.

"We propose to make a rapid survey of what is doing in the several States.

"California.—After various discussions it seems probable that the College of California established at Oakland some years ago, will yield its charter, its funds, its name, &c., and that a state university, including a scientific college, will be established on the site.

"Connecticut.—The Sheffield Scientific School, a department of Yale college, which has been in successful progress since 1847, received the national grant, and has since very greatly enlarged and improved its course of study.

"Delaware.—Delaware College, at Newark, has become the recipient of the grant in this state.

"Illinois.—An 'Industrial University' has been established at Urbana, Champaign County, with the proceeds of the grant, and has been open to students since the spring of 1868.

"Iowa.—The Agricultural College, established in 1858, in Story County, receives the national land grant, and is to be reorganized.

"Kansas.—An Agricultural College is maintained in Manhattan, Riley county.

"Kentucky.—The Kentucky University, chartered in 1838, has been opened in Lexington, and the Agricultural and Mechanical College of Kentucky has been made one of its departments.

"Maine.—Orono, near Bangor, has been fixed upon as the site of a new institution to be called the Maine College of Agriculture and the Mechanic Arts.

"Maryland.—The State Agricultural College opened in 1830, but embarrassed during the war, has been reorganized and enlarged by the reception of the national grant. It is located at Hyattsville.

"Massachusetts.—This is the only state which has divided the Congressional endowment. A portion of it was bestowed on the Massachusetts Institute of Technology, already in successful progress in Boston, and the rest on an agricultural college established at Amherst, in the vicinity of Amherst College.

"Michigan.—The State Agricultural College, near Lansing, a very successful college commenced in 1857, received a welcome increase to its endowment in consequence of the national grant.

"New Hampshire.—Dartmouth College at Hanover is to have in its immediate proximity a College of Agriculture and Mechanic Arts with the proceeds of the congressional endowment.

"New Jersey.—Rutger's College at New Brunswick receives for the Rutger's Scientific School the land script assigned to New Jersey.

"New York.—The Imperial share received by New York, and the gift of Mr. Cornell, have led to the establishment of a comprehensive University at Ithaca.

"Pennsylvania.—The State Agricultural College in Centre county has become the recipient of the national grant assigned to Pennsylvania.

"Rhode Island.—Brown University is selected by the State of Rhode Island as the repository of the portion of the land grant.

"Vermont.—The University of Vermont at Burlington is to maintain a Scientific Department with the avails of this grant.

"West Virginia.—West Virginia established a new institution at Morgantown, Monongalia county.

"Wisconsin.—The State University at Madison receives the congressional grant for the endowment of the Scientific Department.

HAYANA, JULY 8.

The new submarine cable, lately laid by the Narva, has parted from the buoy to which it was attached. The Narva is now engaged in grappling for it, assisted by the United States gunboat Gettysburg. It is doubtful whether the attempt will succeed, as the probability is the engineers will be compelled to underrun the whole length of the cable. The work will be completed as soon as additional wire arrives from England.

The cholera in this island is unabated.

A. S. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office,)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

Patents.

79,330.—RELAY-MAGNET.—Charles Durant, Jersey City, N. J., assignor to George F. Durant, same place.

I claim, 1. The application of a spring or springs, a cushion or cushions, or other elastic substance, to the electro-magnetic-relay machine, substantially as and for the purpose herein shown and described.

2. The shield or protector S, for the conducting wire I, substantially as and for the purpose herein shown and described.

79,331.—RELAY-MAGNET.—Charles Durant, Jersey City, N. J., assignor to George F. Durant, same place.

I claim, 1. The jaws or fork in the armature or armature-lever of an electro-magnetic-relay machine, substantially as and for the purpose herein shown and described.

2. The jaws or fork in the post B, substantially as and for the purpose herein shown and described.

3. The weight T, applied substantially as and for the purpose herein shown and described.

A Courteous Reply.

An American traveller being unexpectedly detained at the mole of quarantine was very civilly offered "half of his apartments and a sofa to lie on" by a young Englishman, who acted as translator to the mole. After they had formed an intimate acquaintance, and had one evening retired to rest, the traveller asked his friend how he could endure the blasphemy which was so constantly heard. The young Englishman replied that "as a gentleman things were disagreeable to him, but as to their being intrinsically wrong it was a matter of no concern to him, as he denied the truth of revelation, and believed Jesus Christ to be an impostor." The traveller without supposing that the remark would be heeded, except by courtesy, replied, "either Christ was an impostor or he was not. If he was an impostor, we have the inconceivable phenomenon of a base man practicing virtue, self-denial, charity, forgiveness of injuries through his whole life, in spite of scourging, contumely, and even crucifixion. Is it philosophical to suppose that a bad man would take so much pains to make men good? But if he was not an impostor, then he has told the truth and we must believe him?" "Is it possible that I never saw that before?" was the only reply of the young Englishman; but the argument sunk deep into his heart, and when the traveller had arrived at Alexandria, he received a letter from the former skeptic, acknowledging him as the "best friend he ever had," encouraging him to be equally faithful to others, and praying him not to forget his "Odessa convert."

Telegraphers'

Mutual Life Insurance Association.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

Western Union Telegraph Company.**BOARD OF DIRECTORS.**

D. N. Barney, New York. Moses Taylor, New York.
 R. S. Burrows, Albion, N. Y. E. D. Morgan, New York.
 John J. Cisco, New York. W. E. Dodge, New York.
 E. Cornell, Ithaca, N. Y. Francis Morris, New York.
 John D. Caton, Ottawa, Ill. C. Livingston, New York.
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 Geo. Jones, New York. G. Walker, Springfield, Mass.
 O. H. Palmer, New York. Alfred Gaither, Cincinnati.

Le Grand Lockwood, New York.

OFFICERS.

William Orton, *President*.
 Hiram Sibley,
 N. Green,
 B. R. McAlpine,

Vice-Presidents.

O. H. Palmer, *Secretary and Treasurer*.
 W. H. Abel, *Auditor*.
 R. H. Rochester, *Assistant Treasurer*.
 Marshall Lefferts, *Engineer*.

SUPPLY DEPARTMENT.

William Hunter, *Superintendent of Supplies and General Purchasing Agent, New York*.
 A. H. Watson, *Storekeeper, New York*.
 M. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.*

CENTRAL DIVISION.

Anson Stager, *General Superintendent*.
 Residence, Cleveland, Ohio.

ASSISTANTS.**Superintendents of Districts.**

		Residence.
District 1	J. J. S. Wilson, - - -	Quincy, Ill.
"	2—R. C. Clowry, - - -	St. Louis, Mo.
"	3—W. B. Hibbard, - - -	Omaha, Neb.
"	4—T. B. A. David, - - -	Pittsburg, Pa.
"	5—E. P. Wright, - - -	Cleveland, O.
"	6—John F. Wallick, - - -	Indianapolis, Ia.
"	7—George T. Williams, - - -	Cincinnati, O.

EASTERN DIVISION.

Thos. T. Eckert, *General Superintendent*.
 Residence, New York City.

ASSISTANTS.**District Superintendents.**

		Residence.
District 1—Jesse Hoyt, - - -	New Glasgow, N. S.	
"	2—Robert T. Clinch, - - -	St. John, N. B.
"	3—James S. Bedlow, - - -	Portland, Me.
"	4—George W. Gates, - - -	White River Junction, Vt.
"	5—Charles F. Wood, - - -	Boston, Mass.
"	6—George B. Prescott, - - -	Albany, N. Y.
"	7—S. B. Gifford, - - -	Syracuse, N. Y.
"	8—D. H. Bates, - - -	Philadelphia, Penn.

Metropolitan District—J. C. Hinchman, New York City.
 B. & O. Railway District—A. G. Davis, Baltimore Md.
 Erie Railway District—W. J. Holmes, New York.

SOUTHERN DIVISION.

John Van Horne, *General Superintendent*.
 Residence, Louisville, Ky.

ASSISTANTS.**Superintendents of Districts.**

		Residence.
District 1—J. R. Dowell, - - -	Richmond, Va.	
"	2—J. W. Kates, - - -	Lynchburg, Va.
"	3—J. A. Brenner, - - -	Augusta, Ga.
"	4—C. G. Merriwether, - - -	Mobile, Ala.
"	5—James Compton, - - -	Jackson, Miss.
"	6—James Coleman, - - -	Memphis, Tenn.
"	7—Thomas Johnston, - - -	Corinth, Miss.
"	8—Geo. W. Trabue, - - -	Nashville, Tenn.
"	9—L. C. Baker, - - -	Little Rock, Ark.
"	10—G. M. Baker, - - -	Shreveport, La.
"	11—D. P. Shopherd, - - -	Houston, Texas.
"	12—D. Flanery, - - -	New Orleans, La.

MACHINE SHOPS.

George M. Phelps, *Superintendent, Williamsburg, N. Y.*
 George W. Shawk, *Superintendent, Cleveland, O.*
 Robert Henning, *Superintendent, Ottawa, Ill.*
 W. H. Johnson, *Superintendent, Louisville, Ky.*

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE.
 WESTERN UNION TELEGRAPH COMPANY,
 145 Broadway, New York.
 July 15, 1887.

To all Offices on W. U. Lines—

The following changes have occurred since July 1st, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Chappell Hill, Tex., tariff same as Brenham, Tex.
 Cresson Springs, Pa., tariff same as Cresson, Pa. (offices will add the rates for this and other lines together for their tariff to Cresson Springs.)

Dent Sta., Mo., tariff same as Iron Mountain, Mo.
 Larkinsville, Ala., tariff 125 from Louisville and 225 from Washington.

North Hatfield, Mass., tariff same as South Deerfield, Mass.
 Shelburne Falls, Mass., tariff same as Greenfield, Mass.
 South Pass City, Dac. tariff same as Salt Lake City, Utah.
 Williamsport, Ind., tariff same as Attica, Ind.

THE FOLLOWING ARE "SUMMER OFFICES."

Coney Island, N. Y., tariff 80 and 8 from New York, check New York.

Bedford Springs, Pa., business for this point will be checked to and at the same rate as Bedford, Pa.

Boars Head, Hampton, N. H., tariff same as Hampton, N. H.
 Ocean House, Rye Beach, N. H., " " "
 Jackson, N. H., tariff same as last season.

Profile House, N. H., tariff same as Conway, N. H.
 Crawford House, N. H., tariff same as Conway, N. H.
 Glen House, N. H., tariff same as Conway, N. H.

Western Union Offices have been opened at Marietta, Pa., tariff same as Columbia, Pa. Huntingdon, Pa., tariff same as Altoona. Downingtown, Pa., tariff same as Lancaster, Pa., and Johnstown, Pa., tariff will be the rate for this and other lines added together. "Special Rates" to Columbia and Lancaster will be used by officers having "Special Sheet A," as the tariff to Marietta and Downingtown. Offices between Pittsburgh and Philadelphia will use the rate given on P. R. R. tariff sheet for the offices in Pa. just named.

OFFICES OPENED ON OTHER LINES.

Rocky Point, R. I., "Summer Office," tariff 30 and 3 from Providence, R. I., check Providence.
 Unionville, Orange Co., N. Y., 25 and 2 from Middletown, N. Y., check Middletown.

Atlanta, Mo.,	tariff 85 and 7 from St. Louis, check St. Louis.
Brunswick, "	100 and 8 " " "
Columbia, "	85 and 7 " " "
Dalton, "	100 and 8 " " "
Huntsville, "	90 and 7 " " "
Salisbury, "	95 and 7 " " "

Offices on Ill. and Miss. Co.'s Lines will use the "Map Tariff Scale" to the points just named instead of the rates from St. Louis.

Ft. Union, New Mexico, tariff 300 and 20 from Denver, Col., check Denver.

Los Vegas, New Mexico, tariff 300 and 20 from Denver, Col., check Denver.

Santa Fe, New Mexico, tariff 360 and 28 from Denver, Col., check Denver.

OFFICES CLOSED.

Carey, Kenton, Belle Centre and West Liberty, O.; Edwards Depot, Miss.; Wheatland, Ind.; Living Springs, Col.; and Big Laramie, Dac.

GENERAL INFORMATION.

Offices having "Special Sheet A" will use the "Special Rate" to Philadelphia, Harrisburgh and Pittsburg, when computing the rate to points on the Penn. R. R. named in Circular dated June 1st, 1887. Also, check Sanborton Bridge, Lake Village and Laconia, N. H., 10 cents; Meridith Village, N. H., 20 cents, and Holderness, N. H., 30 cents more than "Special Rate" to Franklin, N. H. Columbia, Pa., same as Special Rate to Lancaster, Pa.

Hereafter the tariff to Lansingburg, N. Y., from all offices East, South and West of that office will be 10 cents more than rate to Troy. Offices North will check Lansingburg at same rate as Troy.

WILLIAM ORTON,
 President.

M. Blondlot asserts that when phosphorus produces ozone by its slow combustion in presence of water, phosphoric acid is produced, which, in contact with excess of phosphorus, is partly transformed into phosphorus acid.

CHARLES WILLIAMS, Jr.,

109 Court Street,

BOSTON, MASS.,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

BATTERIES,

AND MATERIALS OF ALL KINDS.

CHESTER, PARTRICK & Co.,

TELEGRAPHIC AND ELECTRICAL ENGINEERS,

CONTRACTORS, &c.,

38 South Fifth Street, Philadelphia,

Manufacturers and Agents for every variety of

TELEGRAPHIC AND PHILOSOPHICAL INSTRUMENTS

BATTERIES, WIRE,

ELECTRO-PLATERS' MATERIALS,

INSULATORS,

AND ALL SUPPLIES FURNISHED PROMPTLY AND AT

LOW RATES.

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at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

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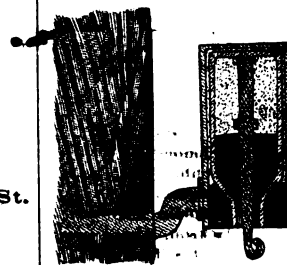
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JOURNAL OF THE TELEGRAPH.

NO. 18.

NEW YORK, AUGUST 1, 1868.

VOL. I.

The English Banquet to Mr. Field.

From the London Star.

Mr. Cyrus Field is too earnest and energetic a man, too completely devoted to great projects and great success, to have much of mere egotism left in him. A life so thoroughly absorbed in pursuits which belong to the business and benefit of the whole world can have little time for the indulgence of vanity. But one might excuse a little self-gratulation and pride on the part of a guest entertained as Mr. Cyrus Field was at Willis's Rooms last night. Not often, certainly, is such a banquet given in England to a man who is neither a politician nor a soldier. In England we are, perhaps, slower even than any other civilized people to recognize and do homage to the genius which works for our benefit by the way of scientific discovery and adaptation. Mr. Field, when he glanced around that splendidly filled banquet-room last night, must have felt gratified at the evidence thus practically and brilliantly afforded that the public of civilized nations are at last trying to unlearn the fatal habit which made them so long ungrateful to some of their best benefactors.

We never remember to have read of a public demonstration to any individual in London which had less of sectarian or sectional character. The Duke of Argyll, one of the most advanced of our Liberal peers, one of the most enlightened of our scientific thinkers, was hardly more prominent in doing honor to Mr. Field than was Sir John Pakington, the steady-going Tory of the old, old school. Lord Stratford de Redcliffe, the great Elchi of Mr. Kinglake's delightful sensation romance, sat side by side with Mr. Bright, who denounced in such powerful and unsparing eloquence so much of Lord Stratford's policy and conduct during the Crimean war. Mr. Layard joined with Sir Stafford Northcote in the compliment to the guest. Two common sentiments animated the whole of the company—a company representing politics, science, literature, arts, and commerce—the sentiment of personal admiration for Mr. Field's labors and character, and that of cordial friendship towards the great people of whose indomitable energy he is so striking an illustration. The speaking was all, or nearly all, as unexceptionable in good taste as it was in good feeling. The Duke of Argyll spoke with that clear and thoughtful eloquence which becomes one of the only living peers—might we not, perhaps, say the only living peer? who has made pure science and philosophy a genuine study. Sir John Pakington was good-humored and appropriate in his anecdotes and reminiscences. Sir Stafford Northcote was at once earnest and genial; nothing could be in better tone than the short and seamanlike speech of Admiral Sir A. Milne. Mr. Bright made the occasion one for a noble and thrilling lesson of peace, friendship and civilization to both peoples. The general character of the assemblage was that of a company feeling a deep and even a profound interest in the proceedings of the evening, and in the services rendered to the world by the distinguished guest. Not ignorant of what public demonstrations of honor usually look

like, we must say that it would be hard indeed to point to any occasion when so large and miscellaneous an English company was so sincere and so enthusiastic in paying homage to a distinguished guest.

Much of the honor of course was entirely personal. It was tendered to Mr. Field because he individually had deserved it. Mr. Bright, in a few words, accurately described Mr. Field's position as regards the Atlantic Telegraph. Other men may have thought of the project; other men may, for aught we know, have thought of it even before he did; other men may have mentally planned it out, and proposed schemes for its realization. Other men have actually contributed by their science, their skill, their patience, their capital, their genius to make the idea a success. The idea is not exclusively Mr. Field's; nor is the success exclusively his. But, assuredly, his was the energy, the prodigious strength of will, the unconquerable perseverance which forced the scheme upon the intellect, the activity, and the influence of England and America, and never desisted until the dream had become a reality. A slight and delicate allusion was made once or twice last night to the sacrifices Mr. Field had made, the responsibilities he had incurred, the risks he had run, to bring forward his darling scheme again and again after each new defeat and disaster. There are more men by far who could bear to make the sacrifices than men who could raise their heads as Mr. Field did, undismayed after every defeat, full of new hope after each disaster. Certainly that glorious vitality of hope is one of the rarest as it is one of the grandest of human attributes. Mr. Field brought to the great project with which his life will be identified more than the genius of a discoverer—he brought the courage, the energy, the heart and hope of a very conqueror. Therefore was his share in the work so unique; therefore did the company at Willis's Rooms last night do him special honor. But in honoring him they honored also his country. Better words, holier messages of peace and brotherhood, were never sent along a wire than those which thrilled last night through the depths of the Atlantic, from the Englishmen around Mr. Field to the brethren of their race in America.

The Compass in Iron Ships.

It is well known that great trouble has been caused to mariners by the action of the mass of iron in iron vessels, causing disturbance to the magnetic needle. In our last number we published a plan of Faraday's, in the use of magnets so placed around the needle as to neutralize the ship's disturbance.

A very simple method of removing this cause of trouble has recently been discovered, which, if correct, will be a welcome solvent to this nautical disturbance. By so bisecting the ship as to place a layer or slip of copper between the two halves, so that the continuity of the iron mass shall be broken in the centre, the action of the compass is severed from disturbance, the action of the separated masses neutralizing each other in their influence on the needle.

Hen Faxon and Blondin.

The following little paragraph, which is going the rounds, is true: "Some years ago, there was a rope-walker by the name of Blondin, amusing the people in various parts of the country. In the course of his travels he came to Buffalo, where he practiced his feats. One day he was astonished to see an announcement in a morning paper that he was intending to stretch a rope across the Niagara chasm, and astonish the public by walking over it. Blondin, in a tearing passion, visited the office of the offending paper, and sought the author of the canard. He found him (Hank Faxon, inventor of the Silver Lake snake story and other romances; he is dead now, poor fellow), and abused him roundly in broken English. Faxon received him good-naturedly, and told him the thing was a joke, and wouldn't hurt his professional business half as much as it would help it. Blondin was calmed, became thoughtful, and finally said: 'By Gar, I go do that very thing.' The American public knows whether he did it, and how well he succeeded." "Hen" Faxon, the person spoken of above, was some fifteen years ago a telegraph operator in this city, and was widely known here as one of the most genial and witty fellows in the world. Many is the tradition that still obtains among the older operators of the State of the pranks which he played upon them, and which, being known along the line simultaneously, were always certain to raise a laugh in a dozen different cities at once. One day Hen's humor went a little too far, and the Superintendent of the line gave him a "vacation" from the office. We next heard of him in Buffalo as the city editor of the *Republic*, where he gained almost a world-wide fame as the author of the Silver Lake Snake story—one of the most original and quaint fictions that ever was palmed off upon the public. The Blondin story related of him above is strictly true; the most perilous feat ever performed by a rope-walker, had its origin in the fanciful brain of Hen Faxon. Subsequently, we regret to say, poor Hen became dissipated, entered the army, and died. With more wit and originality than Artemus Ward, Josh Billings, or any of the present race of humorists, he might have made a reputation which would have eclipsed the fame of any one of them; but he chose to fritter away his time and talents, and to-day is only remembered by the few who knew and appreciated his character and talents.—*Troy Times*.

A PARIS correspondent says he has just overheard a prayer at Notre Dame: "Oh, beloved Saint Joseph," murmured a rosy little grisette on her knees before the flaming taper she had just lighted in his honor, "grant me a good husband, plenty of ironing to do, shirt collars without starch, and charcoal without smoke; and to my dear old aunt a speedy death. All these blessings as speedily as may be."

THE best thing to give to your enemy is forgiveness; to your opponent, tolerance; to a friend, your heart; to your child, a good example; to a father, deference; to your mother, conduct that will make her proud of you; to yourself, respect; to all men, charity.

The Law of Telegraphs—Liability of Telegraph Companies.

TYLER, *et al.*,
vs.
WEST. UNION TEL. CO., } In the Superior Court of Chicago, June Term, A.D., 1888.

HON. JOSEPH E. GARY, Chief Justice, presiding.

The plaintiffs, Tyler, Ullman & Co., of Chicago, Bankers, sued the Western Union Telegraph Company, to recover an alleged loss of \$729.77, sustained by reason of error in the transmission of a despatch by the defendants.

The plaintiffs proved the delivery to the defendants, at their office in Chicago, on the 29th of October, A.D., 1886, by Tyler, Ullman & Co., for transmission to J. H. Wrenn, of New York, of the following telegram:

CHICAGO, Oct. 29th, 1886.

John H. Wrenn, care Gilman, Son & Co., N. Y.:—Sell one hundred (100) Western Union. Answer price.

T. U. & Co.

That by "one hundred Western Union," was meant one hundred shares of the capital stock of the Western Union Telegraph Company. For transmitting this despatch the plaintiffs paid \$2.05. The plaintiffs further proved that the telegram, as delivered by the defendants' agents in New York to, and received by Wrenn, was as follows:

"John H. Wrenn, &c.:—Sell one thousand (1000) Western Union. Answer price.

T. U. & Co.

That on receipt of said telegram, Wrenn sold one thousand (1000) shares of the capital stock of the Western Union Telegraph Company, and on the 30th October, telegraphed to Tyler, Ullman & Co., at Chicago, as follows, viz.:

"Sold one thousand (1000) Western Union at fifty-three (53). Leading broker in this market says it is going higher.

J. H. WRENN."

That immediately on receipt of said last telegram, Tyler, Ullman & Co., telegraphed to Wrenn as follows, viz.:

CHICAGO, Oct. 30th, 1886.

"John H. Wrenn, care Gilman, Son & Co.:—Ordered one hundred (100) not one thousand (1000) Western Union sold. Cover nine hundred (900).

TYLER, ULLMAN & Co."

That, on receipt thereof, said Wrenn, who was one of the firm of Tyler, Ullman & Co., bought nine hundred shares Western Union Telegraph stock, for which he paid the following rates, viz.: 200@53½, 100@53½, and 600@53½. That the loss occasioned thereby, including commissions, &c., was \$729.77, for which they had demanded payment of the company.

The defence offered was that the original despatch was written upon one of the blanks then in use at the company's office, in Chicago; and the evidence of the company's employees in Chicago, tended to show that the form of the blank used was that upon which messages for transmission are usually required by the company to be written (and known to operators as No. 2), ending with these words:

"Send the following message, subject to the above conditions."

That by the terms of the notice upon the blank, the company could not be held liable beyond the amount paid for transmission in the case of an *unrepeated message*. It was proved that the message in question was an *unrepeated message*, and that it was written upon one of the blanks then in use by the company, at Chicago, but there was some confusion in the evidence as to what particular form of blank was used, the original being lost. After argument of the cause, the court instructed the jury as follows, in behalf of the defendants, refusing the instructions asked by the plaintiffs, viz.:

"If the jury believe from the evidence that the message delivered by the plaintiffs for transmission to J. H. Wrenn, in New York, was written upon one of the company's blanks, the same as, or similar to one of the blanks exhibited by the witness, Rankin,

then the plaintiffs can recover but \$2.05, the amount paid for transmitting said message."

The jury found for the plaintiffs, and fixed the damages at \$828.70, and the defendant moved for a new trial. On granting the motion for a new trial, the Court said:

"The verdict of the jury cannot be allowed to stand. It is clearly established by the authorities adduced that telegraph companies are not common carriers in the sense of the common law. They have a right to limit their liability, as the evidence shows was done in the case, by the use of a blank. The evidence establishes clearly that such a blank was used by the plaintiffs, and the verdict of the jury is contrary to the law and the evidence of the case. Motion for a new trial granted."

The rulings of the court in this case are but corroborative of decisions by the courts of most of the other States in which the same questions have been discussed; and we hope to see them prevail everywhere as the nature of the service which telegraph companies undertake to perform becomes better understood.

We publish the case because it was elaborately argued by counsel on the trial; because it is, so far as we are informed, the first case of the kind in which there has been a judicial enunciation of principles in the State of Illinois; and because it is likely to receive the approval of the bench and bar throughout the wide extent of country in which the opinions of the learned judge who presided are justly recognized as authority.

JAMES M. JONES, Esq., of Cleveland, Ohio, appeared for the defendant, and deserves great credit for his handsome legal victory. The learning, ability and perseverance he has shown heretofore lead us to expect like success in the cases to which the same defendant is a party, and which are now pending in other courts, where he appears as their attorney.

The Cornell University.

The return of President White, from a brief but discriminating visit to Europe, naturally attracts attention to Cornell University. This young and vigorous institution has secured an enviable pre-eminence for the emphasis given to particular studies. Besides the usual college curriculum, special pains are bestowed upon mechanics, agriculture and the useful sciences and arts. All the professors are keenly alive to the requirements of our expanding and exigent modern life, and in Goldwin Smith, as well as Mr. James Law, the faculty will receive an enforcement which will give their institution a splendid and wide-spread national reputation.

The recent tour of the head of the University has been attended with such results as will place Cornell in the front rank of American Educational Institutes. Over fifty thousand dollars have been expended in books, models and apparatus. As the library was previously supplied with a superb collection of works on history, architecture and science, the fresh additions will insure such completions in the catalogue as must materially enhance the reputation of the University with scholars.

We are glad to notice the name of Mr. J. H. Larcomb in connection with the City of Washington Fire Alarm Telegraph, to the management of which he has recently been appointed. Mr. Larcomb has been connected with the telegraph now nearly 20 years, and was always known as among the most skillful and energetic which the early years of the enterprise produced. We are sure that in this new field he will give to it all the energy and ability which distinguished him when he and we were associates in labor. Of his ability for the post assigned him, there can be no question.

Re-organization of the East India Telegraph Co.

On account of the necessary absence in Europe of Mr. Holland, late President of the above Company, the following important appointments have been made, which cannot fail to add to the vigorous prosecution of the Company's plans:

DIRECTORS.

Hon. Andrew G. Curtin, Philadelphia.
Paul S. Forbes, Russell & Co., China.
Fred Butterfield, Fred Butterfield & Co., New York.
Alexander Holland, Treas. Am. Ex. Co., New York.
Isaac Livermore, Treas. Mich. Central R. R., Boston.
Hon. James Noxon, Syracuse, N. Y.
O. H. Palmer, Treas. Western Union Tel. Co., New York.
Fletcher Westray, Westray, Gibbs & Hardcastle, N. Y.
Nicholas Mickles, New York.
Andrew G. Curtin, *President*.
Nicholas Mickles, *Vice-President*.
George Conant, *Secretary*.
George Ellis, (Cashier National Bank of the Commonwealth), *Treasurer*.

Subscriptions to the balance of stock to be sold in the United States; application may be made at the office of

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Messrs. Jay Cook & Co., Washington, D. C.
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Messrs. C. D. Head & T. H. Perkins, 31 and 33 City Exchange, Boston, Mass.
Messrs. Lee, Higginson & Co., 40 State street, Boston, Mass.
Mr. Henry H. Ormsbee, Providence, R. I.
Messrs. J. L. Brownell & Bro., 28 Broad street, New York.
Messrs. Charles F. Chase & Co., Baltimore, Md.
Mr. W. R. Higby, Cashier, Pequot National Bank, Bridgeport, Conn.
The Merchants' National Bank, Syracuse, N. Y.
The Syracuse City Bank, Syracuse, N. Y.
Draxel & Co., Philadelphia.

We have received from Gov. Rufus B. Bullock, of Georgia, who not many years ago was one of our own fraternity, his inaugural message, dated July 24th. To two sentences in it we refer as indicative of the spirit which pervades it.

"With natural advantages unsurpassed, we have but to practice economy, the energy and the arts of our neighbors in other States less favored by nature, to insure for ourselves ease, contentment and material advancement.

"With thankful hearts to the Giver of all good for that with which we are now blessed, let us by charity, forbearance and fortitude, merit an increase of His bounty."

To the arduous and responsible post to which Mr. Bullock has been called, he has our hearty sympathy and desire for his complete success.

Writing on a Screen.

BY PROF. ALBERT R. LEEDS, OF HAVERFORD COLLEGE, PA.

Every lecturer has felt how unsatisfactory it is to write or draw, or in any manner attempt to illustrate his ideas in a large room. This difficulty may be overcome in the following manner: A plate of glass is placed in the lime-light or magnesium lantern, and an inverting prism, put in the forward part of the draw-tube of the objective. If now, while looking and lecturing to the audience, writing is done with an ordinary pen and indian-ink upon the glass plate, and proceeding from left to right upon the plate, it will advance correspondingly upon the screen, and will be read in greatly enlarged characters by those present. The square prism inverts with respect to bottom, and the writing being actually reversed by the writer in reference to the other direction in which the lantern is pointing, the crossing of the rays produced by the lens becomes in this case an advantage, and corrects the letters upon the screen. A collodion film, blackened by exposure to the sun's rays, may be substituted for a naked glass plate to great advantage. On such a film chemical and mathematical formulæ, drawings of apparatus, machinery, crystals, anatomical delineations, &c., may be cut with the utmost delicacy, and appear as intensely bright white lines on a black ground, and with something of the appearance of an immense copper-plate engraving.—*Am. Journ. Sci.*, May, 1888.

Napoleon III. as an Electrician.

[From the Journal des Telegraphes, Paris.]

On the 29th of May, 1843, the Academy of Sciences, presided over by M. Poncelet, accorded the privilege to the celebrated Arago to explain the theory of a new voltaic battery, communicated by letter to the illustrious scholar. This letter was dated from the Fortress of Ham, and was signed by the Prince Louis Napoleon. It did not find its way into the archives of the Institute, and the works of the Emperor alone took notice of it, as follows:

"FORTRESS OF HAM, April 23, 1843.

"The idea I submit to you to-day relates to a theory I have conceived of the functions of a voltaic pile. The source of galvanic electricity has been attributed by Volta to the contact of two dissimilar metals. Davy has adopted this opinion; but since then some savans, and among others the illustrious Faraday, have given the opinion that the chemical decomposition of metals is the sole cause of electricity. Adopting this last hypothesis, I have reasoned thus: As in the pile there is never but one of the two metals which should be oxidized, so, if the electricity is only due to chemical action, the second metal ought only to take a secondary part in this operation. What part? That, I believe, of holding and conducting the developed electricity. By the first, of an analogous manner to that which passes in an ordinary electric machine. In effect in this: The electricity disengaged by friction crosses a middle imperfect conductor, which is air, and is held and conducted by a perfect conductor, which is metal. In the pile, the electricity produced by the oxidation of any metal that crosses a middle imperfect conductor, which is the liquid, and is received and transmitted by a perfect conductor, which is the adjacent metal—this idea appears to me so clear and simple that I will find a way to prove the exactitude by experiment. I reason thus: If it is true that one of two metals employed in the pile serves only to conduct, you can replace it by an identical metal to that which oxidizes itself, provided that it is plunged in a liquid which, permitting the electricity to pass, does not attack this metal. Experiment has confirmed my prevision. I construct two couples, following the principle of Daniell's constant-current battery, but with one metal only. I plunge a copper cylinder in a liquid composed of water and nitric acid, all contained in a porous earthen tube. I surround this tube with another copper cylinder, plunged in water mixed with sulphuric acid, which does not attack the copper. Having established the communication as one ordinarily practises it, I decompose with this battery of two cups the solution of ioduret of potassium, and, having placed at the extremity of the poles two copper plates plunged in a solution of the sulphate of the same metal, I gather at the poles which were connected a deposit of copper. I make a second experiment, with zinc alone. I put in the porous cup some zinc, with water and sulphuric acid, and I surround this tube with another zinc cylinder plunged in pure tepid water, with two similar couples. I decompose equally the ioduret of potassium, and obtain, in taking the necessary precautions, a deposit of copper at the pole which was in connection with the attached zinc as before. Now I will reverse the usual order of metals, and put the copper in the centre of a tube plunged in water and nitric acid, and I will surround the porous cup with a zinc cylinder plunged in pure water, and I obtain a strong battery.

"I should like to be able to measure with care the different forces of the electric currents produced, but it has been impossible for me to do it for want of a galvanometer. My efforts to construct one do not succeed, because the magnetic needles are always swerved by the attraction of iron bars which surround my windows. However, after experiments that I have been able to make, it seems to me demonstrated—

"1st. That in the pile the cause of electricity is purely chemical, since two metals are not necessary to produce a current.

"2d. That the metal which is not oxidized only transmits the electricity.

"3d. That each metal is positive and negative to itself or others following the liquid into which it is plunged.

"I give you, sir, these reflections with a certain reserve, for I have not made chemistry and physics my special study, for it was only last winter that, in order to shorten the hours of my captivity, I made some experiments, and studied with most lively interest the works of illustrious men," &c.

This theory, as we see, is not without value, since, in the same year, the Prince Lucien Buonaparte occupied the Academy with his interesting discoveries upon the lactate of quinine, and upon *la cerium et la didymum*. The learned Assembly also wished to encourage profound studies, and ordered the insertion upon the journal of the following:

"Although the Prince Napoleon has been preceded by M. Becquerel in the construction of a battery composed of elements of one metal, we believe it our duty to publish his letter. The clearness of reasoning and the results justify our determination in the eyes of all the world."

Ah! if one had known what glorious and brilliant future destiny had reserved for this young physician. The captive of Ham has become Napoleon III! But no one can know all! Alas! no one—not even an Academician!

Telegraphic Mutual Insurance Assessment.

We have received up to the night of July 30th, two dollars each from the following parties: J. A. Borst, J. D. Reid, W. O. Lewis, W. H. Hill, T. H. O'Reilly, John Horn, Jr., Thomas Allen, George W. Baldwin, Charles Bagley, Benj. C. Clark, E. Chapman, W. J. Dealey, S. C. Hendrickson, H. F. Makepeace, A. W. Pearke, M. S. Roberts, G. W. Shires, F. H. Zimmerman, J. U. Ansley, Andrew Smith, G. H. Grace, D. W. Edgcombe, D. D. Mallory, H. H. Ward, R. Cunningham, A. B. Chandler, Geo. S. Downes, Henrietta Dieckman, B. F. Ely, S. H. Edwards, H. C. Fardon, Hattie H. Franklin, Carrie A. Hinds, E. F. Ludwig, Thos. McBride, R. H. Morris, Warren H. Moake, M. D. O'Connor, Thos. P. Scully, A. S. Brown, N. H. Brown, W. W. Burhans, R. W. Marriott, L. H. Snow, William Cook, J. White Kelly, Leonard Read, George E. Gilliland, George S. Shepard, James T. Maxwell, James Lytle, W. W. Kelchner, Claude C. Freeman, Louis Maury, W. H. Chivis, G. Chivis, R. L. Drakers, S. Dunlap, W. Ferguson, G. W. Roberts, Gerritt Smith, B. Stephens, H. F. Thurber, F. C. Ward, O. M. Gay, D. R. Downer, A. S. Downer, J. C. Christie, J. E. Selden, M. H. Hedding, F. J. Grace, W. C. Havens, John Mauser, J. B. Page.

NOTICES have been mailed to members of the Telegraphers' Mutual Life Insurance Association, that an assessment of two dollars is due, one dollar for the heirs of Edwin A. Hall, and one for the next application. Some of these may fail to reach the parties. To such we trust this will be regarded as sufficient notice. Let remittances be promptly made. Many have already responded. Address D. R. Downer, Secretary, 145 Broadway, N. Y., or J. D. Reid, Treasurer, Box 3393, N. Y.

Lightning Playing with Telegraph Wires.

The Oneida (N. Y.) *Dispatch* describes a singular freak of lightning during the thunder shower of July 2. Mr. Baldwin, operator of the Atlantic and Pacific telegraph office, had placed the cut-off in its position. This cut-off is a piece of coated wire eight inches long, arranged to turn the electric fluid back, so as to prevent injury to the apparatus or accident to the operator. In running across the cut-off the lightning melted the wire entirely off in the centre, leaving it hanging by the coating. A report like the discharge of a cannon accompanied the stroke, and was heard by persons several blocks off, who supposed it was an explosion in the office. The wire was coated by a covering of cotton, but strange to say, the fluid set fire to the papers hanging in contact with the wire, two feet above the cut-off, though the coating was not disturbed.

Reduction of Charges for Cable Telegrams.

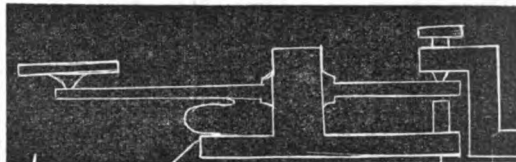
The Joint Committee of the Anglo-American and Atlantic Telegraph Company of London, with the approval of the Directors of the New York, Newfoundland and London Telegraph Company, have decided to reduce the tariff on the transmission of messages of ten words (five words additional being allowed for address, date and signature free) between Valentia, Ireland, and Planter Cove, Nova Scotia, to three pounds or fifteen dollars. The tariff on the land lines west of Planter Cove and east of Valentia will be an additional charge. The reduction is to take place on and after the first day of September, 1868.

In the House of Commons the bill providing for the purchase of all the telegraph lines in the United Kingdom by the Government was finally passed.

A Real Self-closing Key.

The letter of Mr. Haven, below, refers to a proposal to work the wires with open instead of closed circuits, making the spring of the receiving magnet accomplish the closing of the local circuit, instead of the magnet. Of course, in that case, the key left open closes the circuit, and the usual spring keeps it so. This is essentially, under such a mode of using the current, a perfect self-closing key.

The sketch cut represents the key closed and circuit open. It is to us a new and ingenious idea. We hope in another number to publish all the plans submitted to us for self-closing keys as well as our own.



NEW YORK, JUNE 23, 1868.

J. D. Reid, Esq., Editor, &c.

DEAR SIR: In regard to my design for a self circuit closer which has come to your notice, an idea has since occurred to me which I think is an important one in its favor; namely, that its use would insure firm writing.

Some operators from nervous excitement, impatience, or other causes, are in the habit of pounding the key at times, or manipulating in such a style, that now and then a dot is lost, and complaint is made by the receiving operator that "it comes too light." We often hear this remark on the line, coupled with the request "please write firmer." This being the case, in the present partially insulated condition of air lines, what invention for reliable practical use, next to a safe-adjusting relay, would the telegrapher wish to see, or more cheerfully accept, than a key which would not fail to transmit every character as intended, no matter what manner in manipulating the operator might choose to adopt?

Some operators seem to entertain the impression, that when they write *staccato* style, that they make a firmer connection in closing the circuit, and imagine that their writing will reach the remotest station, perfectly as they intend it should. That this is a mistake, it is an easy matter to prove.

My reason for thinking that my design will insure firm writing is from the fact that the key lever closes the *main* circuit in making the back stroke which must be a steady movement, when governed by the action of a spring of proper tension. The operator writes on the down stroke which opens the main circuit and closes the local circuits, whilst the back stroke takes care of itself opening the local circuits and closing the main circuit firmly by the action of the spring.

If my idea, when put to a practical test, should not operate, as I now believe it would, I hope that some one will invent something to meet this want.

Yours respectfully,

W. C. HAVEN.

At the banquet to Mr. Cyrus Field, the Duke of Argyll despatched a very friendly message to a daughter of Mr. Field, who remains at home. The young lady returned this felicitous answer:—"New York, 4 5 P. M.—I thank you most sincerely for the kind words you have spoken of my father, causing me to feel that we are friends, although our acquaintance is thus made across the sea and in a moment of time."

ASTRONOMERS tell us that the moon is drawing gradually nearer to the earth by about an inch every year. They have also discovered that the day is about one-hundredth of a second longer now than it was 20,000 years ago.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, AUGUST 1, 1868.

The Telegraphs in Great Britain.

By the cable we are informed that the bill to authorize government to buy the property of the private telegraph lines of the kingdom has passed the House of Commons. We have desired it otherwise, and regret its consummation. Yet many things favored this result, and which will prevent any great mischief following the change.

There can be no question of the perfection to which the postal service of Great Britain has attained. It has been the fruit of long experience and study. The most executive minds have given it their care. The delivery of letters and the persistence with which parties are followed up is something wonderful and admirable. A limited territory, splendid roads, the permanency of official appointments, all aid in the perfecting of any government scheme of this nature. The post-office management of Great Britain has therefore justified this new trust. Our regret is to see that centralization of power in the Government, which proportionately weakens the influence of the citizen. The correlation of forces is not more true in physics than in political economy. Power taken from the base weakens the superstructure.

As we have said before, we shall regret any such action here. It will be a sign of decay which will give the lie to our pretensions. We deny Mr. Washburn's atrocious calumnies on the status of American Telegraphs. Even if we admitted them to be true, we should equally resist the change of management he proposes. No corrupt private enterprise can long presume on public forbearance. What legislation cannot do, competition or self-interest will. To give up private enterprises to government is to keep the nation in everlasting childhood.

An Inducement to Insure.

The Telegraphers' Insurance Association should have been an immediate success; but, so far, has not realized the hopes of the gentlemen who founded it. After nearly a year has passed, and a fair amount of effort has been made to enlarge the membership, the number of applicants has only become 272. Had it reached 500, as it should very easily have done, and could now, if each insured person would secure one additional member, we would have been satisfied. Five hundred dollars, on an investment of one dollar and a half, is a useful sum when death enters a dwelling. It provides for all the decencies of burial, and should leave a comfortable balance, unless the pride of grief consumes it in wakes, and kid, and coaches. There should be five hundred members within a radius of one hundred miles of New York—certainly that number in the State of New York. As a measure of simple provision for the unfortunates whom death has ticketed for a speedy voyage, it should command a prompt and high minded response. Even the present sum, \$272, for such an one, will be

a great relief, and when some comrade dies, will be felt to be a timely and valuable possession.

Since the above was written, Mr. Seba B. Christie, of the Western Union Office, 145 Broadway, died of consumption, July 18, and the money on hand has been paid to his mother, whom he had appointed his heir. Mr. Christie was one of the early members of the association, and one of the most robust and healthy of any of his associates. He was a young man of excellent habits, genteel in appearance, very attentive to his duties, and had the respect of all his associates.

On the evening succeeding Mr. Christie's death, Mr. Edwin A. Hall, operator in the employ of the Atlantic and Pacific Telegraph Company, having gone upon the roof of the house where he boarded to "cool off," as he expressed it, before retiring, fell to the pavement and died during the night. It is supposed that he had fallen asleep, and unconsciously rolled himself off. Thus two deaths of members of the Association occurred within two days, the heirs of the first receiving, as agreed upon, all the contingent fund on hand. For the second an assessment has been made, which has been already freely responded to, and a number of new applicants for membership received.

We sincerely sympathize with the families of these two estimable young men. Mr. Hall was from Rochester, and his remains were conveyed there for interment. He was well known and esteemed by a large circle of friends throughout the State.

Gen. Anson Stager.

The cherished design which we attributed to Gen. Stager to change his residence to Chicago, is one which had its inception in the suggestion of the officers of the Company, who felt the need of a strong executive authority to control the present and prospective vast interests which centre there. A population increasing with unexampled rapidity, a territory large as civilized Europe thrown open to settlement, a loud constant demand for increased facilities for communication, and the construction of new lines, required one whose executive ability, whose good judgment, whose capacity of labor, whose general popularity, should, at the great centre of this teeming growth, carry out the policy of the Company under large discretionary powers. Cleveland is too far east for such a control.

Under such a pressure, the reasons for which appealed to his own judgment, Gen. Stager has for some time designed to change his residence, although with much excusable reluctance. A beautiful home, enriched by many of the accessories of art, a large circle of friends whom he has won by his geniality and worth, a citizenship every way agreeable to him, all have pleaded against the change. Yet, in obedience to what is an evident necessity, as clear to his own perceptions of duty now, as it has long been felt by the Company, of which he is the efficient western executive, he will soon separate himself from all these ties, and make Chicago his home. We congratulate him upon the change. It will double his usefulness and simplify his cares. Made at the direct solicitation of the officers of the Company with which he has been so long connected, it is the strongest evidence which could be adduced of the confidence they repose in him, and of the high estimate in which they hold his services.

The friends of Prof. Morse have offered him the compliment of a public dinner, which will probably come off during the fall.

EUROPEAN PATENTS are obtained through the Scientific American office in Great Britain, France, Belgium, Holland, Prussia, Russia, Saxony, Austria, Bavaria, Wurtemberg, Italy, Spain, and in Provinces wherever patents are allowed.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

JUNE, 1868.

Gross receipts,	- - -	\$579,911 00
Current expenses,	- - -	353,375 50
Net profit,	- - -	\$226,535 50

The balance thus shown is \$26,000 above the estimate and \$56,000 above the balance of the same month of the preceding year. Of the causes which led to this we may speak in our next. Suffice it to say now that it is the legitimate fruit of the policy pursued of extending the lines and equalizing the tariff.

SINCE the last semi-annual report of the Western Union Telegraph Company, its bonds have advanced from 80 to 90. This shows the public appreciation of the increasing soundness of the Company. As these bonds are reduced in amount by the monthly absorption which it is the settled policy of the Company to maintain, the price of the stock will gradually advance. At present prices it yields an income of about 11 per cent. Sales have varied during the last month from 34½ to 35½. The lines never worked better, and increased attention is being given to their condition.

Telegraphic Base Ball Clubs.

Our intelligent correspondent "Voyageur" of St. Louis, in his last letter states that the boys of the St. Louis office had organized into a club to play Base Ball, after the day's duties were over. Now this is capital and sensible. There is no livelier, healthier game, even though both shins and noses suffer now and then. We took it once square between the eyes and saw stars. But we were rather proud of the scar it left. Out with your bats, boys.

LETTERS from England all agree in representing the banquet to Mr. Field as one of the most gratifying and complete.

A COMPANY has been organized with a capital of ten millions, to purchase of the heirs of Prof. Page his rights under the late act of Congress. Bah!

THE Rev. Dr. Guthrie, the eloquent preacher of Scotland, says of his advancing years: "They say I am growing old, because my hair is silvered, and there are crows' feet upon my forehead, and my step is not so firm and elastic as of yore. But they are mistaken. That is not me. The brow is wrinkled, but that is not me. This is the house in which I live; but I am young—y younger now than I ever was before."

Executive Order No. 63.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York.
July 31st, 1868.

ANSON STAGER,
THOS. T. ECKERT,
JOHN VAN HORNE, } General Superintendents.

All Monthly Office Accounts Current, Check and Free Message Reports, and all papers pertaining to the Auditing and Check and Free Message Departments, will hereafter be forwarded to the Auditor instead of to the Treasurer, as heretofore. The Monthly Reports and Vouchers of the District Superintendents, will also, after examination and approval by the General Superintendent, be forwarded to the Auditor.

This order involves no change in the present system of remittances to the Treasurer.

WILLIAM ORTON, President.

THE operator at Northfield, N. H., is cook for the railroad station, and, having other fish to fry, declines to receive THE JOURNAL. Most intelligent cook, adieu.

For Tariff Bureau see Sixth Page.

Nothing Lost.

Nothing is lost; the drop of dew
That trembles on the leaf or flower,
Is but exhaled, to fall anew
In summer's thunder-shower;
Perchance to shine within the bow
That fronts the sun at fall of day—
Perchance to sparkle in the flow
Of fountains far away.

So with our deeds, for good or ill,
They have their power, scarce understood;
Then let us use our better will
To make them rife with good.
Like circles on a lake they go,
Ring within ring, and never stay.
Oh! that our deeds were fashioned so
That they might bless away!

—Chambers' Journal.

Meeting of the Board of Directors.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 BROADWAY, NEW YORK.
July 7, 1868.

Extract from the Minutes.

RESOLVED, That the President be and is hereby requested to express to Major Abasa, the high appreciation of this Board of the marked ability, energy, and fidelity of his administration of the responsible and perplexing affairs of the Company in Eastern Asia, and to assure him of our increased confidence in his capacity and integrity, and of our sincere regard and best wishes for him personally.

Adopted.

O. H. PALMER, Secretary.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 BROADWAY, NEW YORK.
July 10, 1868.

Sir: I have the pleasure to hand you herewith a copy of a Resolution which, by a unanimous vote of the Directors of this Company at their last meeting, I was directed to present to you.

In complying with the instructions of the Board, I desire to add the assurance of my hearty concurrence in their action, and my earnest wishes for the success you so eminently deserve, in whatever sphere of usefulness you may hereafter be employed.

Commending you to the confidence of good men everywhere, I am, with great respect,

Your obedient servant,

WILLIAM ORTON, President.

Major S. ABASA.

PHILA., June 10th, 1868.

DAVID BROOKS, Esq.,

DEAR SIR:—In reply to your favor, I would say that our telegraph line, connecting our counting house and our works in Montgomery County, is now working and has worked to our entire satisfaction, during this long wet weather.

It is our pleasure to recommend your insulators as being all that you claim.

Respectfully Yours,

BENJ. BULLOCK & SONS.

We are pleased to learn that Charles Williams, Jr., the well known instrument maker of Boston, the burning of whose establishment we recorded a few weeks ago, has entirely restored his establishment, and is now ready for work again. With enlarged premises, new tools, and other appliances for rapid manufacture, we trust Mr. Williams may rise from his ashes to an increased and more remunerative business. He has our cordial wishes for his success.

A TELEGRAPH LINE is projected from Salt Lake City via Fort Hall and old Fort Boise to the Columbia River. This will ultimately make a short route to Vancouver's Island, connecting the British possessions directly with the main line. It will probably be built during the ensuing year.

A Race for the Telegraph Wires.

Few persons have the slightest conception of the trouble and expenditure required to obtain possession of the telegraph wires when the "mail" arrives at either of the colonies. The arrival one Tuesday morning of the first Panama mail was the occasion of a *bona fide* and most exciting boat race. The appearance of the Raikaia had been most eagerly looked for for some days by the boats' crews employed by the *Argus* (Melbourne), and Messrs. Greville's Telegram Company, for the purpose of landing the first dispatch, and obtaining possession of the wires. The boats brought into requisition were small whale boats. In the *Argus*' boat were Green, the ex-champion, Mr. Cook (the shipping reporter of the *Sydney Morning Herald*, who is employed to land the telegrams for the *Argus*), and two others. In the service of Reuter's agents, Mr. McGregor and three able-bodied men pulled the well-known butcher's boat, Fairplay, the property of Mr. Fairplay, of this city. Both crews reached the mail outside the Heads, and boarded and procured their dispatches from her, and were towed up as far as Fort Denison. Here they let go, and a keen contest ensued, as might be anticipated, McGregor's crew being at a slight disadvantage as regards position. This, however, they lessened by degrees, and before passing Fort Macquarie were slightly in the lead. From this point the boats diverged, the *Argus* boat making for Campbell's wharf, and McGregor for the central steps at the Custom House. Thus the *Argus* crew had a much shorter distance to pull, yet both boats reached the shore within a few seconds of one another. At both points conveyances were waiting, and up the different streets both vehicles went at full gallop, and when they entered George Street, Greville's Telegram Company had a very considerable lead, and their telegrams, in consequence, gained precedence, and the messages, having been already prepared, were transmitted to Victoria, Queens, and throughout this colony. The distance pulled over by the two crews is about a mile and a quarter, and was done at a terrific pace. Both crews strained every nerve, and pulled with a determination seldom witnessed in a champion aquatic contest.—*Sydney Empire*.

An ingenious savant informs unscientific people if the earth were shot at the sun from its present distance with its present velocity, and a telegram simultaneously sent to the solar inhabitants, they would receive the message in five minutes; the earth would be seen coming toward them after the lapse of eight minutes, and they would have nearly two months to prepare for the shock, which would be received over ten years before they heard the explosion.

A. B. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office.)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 20, 1868.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE
THICK, OILY AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,
Sole Proprietor, N. Y.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
August 1, 1893.

To all Offices on W. U. Lines—

The following changes have occurred since July 1st, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Bateville, Miss., tariff same as Sardis, Miss.
Benton, Dacotah, tariff same as North Fork, Dac.
Clayton, Ind., tariff same as Cartersburg, Ind.
Ft. Wallace, Ka., tariff 15 and 1 more than Monument Station, Ka.
Miller's Landing, Mo., tariff same as Washington, Mo.
New Market, N. H., tariff same as New Market Junction, South " " N. H., check New Market.
Summit House, Mt. Washington, N. H., summer office, tariff same as Conway, N. H.
Salmon Falls, N. H., tariff same as South Berwick Junction, Me., check South Berwick Junction.
Waterville, Ka., tariff 75 and 6 more than Atchison, Ka.

NEW OFFICES ON OTHER LINES.

Ft. Branch, Ind., Tariff 40 and 3 from Vincennes, Ind., check Vincennes.
Greenwood, Va., 75 and 5 from Richmond, Va., check Richmond.
Business from the following offices on the Reading and Columbia Railroad lines will hereafter leave our line at and be checked against Columbia, Pa., tariff as indicated:
Ephrata, Pa., 35 and 3, from Columbia, Pa.
Lititz, Pa., 25 and 2, " " "
Manheim, Pa., 25 and 2, " " "
Reinholds, Pa., 35 and 3.
"Special rate" to Columbia will be used by all offices having "Special Sheet A," when computing tariff to these points.
Hereafter rate to Mexico and Pulaski, N. Y., will be 30 and 1 from Oswego, N. Y., check Oswego.

OFFICES CLOSED.

Tuscola, Ill., Ringgold, Va.

GENERAL INFORMATION.

All offices having "Special sheet A," will use the "special rate" to Troy when computing tariff to Lansingburgh, N. Y., check Jeffersonville and New Albany, Ind., at 25 cents more than "special rate" to Louisville, Ky., Fonda, N. Y., same as "special rate" to Fort Plain, New York, and Frederick, Md., unless you have been otherwise ordered, at old rate. They will also use the old rate to Columbia, Pa., as tariff to Marietta, Pa., instead of "special rate" as directed in last JOURNAL.

The tariff to White Haven, Pa., will hereafter be same as Wilkesbarre, Pa.

Messages for Dixmont Hospital, Pa., are delivered from Allegheny City; delivery charges, 75 cents.

Business for Unionville, N. Y., in last JOURNAL, will be checked to Erie, Ky. line, instead of Middletown, N. Y. See last JOURNAL.

WILLIAM ORTON,
President.

SAD AFFAIR—TELEGRAPH OPERATOR KILLED.—

Intelligence was received here yesterday afternoon that A. E. Hall, son of our former townsman Thomas Hall, who was paymaster on the Central Railroad, was killed the previous night in New York City. Deceased was a telegraph operator in the A. and P. Telegraph Company's office, aged 24 years, and on going off duty, as had been his custom and that of the other operators during this hot weather, repaired to the roof of the building to sleep. About one o'clock, as is supposed, he rolled off the roof and fell to the pavement, a distance of thirty or forty feet, and was killed. His body was found about 4 o'clock. His remains will arrive here to-morrow morning, and thence be taken to Bloomfield, where his father resides, for interment.

Young Hall was one of the most expert operators in the country. At the time of his death he was employed in the Gold Board office of the A. & P. Co. Mr. Butler, operator in the W. U. office in this city, furnishes the following details of the accident: Hall fell from the roof of his boarding house. The weather was very warm, and he remarked to his roommates that he would go on the roof and cool off before he went to bed. That was the last seen of him until his body was found.—*Rock Union.*

Thrilling Contrast.

A painter once met a beautiful child. So enraptured was he with its countenance and expression of loveliness that he resolved to paint it. He did so, and hung his favorite picture in his study. He made it his guardian angel. In sorrow and passion he sought relief and tranquility in gazing upon that countenance. He purposed that if he ever saw its opposite he would paint that also. But years passed away before he found a face so infernally ugly as to satisfy his idea of a perfect contrast to his darling picture. It was that of a wretch lying in despair upon the floor of his cell. He painted that terrible countenance. But what must have been his emotions when he learned that it was the same person he had painted before? The first was the face of the innocent child; the last, that of the reckless, ruined youth. The best things perverted become the worst. The sweetest juices, changed, become the sharpest acids. The little angel's likeness had been metamorphosed into that of the fiend.

California Pine.

An exhaustless source of wealth, now inaccessible, is the immense forests of sugar pine which extend hundreds of miles through the State of California on the mountain range. The proprietor of a lumber mill in Mariposa County has examined carefully a tract of 1,000 acres of this pine, where the trees range from three to twelve feet in diameter, and generally rise from 100 to 125 feet to the first limb. A belt of this timber extends at least three hundred miles parallel to the coast, no part of it above or below a certain altitude. It is reserved for the wants of future generations, but the subject of propagating this pine in all congenial situations is engaging the attention of parties on the Pacific coast.

A Race Anterior to Our Own.

The late Sir David Brewster, in his very interesting work entitled "More Worlds than One," in discussing the geological condition of the earth, inquires, "But who can tell what sleeps beyond? If we have followed the omnipotent arm into the infinity of space, may we not trace it under our feet in remoter times, and in deeper cemeteries? Another creation may lie beneath the earth's granite pavements—more glorious creatures may be entombed there. The mortal coils of beings more lovely, more pure, more divine, than man, may yet read to us the humbling lesson that we have not been the first, and may not be the last of an intellectual race."

ONE peculiar feature of Lima life, says a correspondent, is the employment of large, clean-looking dogs in the capacity of errand dogs, and for the conveyance of small parcels. The dogs are often accompanied by a small boy, and are fitted out with panniers of leather or wicker, fastened to each side, in the same manner as the donkeys are loaded. These dogs are hired out by their owners, and are mostly employed by the small trimmings stores, although I have seen them employed by butchers and also by bakers, to carry fresh bread or meat every morning to customers. They are said to be very excellent servants, and they go trotting about the streets very sagacious and dignified in demeanor.

MR. CYRUS FIELD last week mentioned some important facts at the recent meeting of the Atlantic Telegraph Company, illustrative of the beneficial effect which a reduction in the tariff of the Atlantic cable has had upon the receipts. Under the £25 tariff the receipts were £505 per day; under the £10 they were £579; and under the five guineas £893. He stated that the company was in a position to do six times the amount of business it is now doing, without adding a shilling to the expense.

Venom of Toads.

The Toad, formerly considered as a creature to be feared, does in reality possess a venom capable of killing certain animals and injuring man. This poison is not, as is generally thought, secreted by the mouth: it is a sort of epidemic cutaneous secretion, which acts powerfully if the skin be abraded at the time of contact. Dogs which bite toads, soon give voice to howls of pain. On examination it is found that the palate and tongue are swollen, and a viscous mucus is exuded. Smaller animals coming under the influence of the venom undergo true narcotic poisoning, soon followed by convulsions and death. Experiments made by MM. Gratiolet, Cloez, and Vulpian, show that the matter exuding from the parotid region of the toad becomes poisonous when introduced into the tissues. A tortoise of the species *Testudo Mauritanica*, lamed in the hind foot, was completely paralyzed at the end of fifteen days; and the paralysis lasted during several months. Some savages in South America use the acid fluid of the cutaneous glands of the toad instead of the curara. The venom exists in somewhat large quantities on the toad's back. Heated with ether, it dissolves, leaving a residuum: the evaporated solution exhibits oleaginous granules. The residuum contains a toxic powder sufficiently strong, even after complete desiccation, to kill a small bird.—*British Medical Journal.*

The Alkaline Dews of the West.

The correspondent of the Chicago *Tribune* writes of the country west of Laramie, on the Pacific Railroad:

From Laramie to here the country is very miserable and very curious. Here and there a patch of Buffalo grass may be seen, but rarely anything except sage brush and cactus. The ground seems incapable of producing anything else. The banks of all the small streams glisten with white where the alkali water has evaporated. Almost all the small streams here are impregnated with this alkali. It renders the water almost useless for all practical purposes, but it produces some very queer effects, as the workmen on the road and the visitors can testify. If one drinks much of it the same effect is produced as if a strong dose of salts is taken. This greatly disgusted the workmen when they were forced to drink it. Nor can the water be used in the engines with any effect: the steam it makes has no power. The water expends itself in froth and suds, and it eats and corrodes the boiler. This has been a great source of annoyance, and is one of the worst obstacles that the road has to overcome. Another peculiarity of this water is the effect it produces on the skin of those who wash in it; it roughens the skin of the hands, just as a cold wind chaps it in winter. It also peels the skin from the face, so that a person who uses this water has a new skin about every seven days. This is especially the case where soap is used in washing. The graders west of here, where the alkali in the water is much stronger, say that when soap is wanted for washing clothes, &c., they put some grease in the alkali water, stir it up with a stick, and there is soap. Naturally it costs but little, and when freights are reduced on the road it is proposed to supply the whole United States with cheap and good soap. Unfortunately there is no demand for that article among the Indians, and the Great Western Soap Factory cannot be started at present. As it is, every man is his own soap-maker. The result of this bad water has been to force the railroad company to dig deep wells along the line of this road. But even this is not always satisfactory: the well at Wyoming, fifteen miles west of Laramie, is almost useless on account of the alkali. In some places along the road the country is almost completely covered with the low, thick sage brush, useless for anything, except in some places where the wood is so large that it can be burned. In this region, where the land happens to be free from the sage brush, it is often so impregnated with the alkali that for two or three inches down the earth crumbles and sinks beneath the feet like ashes. Every now and then there are found in this region drifts of fossils of fish, oysters, clams, &c., thrown up from the bottom of the sea quite a time ago. Some of these fish are so well preserved that the glitter of the gold and silver on their scales is almost as bright as ever. The oysters and clams are tremendous in size, and would well do for the giants of the olden days. Some of the snakes are quite large in size, but few of them are perfect. Some of them are found imbedded in red sandstone, while others lie loose in the earth. Along with these are to be found many sea shells of various kinds. In some cases the fish will be found split open, and all the bones perfectly preserved. Some of these drifts are on the tops of bluffs, while others are low down.

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I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.
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DIRECTIONS TO APPLICANTS.

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4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

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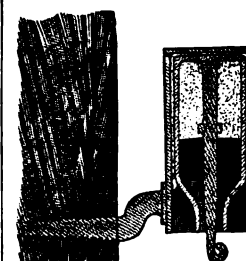
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Now there came a lull in the babbling half of the immense crowd, and the faint murmurs of many voices died away over the lake in a whisper which struck the opposite shore and shivered the foliage like a September gust of wind. There was a long quiet, however, while many a Harvard man's heart fainted in his bosom, and every Harvard girl blushed to the temple. The blue ribbons waved softly in the soft breeze coming across the lake, and the rain began to drizzle with a little more effect upon the water-proof cloaks: "Hush! what is that!" and a report of a pistol is heard, and while the smoke floats upwards in spiral wreaths at the lower end of the lake from the judges' stake boat, a shout is heard from the crowd, and a narrow, long cigar-shaped thing lying in the water and scarcely making any eddy or swell, darts out from beneath an arch in the causeway, filled with six powerfully-built young fellows, naked as to the arms and neck, and only covered on the chest by a thin white flannel shirt. They pull around the stake boat preparatory to taking position, and are hailed with loud acclaim. This is the Yale crew, as I can tell by the shouts of "Yale," "Yale," "Yale," "Elihu Yale," from the stout-hearted blue ribbons. The Yale boys pull around and swing in near the stake boat, and get more cheers. Then there is another short wait, and from under the same causeway arch darts another long, low, narrow boat, perhaps a foot wide and forty feet long; and now I know this is old Harvard herself, with her six brave handsome champions, for there are thunderous shouts all over the lake, splitting the foliage, of "Harvard!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "I never saw such enthusiasm before as was displayed by the red-ribboned ones at the appearance of the crew. Another pistol shot.

"By jimminy cricket," said a pious man, "they are off! They are off as sure as you live." And off they had gone like an arrow from a bow or the plunge of a diver.

Now, Yale, strain your sinews, and Harvard do your best, for this will be the hardest University race ever pulled in America, and ten thousand bright eyes are beaming on you, and ten thousand soft cheeks are glowing with pleasurable pride as your oars strike the water. Yes, there she is, right above in the bushes, more rosy than a pink-tipped shell, taking all hearts by her delicious smiles and glances with her playful eyes, waving her tiny hand and thrilling ten thousand male eyes by her unequalled loveliness. Happy is the man in either crew who shall be guerdoned by her hand to-day.

"Harvard is ahead!" "Harvard is ahead!" cry a thousand throats; and Harvard is ahead, and forges up to the grand stand, the crew bending to the spoons like machinery and leaping forward to every stroke, like bounds from a throng of leather. Yale has a bigger bodied crew, and her boat lies lower in the water, while the men give forth the same steady all-sufficient stroke. "Do you see that Harvard stroke? Oh, what a nice stroke!" says Molineaux, the colored gymnast of Harvard, to me, as the red handkerchiefs of Harvard pass by my sight, with Yale growing less and less by degrees in her wake. Ho! the Harvard crew now begin to show their skill and magnificent training by the way they pull ahead of the Yale crew, who do not cease in their assiduity, neither do they play; but alas for them, Harvard is pulling forty-six strokes a minute and Yale doing her best at thirty-eight. Harvard spurts now and then, but there is no spurt in Yale, for they are doing their best and can do no more. That glorious fellow in the Harvard bow is doing wonders; his laughing, merry face, and his magnificent body are in unison with his active brain; this is mere child's play for him, and I believe he could do it all day without wear and tear. "Bravo! Bravo! George Haldredge!" shout the Harvard fellows from the shore, and half a dozen red ribbons embraced each other in the wildest frenzy, while the girls in the gallery wave their handkerchiefs and actually cry out.

"Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Rah!" "Harvard!" "Harvard!" "Oh, this is the biggest thing I ever saw," shouts a strapping, big framed fellow. Six more red-ribboned hats embrace and kick each other in the shins for sheer joy. Now the crews are almost out of sight above Regatta Point, the Harvards four boat-lengths ahead, pulling that same quick stroke for which they have become famous and feared, just dipping their oars in the water, creating no swell whatever, and keeping their boat well up out of the water, by which they save themselves much trouble, while the Yale fellows pull very vindictively and dipping their oars too deep and letting them lay too long in the water. It is no use for George Drew to throw out those massive arms like an enraged tiger; it is no use for Bill Lee, the man from Chicago, to pull out his heartstrings; no use for Roderic Terry to throw his whole soul into that baw oar which he clutches with the grasp of a vice. The battle is almost lost and won now. The Harvard men are uproarious and shout and caper and offer two to one, three to one, four to one, anything to nothing for a bet, while the ladies rise *en masse* and wave handkerchiefs, and the New York betting men carefully put away large rolls of greenbacks in their pockets, chagrined that they cannot get a cent on the race. "Yale, Yale, Yale!" shouts a man from New Haven in sheer disgust. "Yes," says another Yale man, "shout like hell, anyhow, even if we do get beat bad." A few minutes elapses and the prows of the boats appear rounding Regatta Point, and now the excitement is positively fearful. I never before knew such an uproar. I can

just see Parry, the Yale stroke, looking as if he was about to die in his boat, and Copp's and Bucklin's eyes are almost blinded with perspiration and glamour. Haldredge is still swinging that most fearful of oars; and Loring, with his long, lean body, stretches out his arms like a hawk about to pounce upon a dove; Simonds, with his handsome face and ox-like shoulders, is pulling all he knows, and that is a good deal; while McBurney works nervously but quickly, and every man in the Harvard boat laying down to it as if an empire was at stake. Now the bands burst forth in triumphant brazen strains, that drown everything but the tremendous cheers for Harvard by sympathizers, and the short, sharp, nervous yell, "Rah!" "Rah!" "Rahes!" of the red ribbons.

The two boats pass the grand stand rapidly, Harvard leading two hundred yards, and the grand stand rages and boils and surges to and fro like a convulsed sea. Along they go by the stake-boat, both crews sweating like mules, and everybody cheering. Five minutes more and Harvard, with a great splash of her six oars, lay to it in the water by the stake-line. There is another rending shout, and as I look around and over the lake I can see the Yale boat a quarter of a mile behind, and once more Harvard wins the University race by her magnificent skill and training. The people shout as if demons possessed them, and with a final yell the Worcester regatta of 1868 is a thing of the past, to be remembered in all time by Harvard, and to be sulked over by defeated Yale.

Sir Curtis Lampson.

From the incipency of the Atlantic Telegraph enterprise, Sir Curtis Lampson has been one of its principal capitalists and supporters. When others, on the failure of the undertaking in 1858, hastened to sell their stock at any sacrifice, he held on steadily to his. He called together the disappointed shareholders, encouraged the faint-hearted, combatted the despairing, invited the aid of experts and scientific men, advanced large sums of money to sustain the sinking credit of the Company, made his counting-room the rendezvous of the disheartened Directors, and encouraged new efforts by still larger subscriptions of money. To no man, not even excepting Mr. Field, either in a pecuniary or moral point of view, does the success of the Atlantic cable owe as much. He was never timid. In the darkest days his faith was firm. Beyond all others he incurred risks. Failures that seemed to the public irremediable, were his incentives to new efforts. No difficulties appeared to him insuperable. Faults in construction, in paying out, and in repairing breaks in the cable; defects in signals, connections, insulation, coiling and uncoiling, became subjects of his study. The recovery of the lost cable, at attempts for which the world jeered during three years, he made his particular specialty, and to no other man is that greatest achievement of modern science as much due. His Knighthood, which is simply a decoration bestowed by the Queen as a recognition of meritorious service, neither ennobling his family nor inherited by his descendants, only stamping him, what he was all but in birth before, an Englishman, is an honor fairly deserved and nobly won. Sir Curtis Lampson is a native of Vermont.—*Correspondence N. Y. Times.*

TRIAL is being made in the office of one of the London daily papers, of a new printing machine, which is expected to transcend anything yet extant. The paper is made in immense length and delivered out from a roller. The machine is intended to print 46,000 sheets, or 23,000 perfect copies per hour, which is a greater number than has ever yet been accomplished; and it also cuts the paper into sheets, folds them, and records the number printed.

Opening of the First Public Railway.

Tuesday, the 27th of September, 1825, was a great day for Darlington. The proprietors of the railway met as early as six in the morning at the Brusselton fixed engine, where the working of the inclined plane was successfully rehearsed. At the foot of the incline the procession of vehicles was formed, consisting of the locomotive engine No. 1, driven by George Stephenson himself; after it six wagons loaded with coals and flour, then a covered coach containing directors and proprietors, next twenty-one coal wagons fitted up for passengers (with which they were crammed), and lastly six more wagons loaded with coals. Strange to say, a man on a horse, carrying a flag with the motto of the Company inscribed on it, "*Periculum privatam utilitas publica*," headed the procession. A lithographic view of the great event, published shortly after, duly exhibits the horseman and his flag. It was not thought so dangerous a place after all. The locomotive was only supposed to be able to go at the rate of from four to six miles an hour; and an ordinary horse could easily keep ahead of that. Off started the procession with the horseman at its head. A great concourse of people stood along the line. Many of them tried to accompany the train by running, and some gentlemen on horseback galloped across the fields to keep up with it. The railway descending with a gentle incline toward Darlington, the rate of speed was consequently variable. At a favorable part of the road Stephenson determined to try the speed of the engine, and he called upon the horseman with the flag to get out of the way! Most probably, deeming it unnecessary to carry his *periculum privatam* further, the horseman turned aside and Stephenson "put on the steam." The speed was at once raised to twelve miles an hour, and at a favorable part of the road, to fifteen. The runners on foot, the gentlemen on horseback, and the horseman with the flag, were consequently left far behind. When the train reached Darlington, it was found that 450 passengers occupied the wagons, and that the load of men, coals and merchandise amounted to about 50 tons. At Darlington the procession was rearranged. The six loaded coal wagons were left behind, and other wagons were taken on with 150 more passengers, together with a band of music. The train then started for Stockton, a distance of only twelve miles, which was reached in about three hours.—*Smiles's Lives of the Stephensons—new edition.*

Aurora Works the Telegraph.

During the recent displays of the magnetic storm, or Aurora Borealis, which was an object of wonder and admiration, the telegraph operators at Valparaiso and Fort Wayne, Indiana, curious to test its effect in working telegraph lines, disconnected the batteries from the line and put in ground wires, when they got magnetism sufficient enough to work the instruments quite well, enabling them to communicate with each other.

A FRENCH chemist informs the Academy of Sciences that he has discovered a means of fabricating real diamonds. His process consists in vaporizing molten iron, and condensing the vapor in a peculiar manner, when, as he says, the diamond *ought to be* one of the products of the condensation. If a current of chlorine, he says, be made to pass through cast iron when in a state of fusion, perchloride of iron is formed, which disappears by evaporation, leaving the carbon of the metal at liberty, in a crystallized state. He does not say whether he has actually made a jewel; but M. Dumas, the Secretary of the Academy, says that the experiment is worth trying; whereupon, *Once a Week* facetiously adds: "The experiment will begin with vapor, so there is just the possibility of its ending in smoke."

Tyndall and Varley in a New Role.

From the *Spiritual Magazine*.

"FLEETWOOD HOUSE, BECKENHAM, 19th May, 1868."

"J. Tyndall, Esq., F. R. S., &c."

"MY DEAR SIR:—Mr. Wallace has forwarded me your letter to him, dated 7th inst.

"In compliance with your desire, I will endeavor to describe briefly some of the 'physical phenomena' I saw on two occasions, in the presence of Mr. Home, together with the precautions I adopted to guard against trickery. To facilitate the explanation, permit me to premise, that the object of the *seance* was to demonstrate to me that the physical manifestations were not the result of trickery, and that there was some other intelligence at work besides Mr. Home and the observers. I had repeatedly heard from well-informed people of extraordinary manifestations occurring in the presence of this much-abused gentleman, and became very anxious to ascertain for myself the nature of them.

"Having no introduction, I called one Tuesday morning in the Spring of 1860, at his residence, 184 Sloane street, and told him that I was an Electrician of the Electric and International and the Atlantic Telegraph Companies, that I was well acquainted with electricity, magnetism and other physical forces—that I had heard of extraordinary phenomena occurring in his presence, and was desirous of seeing them and of investigating their cause. I asked him if he would permit me to witness them. His answer was 'He would be delighted to do so.' At the same time he warned me that he could not promise that any manifestations would take place, that the phenomena were of a delicate character, and that it generally required several sittings before the necessary rapport was established to permit of anything decisive.

"The next day I received a formal invitation for myself and Mrs. Varley for Thursday evening, between seven and eight o'clock. Mr. Home was residing in furnished apartments, and the drawing room into which I was introduced on the Tuesday, and in which the phenomena occurred on the Thursday, was over a chemist's shop.

"On one of those occasions, I examined the staircase to see if the floor was of unusual thickness or not, so as to permit of the introduction of machinery, and I also went into the shop underneath and examined the ceiling under the drawing room, but there was nothing unusual. The room was rather scantily furnished; there was a couch, about a dozen chairs, and nothing else capable of concealing any quantity of apparatus.

"Eight of us sat down to a large, heavy, circular table. I had previously arranged with Mrs. Varley to observe very closely, to look out keenly for anything resembling trickery, to observe the room, the furniture and those present for anything that might appear suspicious, and if anything unusual happened to note it carefully and fix it in her memory, so that we might collate our observations. On a slip accompanying this I give you in confidence the names of those who were present, all excepting one whose name I do not recollect, and their positions around the table. Finding so many ladies I felt some disappointment, fearing it would prevent a rigid scrutiny.

"The lady who sat on Mr. Home's left, i. e. between me and him (and whom I will call Mrs. A.), and who had devoted considerable attention to the subject, entreated me, as did Mr. Home, to use my utmost endeavors to satisfy myself with regard to the phenomena, and he again urged me on no account of etiquette or otherwise to hesitate to make a complete scrutiny.

"I availed myself of this. After sitting at the table for twenty minutes the first phenomenon occurred. We heard a number of sounds or raps as they are frequently termed. I examined the table underneath while Mrs. Varley observed above. There were four full-sized gas burners in the room burning brightly, all hands were on the table, all feet, as previously desired by Mr. Home, were turned back under the chairs.

The following simple telegraphic alphabet was then explained to me:

1 sound or movement, or action of any kind	No.
3 sounds	Yes.
3 sounds	Doubtful.

i. e. that neither *No* nor *Yes* would answer the question.

5 sounds or movements, &c., of any kind, the *Alphabet*. i. e. that the *alphabet* was to be run over or repeated aloud, and on the right letter being reached the fact was indicated by three sounds. In this manner words could be telegraphed easily, though slowly, by any one capable of producing the signals in question. Mrs. A. audibly expressed a wish that I should be touched—immediately five sounds were heard and telegraphing commenced. We were informed by this means that the communicator was afraid to approach me. I made no remark, but simply kept a sharp look-out, and endeavored to find whence the sounds proceeded. Shortly after, the table tipped up, first on one side and then on the other, remaining sometimes for many seconds in an inclined position, having described an arc of about 30 degrees. I examined under and over the table—all hands were resting gently on it, and I could see no indication whatever, of any exertion of muscular force on the part of any of us. About this time the sounds became louder, and there were two distinct kinds of raps—the one being a lower, but louder note than the other. The lighter and higher sound communicated that it had now lost its dread of me, and would move my coat. It was pulled or jerked three times—about half

a second of time elapsing between each pull. As these jerks were given to my coat, low down on the right hand side, between my chair and that of Mrs. A., the thought flashed through my mind, that this could not be accepted as evidence; but that, if my coat were pulled above the table, so that I could see it, it would be far more satisfactory. The instant this thought had passed through my mind, the flap of my coat on the right-hand side, within a foot of my face, was turned up three times. Immediately, and in order to test it carefully, I *mentally* wished the left hand collar to move in a similar manner. Before the thought had been put into words in my own mind, the left-hand flap moved three times, as requested.

"Very shortly afterwards information was signalled that I should be touched on the knee: without moving I again inaudibly desired that my right knee should be touched three times, and instantly I felt three distinct pressures. I mentally said, 'Left knee,' and it was touched three times without waiting a second. I mentally said, 'Right shoulder,' and it was instantly touched, but I could see nothing. I then mentally said, 'Left shoulder,' and finally, 'Top of my head,' and was touched accordingly three times at each place. The whole occupying not more than three times at each place. The whole occupying not more than 10 seconds. As I did not speak or move, or make any gesture, no one was aware of what had taken place until I described it to them. The table was tilted about a great many times, and by means of the signals we were instructed to stand up, which we did, resting our hands lightly on the table, the latter after rocking about for a little while suddenly rose up bodily off the floor 14 or 15 inches, moved about, and then descended. I examined underneath during this phenomenon, but there was nothing visible. The hands were well over the table, and it certainly was not supported by them. It then occurred to me, as my *unuttered* thoughts had been responded to in the early phenomena, that if the table rose off the floor again I would wish it to be moved in various directions; after writing three or four minutes the table rose again into the air about 13 or 15 inches and remained up fully half a minute. I mentally wished it to move in various directions, and it did so, before those thoughts had assumed the shape of words in my own mind.

"During a portion of the *seance*, as many as four distinct kind of raps were heard at the same time, and as many people were putting questions and receiving answers at the same moment. When requested, the raps were produced on the walls, on the ceiling, on our chairs, which latter were distinctly shaken by them: and on several occasions the whole vibrated sufficiently to simultaneously attract the attention of every one.

"Several of us, while seated in our chairs, were suddenly twisted round; and subsequent experiment showed that it required a good vigorous effort to perform a like operation by the hands. These twistings occurred to those who were far from, as well as those who were near to Mr. Home. The *seance* continued till about eleven o'clock; Mr. and Mrs. Home, as well as Mrs. A., pronounced it unusually successful, and expressed surprise at such a display of force at my *first* investigation.

"On returning home Mrs. Varley and I compared notes, I found that she had put a great many questions mentally and received answers as rapidly as I had.

"It was between 12 and 1 o'clock when we reached our dwelling at the other end of London, five or six miles from Sloane street. Before retiring I requested Mrs. Varley to sit down with me in the drawing room and once more think over carefully what we had seen together with the tests we had employed to guard against delusions: while so engaged, although five miles away from the medium, the sounds or raps commenced upon the walls of our own house.

"The next evening I received a letter from Mr. Home, in which he informed us of the fact that we had heard these sounds in our own house.

"I saw him shortly afterwards and asked him how he knew this, and he said that the same power which had produced the phenomena at his house, had produced the sounds in my own room, and had informed him of the fact and instructed him to write me as an additional evidence.

"SECOND SEANCE AT MY OWN HOUSE, AT BECKENHAM, KENT.

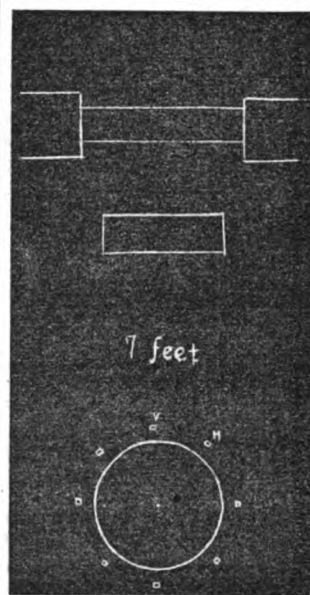
"Present:—D. D. Home, a lady, a city accountant, a merchant, a gentleman, the first officer of a ship, Mrs. Varley, and myself.

"I purchased this house in the latter part of 1863, while it was in course of erection, and before any of the flooring was laid; I am therefore well acquainted with its internal structure.

"In the summer of 1864, I requested Mr. Home to keep his promise of giving me a *seance* at my own house, and I invited the people mentioned to meet him. He had never been in the house before.

"We had a great many phenomena similar to those already described: there were some, however, different from those I had seen in his house. During the course of the evening he became apparently nervous, and requested me to hold his hands, and said: 'Oh! look behind you'—and became somewhat alarmed.

"He then put both his legs over my left knee, and at his request I held both his legs between my legs, and grasped both his hands in my own. We all of us looked in the direction which he indicated—there was a small side table close to the conservatory window, seven feet behind Mr. Home's back, Mr. Home and I being the nearest to it. We were seated thus:



"Shortly afterwards the side table began to move. This table is mounted on casters, and it was driven up to me by some invisible means no one being near it, and while I had hold of both Mr. Home's hands and legs. A large ottoman, capable of seating eight persons, was moved all over the room, and we were all driven by it up to the piano-forte.

"*Imposture* was impossible. Phenomena of this kind were abundant this evening. As many of them occurred in the dusk of the evening they hardly come within the scope of your demand, viz., under a 'bright light.' I have witnessed the 'physical phenomena' more than twenty times; but the higher physical phenomena, which convey better proof to those who actually witness them than do the physical, have been witnessed by me more than a hundred times both in England and America.

"You may ask why I have not published this before. The answer is simple—you yourself know how all new things are received in this world of contention.

"I have endeavored, whenever opportunity, health, and business would permit, to ascertain the nature of the force by which these phenomena are produced, but I have not progressed much farther at present than to find out the source whence the physical power is abstracted, viz., from the vital systems of those who are present, and especially from the medium. The part of the subject under discussion, therefore, is not yet ripe for publication.

"As to the phenomena themselves, there are numerous accounts on record—some excellently authenticated, both in this and the previous century. We are only now re-studying what has been investigated by the philosophers who lived 2,000 years ago; and when some good Greek or Latin scholar, who has made himself acquainted with the character of the phenomena which have been presenting themselves so numerously since the year 1848, will properly translate the writings of those great men, the world will find out that what is happening at the present time is only a new edition of an old page of history, studied by keen intelligences to an extent that will redound greatly to the credit of those good and clear-headed old sages, who seem to have risen far above the narrow-minded prejudices of their age, and to have investigated the matter under discussion to an extent in some respects transcending our present knowledge.

"I am, my dear Sir, very truly yours,
(Signed) CHAMWELL F. VARLEY.

The Invention of Vulcanized Rubber.

After long years of effort and disappointment, Charles Goodyear stood apparently as far as ever from the attainment of his object, until one day, while in earnest conversation regarding his proposed invention, he emphasized an assertion by flinging away at random a piece of rubber combined with sulphur that he held in his hand. The fragment fell upon the stove, was subject to a higher heat than that to which he ever ventured designedly to subject the material; and when it was recovered it was found to possess the qualities for which he had sought so long; cold did not harden and heat did not soften the water-proof and elastic mass. And thus sprang forth the germ of an invention that has built up a new branch of manufacturing industry, given employment to thousands of operatives, and added in myriad forms to the conveniences of life.—*Am. Art.*

We appointed, some 16 years ago, a quick active lad, named Matthew Hunt, to a messengership in the Louisville, Ky., office. A day or two ago he called on us, still young, still active, but now a St. Louis merchant, doing a large and growing business, trusted and honored, as all true men are. We like to see these boys dropping into this quiet corner of ours, to tell us how the world uses them. Success to all of them.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, AUGUST 15, 1868.

The Bewildered Stockholder.

A few days ago we watched an elderly gentleman, with a hat so ancient and so smoothly brushed as to suggest habits alike of neatness and economy, studiously conning the recent exhibit of the Western Union Telegraph Company. With his right shoulder against the glass of the street door, the forefinger of his right hand between his teeth undergoing the progress of a gentle chew, and with his left holding the JOURNAL OF THE TELEGRAPH, his whole attitude denoted intense interest and study. Just as we were turning aside, the old gentleman suddenly cocked his head on one side, changed the point of chew from the first to the upper joint of his salivated digit, and with his left eye partly closed and the brother optic gleaming beneath the sharp arch of his elevated eyebrow, looked the very personification of an algebraic puzzle. By and by, however, his features relaxed, and resignation, if not contentment remained behind. Yet there was evidently something still resting in his mind undigested.

Observing, we presume, something communicative in our always pleasant features, the owner of the hat and finger, sideling up to us with a kind of cat-like carefulness which was entirely unnecessary and somewhat amusing, asked in a half-pronounced and furtive manner:

"Belong to this Company?"

"Yes, sir."

"President in?"

"Believe he is. Do you want to see him?"

"Well, yes, I want to know some things about this Company I can't understand."

"Perhaps I can relieve your mind, sir. What is the trouble?"

"Well, you see," and the old hat looked like the knob of a mark of interrogation, "this item of construction, construction always coming into these statements after a line has been built clear over the whole way from Calais to San Francisco I don't understand, and," waxing a little warm and the hat looking pugilistic, "I don't believe. There's money enough spent for construction to make my stock worth par and my dividends six per cent., sir."

"Well, my dear sir, don't get angry. Construction and Re-construction, you know, are both troublesome things to understand. But both are necessary. Now listen a moment:"

"The territory of the Western Union Telegraph Company is under three general Superintendents, all of them first-class, practical men, and it is their business at the beginning of every year to make an estimate of what they need and the amount of new line which ought to be or must be built."

"Must, must," sharply retorted the old hat, "what business have they to 'must.' Is, is, isn't the line built already, or is there any line at all? Tell me that, sir," and the brim of the hat and the two mobile lips made signals to each other in a most alarming way.

"Now, now, now don't be impatient, and listen: In one of these divisions, 37 railroad companies have determined to extend their roads 3,485 miles during the coming year. They have telegraph lines along their present roads, but need them wherever their roads run. They cannot do without them. If we don't build lines for them, some one else will. It won't do to let other lines cover our territory, you know. Don't you see? That's what makes the Company strong and useful."

The old hat muttered the word "useful" as if it was a silly thought, but rather stiffened up on the "strong," and asked with considerable calmness—"are you going to build all them lines this year for these railroads?"

"Well, we must build some of them, if not all, and there's a good deal more to do besides that."

"More," what "more?" Do you mean to tell me that the other two divisions *must* have as many more miles of line built for them—over 10,000 miles of new line in a single year? Where's my January dividend to come from? By George, I'll sell."

"No, no, don't you sell, the dividend will be all right. But men ought to be more intimate with the necessities of this great concern. During the last four years or so, the Company has built over 25,000 miles of line. It cannot stop building. Every new town which springs up in the vast range of country opening by the Pacific Railroad must have its office. Increase of population demands new facilities. New railroads must have new lines, and reduced tariffs must, in developing new business, require added wires to enable companies to perform it. No, sir, we cannot stop construction; it is the policy of an intelligent company to place the facilities of intercourse in possession of every community everywhere, and we intend to do it."

"God bless me!" exclaimed my agitated friend—and the old hat moved out into Broadway, and was soon lost among a sea of other hats as it threaded its way to Wall street.

This "construction" item troubles many. And yet it is the visible sign of life, the basis of a successful future. The gain of \$56,000 in June is due to it. Every new line is a new rivulet opened, whose last trickle is heard in the money-drawer of the Treasurer, at 145 Broadway, New York.

Stomachic Observations.

Some time ago we published the statement of some European genius, that he had discovered a mode by which all the operations of the stomach and bowels could be seen. Several applications were made for copies of the paper containing it, and a request from one enthusiastic correspondent to know if such a machine could be produced. A second time we had a similar announcement from Breslau, with a similar result. To see the operations of the stomach seems to be invested with remarkable charms.

Now we protest. The happiest thing in life is to be supremely unaware of the existence of a stomach at all. Carlyle said he was happier until he found he was the possessor of so diabolical a thing as he found a "stomack" to be. With a machine for watching it we would have the most unutterable unhappiness at our tables, where such machines would surely go, as the processes of the destruction of hash, and eggs, and buttered fish, and soft crabs, were going on, and watched. We should be afraid to eat. We would be jumping up at night in our disturbed gowns to see the condition of the oysters we ate at 11 P.M., and the cream we swallowed at 12. No, no; such knowledge is too wonderful. At least, let it be confined to the doctors. The least we think about stomachs the better they work. That is orthodox philosophy. We speak that which we do know. Let the stomachscopes alone.

Telegraph Lines.

In the report upon the Universal Exposition of Paris, prepared by M. Neumann, in the name of the Austrian Commission, it is shown that the telegraphic lines of the whole world would have a total length of 47,255 geographical miles. There are in Europe 8,000 telegraph offices, and 4,000 in the other continents. No less than 1,300,000 hundred weights of metal have been used for the conducting wires, and the expenses of establishing all the lines are estimated at nearly \$42,000,000.—*Scientific Amer.*

We have only to inform M. Neumann that the Western Union Telegraph Company has as many miles of actual pole line, as he has allowed to be in existence in the whole world.

MR. WM. M. SPINK, of the Western Union Telegraph Office, St. Louis, has accepted the post of night report operator, at the office of that company in Cincinnati. Mr. S. is, besides being a skilful operator, a man of education, and uses his pen gracefully and fluently. He has contributed already several pleasant and acceptable letters to this journal, and we trust to hear from him often.

Telegraphers' Insurance.

The following has the right ring in it. We would be glad to receive one thousand applications within thirty days. We would feel prouder of the craft:

TELEGRAPH OFFICE,
McEUNSVILLE, Pa., August 4, 1868.

MR. J. D. REID:

Dear Sir—Enclosed please find amount assessed me on account Insurance—\$2.

Hoping all the telegraphers in the land will take hold of this mutual benefit, placed within the reach of all, binding us together in one fraternal band, and giving us the assurance that we are lightening each other's burdens, thus accomplishing one of the noblest objects of life. Yours sincerely,

S. M. G. WENCK.

Telegraphic Insurance Association.

ASSESSMENTS RECEIVED SINCE JULY 30.

Byron A. Squires,	D. H. Henshaw,
George F. Durant,	William Blanchard,
John Fuller,	Horace A. Chute,
Wm. K. Applebaugh,	George E. Gilliland,
W. H. Clark,	D. P. Livermore,
Charles L. Chase,	Smith Robertson,
Cornelius Dwyer,	O. S. Wood,
Thomas Dolan,	S. M. G. Wenck,
Fred. C. Gay,	Joshua C. Smith,
Frederic Crouse,	R. S. Raymond,
Mary E. Bell,	M. V. B. Buel,
Joseph Munson Nye,	W. H. Stiegelmaier,
P. H. Shaugnessy,	John A. Casterlin,
George H. Smith,	Waldo H. Collins,
Mattie L. Smith,	C. O. Rowe,
Mary E. Smith,	D. H. Fitch,
F. A. M. Eyster,	Henry M. Wynkoop,
J. R. Dowell,	Fred. Fairchild,
Francis M. Ingram,	S. E. Atwater,
J. A. Brenner,	J. B. Leach,
C. G. Merriwether,	James M. Armstrong,
Wm. Sanford,	Elisha Rider,
F. A. Armstrong,	Henry S. Smith,
Charles E. Higdon,	Phil. P. Hauff,
Allice A. Smith,	E. G. T. Adams,
Alfred Weller,	Wm. N. White,
Chas. H. Vogel,	Geo. J. Whitehead,
C. E. Merritt,	Joseph Knittle,
A. Neilson,	J. P. Kirchner,
Wm. C. Long,	R. B. Lown,
Wm. G. Jamieson,	M. Foley,
Wm. Mackintosh,	J. P. Towler,
John T. Winne,	J. L. Edwards,
J. H. Cochran,	A. W. Meecham,
Jas. J. Calahan,	A. Baur,
B. F. Follet,	W. H. Ashley,
F. D. Adams,	Geo. A. Lance,
Frank Nicholson,	J. Ford,
Samuel Moore,	C. S. Follet,
W. C. Buell,	G. T. Williams,
W. W. Lyle,	E. C. Bush,
W. J. Lawler,	J. H. Pearce,
C. H. Summers,	W. W. Smith,
B. F. Bush,	S. P. Peabody,
B. H. Johnson,	J. W. Smith,
C. M. Knox,	J. E. Palmer,
T. E. Palmer,	

EXECUTIVE ORDER No. 64.

Reduction of Tariff on Atlantic Cable Business.

On and after September 1, 1868, the rates of tariff on Atlantic Cable business will be as follows:

TARIFF IN GOLD TO ANY POINT IN GREAT BRITAIN AND IRELAND.

From all points in Nova Scotia and New Brunswick, except Sackville, . . .	10 words or less.	Each additional word.
" Sackville, N. B.,	\$16.35	\$1.63
" Boston, Mass.,	16.10	1.61
" New York City,	16.65	1.66
" All points in Maine, New Hampshire, Vermont, Massachusetts (except Boston), Rhode Island, Connecticut, New York (except N. Y. City), New Jersey, Pennsylvania, Delaware, Maryland; and District of Columbia,	16.85	1.67
" All points in Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, and Wisconsin; also, from St. Louis, Mo., and Lake City, Tallahassee and St. Marks, Fla., . . .	17.35	1.72
" All other points in Florida, . . .	19.00	1.83
" All points in Texas, Arkansas, Missouri (except St. Louis), Kansas, Nebraska, Iowa, Minnesota, Colorado, Dakota, Wyoming, New Mexico, Utah, Idaho, Montana, Nevada, California and Arizona, . .	22.50	2.13
" All points in Oregon, Washington Territory and British Columbia, . .	21.75	2.08
" Territory and British Columbia, . .	24.75	2.33

We are notified of following changes in rules for Checking, Counting, etc., which otherwise remain unaltered, as per Executive Order No. 58, published in the JOURNAL OF THE TELEGRAPH, February 15, 1868.

Figures in ordinary messages must be expressed in words thus "2" two—"4-5" four fifths. The charge will be for the number of words and letters without regard to the figures they represent.

Count two-pence, three-pence, &c., up to eleven-pence inclusive, each one word.

Prepaid answers must be presented for transmission not later than eight days after arrival of original at delivery station. If answer of only ten words is prepaid, it is sufficient to insert in original message "reply paid."

In messages repeated back from destination to originating station, the words "repetition paid" must be inserted after address and charged for.

Code messages, constructed for purposes of secrecy, of disjointed sentences or words, rendering the meaning unintelligible, will be transmitted with every possible care, but the Telegraph Companies while willing to investigate by post, complaints respecting errors in such messages, will not return the charges upon them unless they be "repeated messages." Should the receiver of such a message have it repeated, the amount paid for application and reply will not be returned unless the message was originally a "repeated message" and paid for as such by the sender.

TARIFF TO PLACES BEYOND GREAT BRITAIN AND IRELAND.

On messages to places beyond Great Britain and Ireland, charge the following rates, in gold, in addition to the tariff to Great Britain and Ireland:

TABLE		For each 10, or fraction of 10, words above 20, charge in addition, one-half of these rates.	
20 words or less.		20 words or less.	
Belgium,	\$ 63	Spain,	3.25
France,	84	Algeria, Portugal, Turkey in Asia,	4.00
Holland,	94	Ionian Isles,	4.25
Switzerland,	1.46	Russia in Asia,	5.63
Prussia, Austria, German States,	1.50	Tripoli,	7.38
Channel Islands,	1.67	Alexandria,	12.38
Denmark,	1.75	Cairo,	13.38
Sweden,	2.00	Suez,	15.63
Norway,	2.13	India,	26.25
Italy, Turkey in Europe, and Greece,	2.25	Ceylon,	25.25
Russia in Europe and Sicily,	2.50	China, Port Galle,	27.00

We are notified of following changes in Rules relating to Continental business:

Determine the number of chargeable words by count of actual words in the entire message, including address, date and signature, without reference to the number of letters.

All compound names and words count for as many words as they contain.

The Continental Telegraph Companies will not entertain or investigate complaints of error or delay in unrepeatable messages.

In all other respects Rules contained in Executive Order No. 58, remain unchanged.

WILLIAM ORTON, President.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
August 15, 1868.

To all Offices on W. U. Lines—

The following changes have occurred since August 1st, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Clarendon Springs, Vt., tariff same as Rutland, Vt.
Emlenton, Pa., tariff same as Brady's Bend, Pa.
Gilmer, Utah, tariff same as Weber, Utah.
Meranac, Mo., tariff same as Kirkwood, Mo.
Templeton Depot, Mass., tariff same as Gardiner.
Velonia, Ind., tariff same as Brownstown, Ind. (Velonia will be open during the melon season only.)
Wheatland Furnace, Pa., tariff same as Sharon, Pa.
Wheatland, Ind., tariff same as Vincennes, Ind.
Newfield, N. J., summer office, tariff same as Vineland, N. J.

OFFICES OPENED ON OTHER LINES.

Camp Reed, Utah, tariff same as Weber, Utah. Check Weber.
Gorham, Me., tariff 25 and 2 from Portland, Me. Check Portland.
Pierreville, Quebec, tariff 25 and 2 from Montreal, Quebec. Check Montreal.

OFFICES CLOSED.

Blandensville, Ill., Zilwaukee, Mich., and Freemansburg, Pa. Business for Freemansburg will be mailed at Bethlehem Pa.

GENERAL INFORMATION.

The through tariff to the following named offices on the Delaware and Hudson Canal Telegraph line, is now 35 and 3 from Scranton, Pa., Mondou, N. Y., and Lackawaxen, Pa. Business will be sent by the route giving the lowest rate, and be checked accordingly. Lackawaxen is an "Erie line" office; business sent by that route will therefore be checked to the same point as is now checked on business for Lackawaxen.

Archibald, Pa. Mongaup, N. Y.
Barryville, N. Y. Neverink, or
Carbondale, Pa. Cuddebackville, N. Y.
Eddyville, N. Y. Olyphant, Pa.
Ellenville, N. Y. Phillipsport, N. Y.
Hawley, Pa. Pond Eddy, N. Y.
High Falls, N. Y. Providence, Pa.
Honesdale, Pa. Waymart, Pa.
Kerhonkson, or White Mills Pa.
Middleport, N. Y. Wurtsboro, N. Y.

The name of the office heretofore known as Bolling Springs, N. J., has been changed to Rutherford Park, N. J., and Holderneess, N. H., to Ashland, N. H.

WILLIAM ORTON,
President.

PHILADELPHIA & READING RAILROAD,
SUPERINTENDENT'S OFFICE,
READING, June 1, 1868.

DAVID BROOKS, ESQ.,

DEAR SIR:—We have in use upon the lines of this Company three different kinds of Insulators, among which is your improved Paraffine, excelling all others, both as to insulation and durability. The lines having your insulators work well during all kinds of weather.

Respectfully,
C. T. SELLERS,
Superintendent Telegraph.

A. S. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office.)

UTIOA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

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SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding or any other man. It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,
Sole Proprietor, N. Y.

What Next?

Telegraph lines and cables having had their excitement and their congratulatory suppers and gold medals, the great public maw is open for something new. We have been expecting daily to hear of some feasible proposal to receive a gentleman at some handsome New York receiving office, fasten him inside a gilded ball, duly labeled, give him a drink of Colton's ether to render him unconscious of motion for a few seconds, and blow him by pneumatic tube out on the sidewalk of Philadelphia or Washington, inside of ten seconds, with all the integuments of the blowee's raiment clean and undisturbed. We are, perhaps, not quite ready for that yet, although it is coming. But we are going to fly! Men are to become angelic in fact, and women what they are now, or are supposed to be, angels. We cut the following from "ENGINEERING," one of the two great English scientific papers. Oh! ye young maidens who want to fly into your lovers' arms, be comforted, for the day draweth nigh! You sigh

"Oh! that I had the wings of a dove."

Well you shall have them, sweetest. Mr. Spencer is making them for you. Only don't put too much steam on as you come on aerial flight with your fan-shaped terminus to

"Rest, rest in this bosom, love."

Come gently, gently, with all your cranks and appendages cool, giving due notice by proper whistle of your approach.

THE FLYING MAN.

At the recent meeting of the Aeronautical Society, it was announced by Mr. Wenham, that one of the members of the society, Mr. Spencer, had already constructed an apparatus, by the aid of which he had accomplished the feat of raising himself from the ground level and performing a horizontal flight of sixty feet; and it was further stated by Mr. Wenham that Mr. Spencer expected to fly the length of the Crystal Palace during the meeting of the Aeronautical Society to be held there next month. Since the above announcement was made, we have received from Mr. Spencer some particulars of the apparatus employed by him. It consists of a pair of wings of rather small size, arranged so that they can be worked by the arms, and a large fan-shaped tail of very light construction, connected to the body by basket-work, so that it stands at an angle of about 8° with the horizontal. Mr. Spencer does not profess to fly in the ordinary sense of the term. He uses his apparatus by taking a short, quick run, this run being continued until, by pressure of the air against the under surface of the tail, he is raised from the ground. He then, by using the wings, maintains the momentum which he has acquired as long as possible, and is thus enabled to skim along at a short distance above the ground. Mr. Spencer commenced his operations by practicing long jumps without the aid of the apparatus, and he then commenced using the wings, and finally added the tail. By continued practice, and from time to time making alterations in his apparatus, Mr. Spencer has been enabled to extend considerably his early flights or "skims," and we were informed by him a few days ago that he had lately accomplished a flight of 180 feet, starting and alighting at the ground level. Mr. Spencer is now engaged in completing a new apparatus, which he hopes to finish in time for the exhibition of the Aeronautical Society at the Crystal Palace, and we look forward with some interest to witnessing its performance.

A CORRESPONDENT who signs himself "Above Canal Street," deems the branch offices entitled to a share of the credit given to the central office in the recent statement of business done during "Convention Week." This we cheerfully accord. The labor was all the greater from having to perform it alone.

Petrification of the Human Body.

W. P. Bain, M. D., writes as follows to the *Lancet*, on the subject of Dr. Marini's preparation of the human body:

"Having handled some of his preparations in Florence last Autumn, I am able to say that he is the inventor of a mode of turning the human body or any part of it into stone, in any attitude that may be desired. I inclose the photograph of a senator of the Italian Parliament, taken four months after his decease, in which he is represented seated in his chair, with his clothes on, just as when alive, his eyes retaining, in an astonishing degree the vivacity of life. I also inclose the photograph of a table, the slab of which is formed of pieces of the human body—brain, muscles, etc.—all turned into stone, and which, when struck by me, sounded as a marble table. I also inspected a lady's foot, likewise petrified, and which had every appearance of marble, until upon close inspection, the texture of the skin was apparent. Dr. Marini showed me, too, some specimens of the human body, which were in a moist and perfect condition, preserved for years. He assured me also that the week before he had dined off a duck which had been killed months previously. The foot of a mummy was in his apartment at the time of my visit, in which the color assumed that of life, and the toes were perfectly flexible.

"I am perfectly certain that these inventions are genuine and of high value; and when Dr. Marini arrives here, I hope to be able to introduce him to the heads of the profession. The Emperor of the French, with his usual tact, has expressed himself warmly to Dr. Marini in approbation of his inventions.

Stomach and Mind.

Much of our conduct depends, no doubt, upon the character of the food we eat. Perhaps, indeed, the nature of our meals governs the nature of our impulses more than we are inclined to admit, because none of us relish well the abandonment of our idea of free agency. Bonaparte attributed the loss of one of his battles to a poor dinner, which at the time disturbed his digestion. How many of our misjudgments, how many of our deliberate errors, how many of our unkindnesses, our cruelties, our acts of thoughtlessness and recklessness, may be actually owing to a cause of the same character! We eat something that deranges the condition of the system. Through the stomachic nerve that derangement immediately affects the brain. Moroseness succeeds amiability, and under its influence we do that which would shock our sensibilities at any other moment. Or perhaps a gastric irregularity is the common result of an over indulgence in wholesome food, or a moderate indulgence in unsuitable food. The liver is afflicted. In this affliction the brain sympathises. The temper is soured, the understanding is narrowed, prejudices are strengthened, generous impulses are subdued; selfishness, originated by physical disturbances which perpetually distract the mind's attention, becomes a chronic mental disorder; the feeling of charity dies out; we live for ourselves alone, we have no care for others. And all this change of nature is the consequence of an injudicious diet.—*Journal of Chemistry*.

A Sure Sign of Death.

M. Martenot de Cordoux, of the Lyons Military Hospital, states the following as an infallible means of deciding on the certainty of death—a matter of more importance on the Continent than with ourselves, owing to the precipitancy of interments there. Bring the flame of a candle in contact with a finger or toe for a long enough time to raise an ampulla or bladder. If this contain serosity, life is certainly still present, while, if it burst, discharging nothing but vapor, life is as certainly extinct. In one word, a dry vesicle is a sign of death, a liquid one of life.—*Gaz. Med. de Lyon.—Med. Times and Gazette*.

ELECTRO-MAGNETIC machines are perhaps the least likely of all inventions to supersede the steam engine. The consumption of a grain of zinc, as Mr. Joule has shown, though much more costly than a grain of coal, does not produce more than one-eighth of the same mechanical effect.

What to Do, and When to Do It.

1. If a man faints, place him on his back and let him alone.

2. If any poison is swallowed, drink instantly half a glass of cool water, with a heaping teaspoonful each of common salt and ground mustard stirred into it; this vomits as soon as it reaches the stomach; but for fear some of the poison may remain, swallow the white of one or two raw eggs, or drink a cup of strong coffee, these two being antidotes for a greater number of poisons than any dozen other articles known, with the advantage of their always being at hand; if not, a pint of sweet oil, or lamp oil, or "drippings," or melted butter, or lard, are good substitutes, especially if they vomit quickly.

3. The best thing to stop the bleeding of a moderate cut instantly, is to cover it profusely with cobweb, flour and salt, half and half.

4. If the blood comes from a wound by jets or spirts, be spry, or the man will die in a few minutes, because an artery is severed; tie a handkerchief loosely around, near the part between the wound and the heart; put a stick between the handkerchief and the skin, and twist it around until the blood ceases to flow; keep it there until the doctor comes; if in a position where the handkerchief cannot be used, press the thumb on a spot near the wound, between the wound and the heart, increase the pressure until the bleeding ceases, but do not lessen the pressure for an instant until the physician arrives, save to glue up the wound by coagulation or cooling of the hardening blood.

5. If your clothing takes fire, slide the hands down the dress, keeping them as close to the body as possible, at the same time sinking to the floor by bending the knees; this has a smothering effect upon the flames; if not extinguished or great headway gotten, lie down on the floor, and roll over and over; or better, envelop yourself in a carpet, rug, bed cloth, or any garment you can get hold of, always preferring woolen.

6. If the body is tired, rest; if the brain is tired, sleep.

7. If the bowels are loose, lie down in a warm bed, remain there and eat nothing until you are well.

8. If the action of the bowels do not occur at the usual hour, eat not an atom until they do act, at least for thirty-six hours; meanwhile, drink largely of cold water or hot teas, and exercise in the open air to the extent of a gentle perspiration, and keep this up until things are righted; this suggestion, if practiced, would save myriads of lives every year both in city and country.

9. The three best medicines in the world are warmth, abstinence, and repose.—*Hall's Journal of Health*.

ONE wise point in the administration of the new line of cable telegraph between France and America is the fixing in the Company's charter of one hundred francs for twenty words as the maximum tariff to be charged. The high rates of the present cable have been perhaps excusable on the ground of a desire to make sure of ample returns for those who took the first risks and made the most precarious investments in what was once so problematical. But it was a timid and narrow policy even in that view; a lower rate would have enormously increased the business done, as it has in postage. By the competition that is to come, this will be remedied.—*Times*.

It has been found by experiments that a stream of electricity derived from a powerful electro-magnetic machine, driven through a solution of brown unrefined sugar, will bleach it, electricity being thus made to perform the function of charcoal. It appears that one of Wilde's electro-magnetic machines, driven by a 15 horse-power engine, has been set up for this object in a sugar refinery in Whitechapel.

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"	6—George B. Prescott, - - -	Albany, N. Y.
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Telegraphers'**Mutual Life Insurance Association.****INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.**

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, falling to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.**DIRECTIONS TO APPLICANTS.**

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

CHARLES WILLIAMS, JR.,

109 Court Street,

BOSTON, MASS.,

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They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

JOURNAL OF THE TELEGRAPH.

Published on the first and fifteenth of each month, commencing with December 2, 1867, will be what its name indicates, a record of Telegraphic progress throughout the world.

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OUR WORK WILL BE DONE PROMPTLY.

And it is particularly requested that any goods sold and recommended by us, not proving satisfactory, SHALL BE RETURNED.

We have on hand an assortment of other makers' Instruments besides our own, and are prepared to supply them at their own prices—

BRADLEY'S,

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Or any other, excepting such as we know to be of inferior quality.

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IMPROVED TELEGRAPH INSTRUMENTS.

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which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed. His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the *Helix*, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

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Excellent Registers.....	40 00
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REGISTERS, RELAY MAGNETS, SOUNDERS, KEYS,

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PAPER-BELLS, LIGHTNING-ARRESTERS, BINDING-SCREWS, REPAIRERS' TOOLS, &c., &c., &c., &c.

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L. G. TILLOTSON & Co.

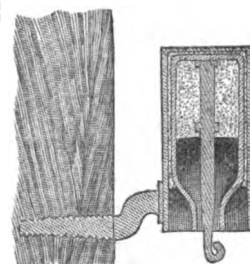
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To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.

JOURNAL OF THE TELEGRAPH.

NO. 20.

NEW YORK, SEPTEMBER 1, 1868.

VOL. I.

TELEGRAPHIC STORM SIGNALS.

CINCINNATI OBSERVATORY, July 29, 1868.

DEAR SIR—I take the liberty of bringing to your attention, and through you to that of the Associated Press, a plan of operations looking to a system of storm warnings, such as will, I believe, be highly appreciated by the public.

It cannot have escaped your notice that during the past twenty years very many endeavors have been made by various nations to utilize the science of meteorology. From the Paris Observatory daily bulletins are published showing the state of the weather in Western Europe. In England storm warnings are published many hours in advance and sent to the ports that are threatened.

The great value of such storm warnings long ago suggested the importance of the study of the phenomena of our own climate, and these labors have met with commensurate success. But such endeavors must be long continued and not spasmodic, and in view of their importance, I take the liberty of suggesting a simple plan by which the Associated Press may contribute much towards the progress of the science of meteorology as well as towards its utilization.

The Cincinnati Observatory, because of its central position with reference to the railroad and telegraph systems of our country, may, with special propriety, be made the central station for meteorological dispatches from all parts of the country.

The newspapers daily publish such dispatches from ten to fifty stations, and it is suggested that if the Associated Press will substitute for these the far more accurate and valuable observations of the trained meteorological observers stationed all over our country, and will forward them to this observatory, we will submit them to a careful discussion and will within a few hours return them systematically arranged and condensed to the Associated Press. In this shape they will be of increased value to all who consult them.

We shall, moreover, ourselves enter these observations upon an appropriate manuscript chart, and propose that when we send the daily digest of the weather to the Associated Press, we accompany it with such general predictions of the weather for the next two days, as we may seem authorized to venture upon.

It seems certain, that at least in the case of a great storm, we may arrive at a greater degree of certainty in these predictions than is obtained in England and France where only seven-tenths of the predictions are verified.

Such a system as is proposed would, it is believed, powerfully contribute to advance scientific and practical meteorology. We have received promise of the hearty co-operation of the observers of the Smithsonian Institute and of the army, in case the systematic daily publication of good observations and storm warnings is attempted.

To render these meteorological reports as simple and brief as possible, consistent with accuracy, a series of blanks will be issued to each observer who will each day at an appointed minute (8 a. m., Cincinnati mean time) record the following data:

- a. Barometer reduced to 32° and to a common standard.
- b. Temperature of the free air.
- c. Amount of moisture in the free air.
- d. Direction and force of the surface wind.
- e. Quantity of lower clouds, kind, and direction of motion.
- f. Quantity of upper clouds, kind, and direction of motion.
- g. Amount of rain or snow during past 24 hours.
- h. Condition of the atmosphere (clear, hazy, foggy, &c.)

Further instructions will be given the observers by which the dispatch from each will average twenty or twenty-five numbers or letters. Observers of the requisite experience can be readily found in all desired localities. They should be distributed widely over the country—if not to be found at any desirable point, then the telegraph office at that point will be supplied with the proper instruments and some employee of the company instructed in their use—the company being responsible to the extent of \$100 for the value of the instruments.

The observers will send their blanks to the nearest telegraph office, addressed to the "Cincinnati Observatory," and we must receive them all at the Cincinnati office of the Western Union Telegraph by 12 o'clock, noon. Should there be no communication with any station we are to be informed of the fact and the delayed dispatches are to be forwarded at the earliest opportunity. These dispatches are to remain at and to be the property of the Cincinnati Observatory.

The observers will furnish their observations *gratis*, receiving in return a copy of the Daily Bulletin or summary in a form convenient for preservation.

The daily digest and the weather predictions are to be furnished by the Cincinnati Observatory *gratis* to the Associated Press and to such institutions as unite with us in the undertaking.

At least 100 stations ought to be thus occupied and report daily. If the Associated Press will assume the expense of fifty daily dispatches, it will not be difficult for us to secure the co-operation of other interested parties who will afford the means of largely increasing the number of daily dispatches.

Hoping that this or some improved plan may commend itself to your attention.

I remain very respectfully yours,

CLEVELAND ABBE, Director.

JOHN A. GANO, Esq.,

Ed. Cin. Commercial & President C. Chamber of Commerce.

Electric and International Telegraph.

Half year's receipts, £172,828, against £167,461 for corresponding period of 1867. Working expenses and income tax, £101,583; net balance £71,245, against £68,995. The usual 10 per cent. per annum dividends are declared free of income tax, and £12,752 is carried to the trust fund. The telegraph's bill has passed, subject to a money bill next year. The Company will receive 20 years purchase on present net profits.—*London Economist*.

Correspondence.

BRADY ISLAND, Neb., August 8, 1868.

To the Editor Journal of the Telegraph:

This country appears to have been forgotten entirely; at least so it seems, as I have never seen as much as a mention made that there are railroads and telegraph lines extending to these hot sandy plains, the very centre of the most barren parts of the American Continent. Yet here we have the two great promoters of civilization—the Union Pacific Railroad and the Telegraph.

Now, that mosquitoes have become less numerous, the nights cooler, rattlesnakes blind, and Major Frank North with his Pawnee Scouts have driven the Sioux Indians down to the Republican River, making it safe to let go my scalp for a short time, and so giving me some leisure, I propose, in my own poor way, to give you an account, in brief, of how we operators manage to survive out here on the plains, together with an item on the progress of telegraph lines.

The country here is not entirely bereft of attractions and is not wholly a barren waste as some have supposed. There is some beauty in these rolling hills, and valleys and winding streams. From early Spring to late Fall there are flowers for every month in bloom. The air is pure and delightful, and today, far as the eye can reach over the plains, the broad expanse of green is diversified with flowers of almost every hue, while down on the Platte river banks, clumps of sturdy cotton-wood trees and wild willows shade and adorn its banks.

The scarcity of wood makes it very valuable. Red cedar predominates and is procured from the bluffs on the south side of the Platte river, and has to be drawn by mule and ox teams from 20 to 30 miles, costing the U. P. R. R. Co. delivered at their stations, piled, \$12 to \$15 per cord, poor scraggy stuff at even that. Telegraph poles are procured from the same region, each pole costing \$3.

It is now nearly four months since I made my first *debut* out here, and entered the employ of the U. P. R. R. as operator, &c., and in declaring myself well pleased with my situation, employer and country, I only half express my satisfaction. My anticipations were not over sanguine, hence my pleasant surprise.

The labor is neither arduous nor confining. Of course an operator here, as elsewhere, is expected to be on hand at all times, but there are opportunities for recreation of a pleasant character. The plains abound in buffalo, elk, antelope, deer and prairie chickens, while the streams swarm with ducks and geese. Occasionally for a day, or a half, we have a chance to join in the excitement of a hunt; or in early morning, gun on shoulder, without going far from station, have plenty of opportunities for securing a fresh slice of antelope for breakfast.

We are, of course, deprived of many of the pleasures and delicacies of good society, such as we have been accustomed to in the east. The remuneration, however, is very liberal, which, with a close watch of our scalps, and with the novelty of the country, amply repays for the sacrifice. Then, there are opportunities to accumulate wealth. Several operators

along the line have already quite large herds of stock, while others are making a start in the same business. Some of them will in a very short time become independent and wealthy.

Our mode of living is truly not very inviting, but has its pleasures as well as its disadvantages. There are good substantial frame station-houses located at from 12 to 20 miles apart, the entire length of the road, and are being built as the road advances. At each station there are section houses built by the company for track repairers, and in many instances towns are springing up, as if by magic, about these stations. These section houses are so constructed and managed that operators can find very comfortable boarding houses, where they are provided with good substantial food at a cost of \$5 or \$6 per week.

If you choose you can board yourself—keep "bachelor's hall." It is thought nothing disgraceful for a young man to do his own cooking, and living as economical as he pleases. Many live in this way. I have done so for the last three months, and find that my expenses are but \$10 per month. You can get all your groceries at Omaha by train free of freight, and at eastern market prices. Some operators bring their wives with them, and, as the stations are so constructed that a part may be used for a dwelling house, which is allowed them free, together with fuel and light, in addition to their salary, they can live very comfortably and happy, and in a few years the country will become settled about them and they will find themselves possessed of considerable property.

I would not have you think in painting this picture I am trying to induce operators to come out here by any means. I am merely giving you the facts as they are with us. I would not advise any young man to come, although I believe any young, experienced number one operator, coming well recommended, would find no difficulty in securing a good situation.

The Union Pacific Railroad is being rapidly pushed forward to completion. Only last week another section of 160 miles west of Laramie, of the road was opened with ten new offices requiring twenty operators. These have all been filled now at salaries varying from \$65 to \$85 per month.

The great national iron thoroughfare that will soon span the continent, is now in operation 692 miles west of Omaha, the western terminus being a mushroom town called Benton. The road is divided up into divisions of equal distances, A, B, C, and D. The management of the telegraph line belonging to the railroad company is under the able superintendency H. H. Cook, Esq., of Omaha, whose system of management precludes the possibility of the trains coming into collision on any part of the road. The boys all speak well of him.

The Western Union Telegraph Company, with W. B. Hibbard as Superintendent of Western Division, at their head, are building a double line of telegraph from Omaha to San Francisco this summer, and with some seventy men are putting up eighteen miles of post per day. In the course of a week or ten days the lines will be in working order to Cheyenne. These lines are to take the place of the old route on the south side of the river. This will give us four lines, two on each side of the railroad, and will, when completed, add materially to the appearance of the road. There are forty poles to the mile in the new lines. The wires are fastened over to each end of cross arms, attached to the poles about three feet from the top, leaving room sufficient for another line on the top, to be erected some time next season.

Respectfully yours,

W. J. BIGGAR.

WE return thanks to Mr. Biggar for his interesting letter and hope often to hear from him. He is in a country pregnant with a great future.

Cook's Automatic Telegraph.

There can be no two opinions as to what are the essentials points to be secured in a Telegraphic System which presents itself for acceptance as a State Telegraph—correctness, speed, and economy. Facility of manipulation and simplicity are the inevitable corollaries of the first and second, while the third almost necessarily follows from these two qualities of easy manipulation and simple mechanism. All instruments, then, must be estimated by their possession, relatively to each other, of these qualities.

Mr. Cook's new Telegraph asserts roundly its pre-eminent claim to all three: First, as regards correctness, the dispatch set up in ordinary type, and in the same sense in which it is written, can be verified by a competent reader, or by the sender himself. From this moment all possibility of error is absolutely eliminated; either the message does not arrive at all, or it arrives with mathematical correctness. Correctness is of prime importance: a message which is not intelligible, or in which misconstruction is possible, can never be cheap, and its speedy delivery is a mockery. Next to accuracy comes rapidity. Taking into account all the vicissitudes of a telegraphic service, it is evident that the vital point to be attained is the *minimum occupation of the line*. This great desideratum forms one of the chief claims of the new system; from eighty to one hundred messages per hour can be transmitted with ease and certainty over distances of a thousand miles,—sixty to eighty over still greater. The service is but *partially suspended by the breaking down of a line*. As the messages arrive they are set up in type, and the moment the communication is re-established they are passed under the instrument with wonderful rapidity. This advantage can only be possessed by a typographic or autographic instrument.

Owing to various causes the type-setting part of the process has been completely misunderstood, calculations based on the type-setting of even the best compositors in ordinary establishments being absolutely erroneous. Without entering into the causes Mr. Cook does not hesitate to guarantee an average rate of fourteen words per minute as the rapidity attainable by young girls or boys, with a few week's practice. It is evident, therefore, that as each compositor can set up forty-two messages of twenty words per hour, three will suffice to keep an instrument in full work, while the manipulation of the instrument is so simple as to require a single clerk only. As the message requires no transcription, but is sent as it arrives, a great saving is effected alike in time and expense. The instruments are not materially more costly than the Morse; will work under conditions in which the Morse signals become illegible, and are independent of the carelessness and inattention of the transmitter, and will moreover send at least three times the average number of messages. They become relatively much cheaper in minor stations when the work is not sufficient to keep two instruments in full operation. The fact that the machine may be used at will and without any loss of time, either as transmitter or receptor, is a great advantage, while by the simple turning of a button they are rendered autographic. Of course the penalty of loss of speed in these as in all other autographic instruments has to be paid, but four and twenty messages per hour may be transmitted with certainty.

The object of the inventor has been to produce an instrument in which error is out of the question, speed attained, and economy effected. The one is effected by the setting up of the message in type, the second by the automatic and chemical action of the instrument, the third by the substitution of ordinary for highly skilled labor, and the substitution of one for several instruments; once regulated, the instruments keep in order an indefinite time; a certain

discretion in the relative force of the printing and counter currents in order to meet the accidents of weather, loss to earth, &c., being all that is required is far from absolute and is perfectly attainable by the simple means adopted with the consent of the inventor, Mr. Hipp. Unlike the Hughes instrument Mr. Cook's improvement on Bowditch's is affected in an insignificant degree by defective synchronism. In the former the substitution of one letter for another, and consequent error, the instruments are synchronised, but the exactitude required is the result; in the latter the legibility and correctness remain intact, only the printing is more or less inclined to the right or left, instead of being, as it is when the synchronism is perfect, absolutely perpendicular, but it is clear, for instance, that an E remains an E, whether it be printed E. E. E, S. S. S, P. P. P, and this divergence represents a maximum of defect.

It now remains to describe, briefly, the *modus operandi*.

Each instrument is provided according to the exigencies of the service with a given number of compositors, or type boxes, easy to hold, conveniently disposed for the reception of two, four, six, eight, or ten lines of type—the message is set up rapidly, verified, and placed in the machine. The pressing of a button warns the machine clerk at the opposite station, that a message is coming, he places on a metallic plate a sheet of paper of a certain size, which has been previously dipped into a weak solution of Iodide of potassium, places this plate in its place on the instrument, and turns the manipulator to the letter R, thus establishing the circuit proper to reception; the clerk at the transmitting end has, by this time, placed his type, set the message in its place, and the instant he turns his manipulator to the point establishing the circuit needful for transmission, the two instruments are set in motion, the point passing at the one station over the metallic surface of the type, at the other, over the prepared paper; this passing over repeated five times produces a perfect reproduction of the type, and as each passage of the style or point occupied two seconds, and each line contains ten words at least, it is clear that a message of twenty words is produced in twenty seconds, or three per minute, one hundred and eighty per hour. This rapidity is of course modified by the substitution of one message for another, but with the most ordinary attention, a hundred messages may and have been transmitted within the hour. The printed paper is then detached from the plates, immersed for a few seconds in water, passed under a roller, and put into its envelope, which (as the address is printed first) is already prepared and sent to its destination.

HENRY COOK.

Sunshine.

The country houses of Great Britain are by no means shaded as our own, and the most considerable piles of buildings, such as Eaton Hall, Blenheim, Dalkeith, and Burghley House, have hardly a noticeable tree within a stone's throw of their walls. The flower patches and coppices of shrubbery approach more nearly, and to the garden front of those magnificent homes, you walk through walls of blooming shrubs. But the full flow of sunshine upon the window is a thing courted. Allowing for all difference in climate, I think there may be a question if we do not err in this country by overmuch shading. A cottage in a wood is a pretty subject for poetry, but it is apt to be uncomfortably damp. And there are village streets with us so embowered that scarce a ray of sunshine can play fairly upon the roofs or fronts of the village houses from June to October. A summer's life under such screen cannot contribute to the growth of roses in the cheeks any more than to the growth of roses at the door. There is no provision against agues—whether moral or physical—like a good flow of sunshine."—*Rural Studies*, by Donald G. Mitchell.

MR. EDITOR—In looking over a little work entitled "Smith's Manual of Telegraphy," published by L. G. Tillotson & Co., of New York, I find on the 45th page, where speaking of Lightning Arresters, he says: "A short piece of wire (six inches long) considerably longer than that in the relay magnet, run from each main circuit binding screw of the relay, and the ends dipped into a small bottle of water, forms one of the best protections against lightning. The distance of the wires from each other in the water, as also their depth in it, may be varied, but they must not be allowed to come together. Water being a poor conductor of galvanic electricity, only a small portion of the current will pass through it, the larger part choosing the magnetic wire; but atmospheric electricity being possessed of enormous intensity prefers the short water route."

I was forcibly impressed with the simplicity and seeming perfect adaptation of the above described arrester to the protection of the fine wire of the relay magnet from atmospheric electricity, and having been recently "burned out," I gladly adopted the above described plan for the protection of my relay, and constructed and used one for about three weeks, allowing my instrument to remain on the line during the prevalence of a thunder storm, long after I was aware that other operators who were experiencing the same storm, had "cut out" without any injurious result, and was beginning to feel that "the burned child need no longer dread the fire," until one day our worthy Division Superintendent called into the office, and observing the arrester attached to the relay, asked "What that thing was for," and when told, and the theory explained as well as I could, he objected to its further use, upon the ground that "it resisted the action of the main line current." I objected to that by saying that there was no possible escape, and that the current had the same facility for passing through the relay that it had before the arrester was attached, the same wires to conduct it being undisturbed. He answered me "that I did not understand the laws of resistance," which is perhaps only too true, yet I did not feel quite satisfied. Please favor us with your views upon it.

OPERATOR.

We omit the date of this communication to prevent trouble to the writer. We are unwilling to believe there is a superintendent anywhere so stupid as to suppose that the mere insertion of wires as stated increases resistance to a main current. The objection to such a lightning arrester is the diminution of the current passing through the magnet, by which action might be impaired, and its proximity to the magnet.

Philadelphia.

The Western Union Telegraph Company, at the southeast corner of Third and Chestnut streets, is one of the great institutions in the way of transmitting and receiving information to nearly every town and city in the United States, to Canada, England, Egypt, and even China. To accommodate this vast business, 123 wires enter the building, and are connected with two batteries; one of 65 cups, with a positive pole, which furnishes battery power to 28 different wires; the other with 45 cups and a negative pole, furnishes power to 11 different wires. Of the 123 wires, 49 are known as through wires, sending messages direct to certain given points. Twelve are for way stations; 28 are loop wires for use in connection with branch offices; 11 wires for city office, and 25 to be kept for contingencies. These lines connect with 49 instruments in the fifth story, (all messages received by these are given to the operator by sound instead of on paper, as originally invented) and three are connected with printing machines located on the first floor.

The wires lead out of the office as follows: 24 to New York; 15 to Washington; 10 to Pittsburg; 1 to Cape May; 1 to Salem, N. J.; 2 to Scranton, by

way of Trenton and Easton; 1 to Atlantic City; 1 to Long Branch, and 1 to Williamsport.

The force required to carry on the business of the office is thus summed up: 39 operators of Morse instruments, 3 of the printing; 16 clerks; 8 office boys; 30 messengers; 1 janitor; 3 for turning printing machine; 1 battery keeper; 3 repairers; 6 branch office clerks; 34 clerks on city line; 1 manager; 1 office clerk; 1 night clerk; 1 cashier; also on city line, 37 operators; 2 clerks; 1 superintendent, and 21 messengers, making a total of 214.

The wires of the Philadelphia office have recently been very skilfully arranged by Mr. M. V. B. Buell, Assistant Superintendent. Few men in the service know better how to do it.

Manipulating with an open Circuit.

To the Editor Journal of the Telegraph:

The plan of working telegraph lines suggested by W. C. Havens, in the last number of your paper, though possessing valuable features, is by no means a novelty. In the American Fire Alarm Telegraph used in the principal cities in the United States, the keys and relays for communicating between the signal boxes and the central station by "Morse," are arranged on this plan, so that when the key is depressed, the main line is broken and the circuit closed. The European railway lines, working the Morse system by a continuous current, are invariably arranged in this manner. It is in several respects an improvement on the plan in general use in this country, and is worthy of more attention than has hitherto been bestowed upon it.

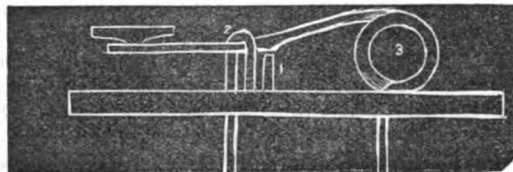
New York, Aug. 4, 1868.

Self-Closing Keys.

We are still in frequent receipt of various contrivances to accomplish the automatic closing of keys after use. The plan proposed by Mr. W. H. Haven in a late number effectually accomplishes this, when the open circuit is used to manipulate, and has been in use for many years on the continent. Our correspondent "P" testifies to its merit, and with such an endorsement we are satisfied. Indeed the mode is so simple that it commends itself.

We have given us by Mr. Jos. J. B. Frey, of N. Y., another mode of effecting the same purpose. The key as shown to us is made of simple brass wire and certainly has whatever merit there is in simplicity. The explanation is as simple as the design and requires no change in any of the present appliances except the key. Indeed the present key with an insulated anvil beneath the back adjusting screw, and the ordinary anvil made neutral, accomplishes the same thing. It is only necessary then to read with the back stroke of the sounder, which can easily be done by deadening the ordinary anvil.

Here is a sketch we have made of Mr. Frey's key, for which he has applied for a patent.



- 1—Is a neutral anvil.
- 2—Is a detaining loop on which connection is made by the back stroke.
- 3—Is the spring, which, like our friend Benton's, is a part of the armature.

The key is manipulated exactly as in the usual manner, only that the sounders are read from the back stroke. Of course the key is always closed when at rest. In operating, the shaft of the key must always be allowed to go up promptly so as to make connection on the detaining loop or secondary anvil, or adjusting screw as may be adapted. A system adapted to the use of these keys would for ever prevent open circuits.

MR. FIELD reports the failure of the cable of 1866 at 35 minutes past 12 on Monday, August 3d, supposed to be caused by an iceberg on the Newfoundland coast. These recurring casualties from icebergs suggest the conviction that another and more southern landing place must be found, where interruption from this source will be impossible. Connection with Europe by telegraph is now too important to leave us indifferent respecting any means by which the fear of losing it may be removed.

Florida.

TALLAHASSEE, Fla., Aug. 5.—The bill ordered to a third reading, relative to the oath for telegraph operators, was not totally disposed of until to-day, when it was defeated. It proposed taxing all telegraph companies in the State one dollar per mile for land lines, and fifteen dollars on cables. The oath was to be "iron clad."

PROF. TYNDALL concludes his memoir of Faraday with the following beautiful tribute to his memory: "You might not credit me were I to tell you how lightly I value the honor of being Faraday's successor compared with the honor of having been Faraday's friend. His friendship was energy and inspiration, his mantle is a burden almost too heavy to be borne."

STUART, then manager of the Winter Garden Theatre at New York, and the husband of the well known actress, Julia Barrow, had planned to have gumbo soup in their summer retreat at New London once upon a time during the war. Gumbo soup needs okra, a plant unattainable short of New York, whither Barrow went for it, and was to telegraph to Stuart, that all might be ready. But Stuart received no telegram, and the soup waited till next day. That noon the Norwich paper, amid the war despatches, contained this: "Stuart—have got Okra—Barrow." The next day the New London paper elaborated it into the capture of Okra, an important place on the South Carolina coast, by the federal General Stuart, and the gumbo soup was relished all the better for the zest added by this remarkable victory.

To the Editor Journal of the Telegraph:

We have just received notice of an error in transmission in a cable message to Liverpool, wherein the word "hoax" was made to read "oaks." Our friend Smith suggests that the dialect of the English instruments is responsible for the "bull."

Respectfully, CABLE ROOM.

The cable mechanism neither records nor articulates by sound. An operator has to watch the changes of a reflected light, and read off to an assistant. If the operator is a genuine "John," it is easy to see where that unfortunate aspirate was lost. Or can it be that these English instruments have learned to repudiate the "hitches?"

Mr. M. R. Wolff, formerly of general telegraph office of P. C. and St. L. Railway, Steubenville, Ohio, has been appointed ticket agent of C. and P. Railroad and manager of W. U. Telegraph office in that city.

A Model Scientific Writer.

Professor Fraser says with regard to Sir David Brewster's great precision, energy, and determination of thought—that during the seven years that he (Professor Fraser) was editor of the *North British Review*, Sir David Brewster contributed an article to every number; and that he did far more—that he stated the day when his first slip of paper would come, and the day when it would be finished. His manuscripts came as they were written—day after day, and sheet after sheet—and without the necessity of a revival of those preceding. He thus worked with the precision and regularity of a mechanical rather than a mental machine.—*Scientific Review*.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, SEPTEMBER 1, 1868.

The Difference.

The London Economist, of August 8, says, in reference to the price to be paid for the English telegraphs by the Government:

"It is objected that Government is going to give too much for the telegraphs. But a Government in such cases must expect to pay dear. They grant a privilege and then buy up the privilege; they authorize an experiment and then purchase the good result; and in fairness the Government ought to pay dear; and in practice a Parliamentary Government must pay dear."

What does the English Government pay to the Telegraph Companies for their property? It pays a sum the equivalent of the net profits of 20 years. The chief telegraph company of England is the "Electric and International," which declares an annual dividend of 10 per cent., besides a surplus applied to what is termed a "Trust Fund." Taking ten per cent., however, as the basis of profit, the English Government agreed with the telegraph companies before the passage of the recent bill, by which the Government was authorized to acquire their lines, to pay therefor twice the amount of their capital. And in this they do no more than simple justice. A private company under a government charter has demonstrated, at its own risk, an important agency of power, usefulness and profit. By all the laws of honor it is entitled to its success and all its fruits, present and prospective. The British Government recognizes this, and pays accordingly. Had it been a failure, no offer of participation in the loss would ever have been made.

Were the same offer made in America, we suspect that stockholders would not much object. The Western Union Telegraph Company is legitimately earning now six per cent. per annum, although paying only four. If Government were to say to its President, "We want your lines; you have proven their great value, fairly and enterprisingly; we can utilize the post office force in their management; we will purchase your stock at a premium of 20 per cent. on its par value, equal to 20 years of net profits at six per cent."—we think the President would very respectfully accept the offer, however much he might doubt the policy of the governmental assumption of such an enterprise. Even were the offer 80 per cent., or 20 years profit on an annual basis of four per cent., as now declared, we think he and all the people would say "amen."

But Mr. Washburn in the American Congress, using only the fact of the English Government's assumption as a proof of private incompetency, asks \$75,000 to destroy existing enterprises by competition, and while praising the inventor of the telegraph, seeks to rob him of that which is more necessary to him than fame.

If the example of foreign nations in their treatment of public enterprises is to be taken by our own, we object to the elimination of that justice which, in some respects, allays apprehension of the evils to the public which the change might inaugurate, and which in this country we assert must necessarily follow the Government management of our telegraph system.

Wanted—A Common Language.

As the nations become united by sub-oceanic cables, the need of a common language becomes evident. The proposed extension to China increases this. An English or American operator can transmit messages in French, Spanish, or Italian; but when it comes to the Chinese, whose 80,000 characters are like ingenious changes on fiddlesticks and chicken's feet, human ingenuity is at fault.

On the Chinese coast, between the large seaboard cities, messages will probably be required to be written in English. This will lead to the acquisition of the language. Interpreters will be used for translation, and as intercourse increases with our Pacific territory, the English language will more and more become to China a necessity, and the basis of a system of education in which the study of the English language will form a prominent part. Thus the unity of languages will begin. When the nations of the earth are bound by a common bond, and are cast face to face with each other by the telegraph in the necessities of commerce and the discussion of political problems, there must be some common speech by which, without misinterpretation, the language of all shall be understood. Autographic telegraphs will be useful, but a common language is the *sine qua non*.

We have been favored with a visit from Sir Charles Bright, the well-known English electrician, since his unfortunate mission in connection with the second Cuba cable. Mr. Bright is a gentleman of cultivation and refinement, and we were glad to see him among us, although the visit would have been more cheerful to both had his Cuban work been successful.

Sir Charles had a fine opportunity, while here, to correct some misapprehensions which he had shared with reference to the working of the land lines which connect with the Atlantic cable. A circuit of 1200 miles from New York to Plaister Cove, worked with a rapidity which practically annihilates the intervening space, and with a single repeater at St. John, surprised him. Without previous call messages were sent in his presence to the managers of these distant offices, and replied to without an instant's hesitation. This circuit is perhaps the best on the continent, and worked with the most commendable care. Every message for Europe is repeated, and no error has occurred on it for the past twelve months. Although the wire on a part of the route is imperfect and soon to be replaced, and the insulators are of the common modes, no weather prevents prompt and accurate transmission.

We regret the ill-success attending the laying of the second Cuba cable. Want of knowledge of the currents of the Gulf has been the cause by which a larger amount of cable was required to make up for the sinuosities of the course of the vessel than was provided. A few miles more of cable would have prevented the misfortune which now postpones to another season all attempts to restore it. Still the present cable performs the work of the line well and satisfactorily, and a little more experience may enable its energetic managers to largely increase its capacity for transmission, and execute easily all the business which may be offered.

By a recent letter from our friend C. F. Varley, we learn that he has been engaged as consulting electrician in the proposed laying of the cable from Brest to the United States, of which so much lately has been said. So next year we may expect to see his pleasant face among us again.

THE English test of the Varley and Brooks insulators, see page 6. It has been long in type. There must be excellence in an insulator which, with such a test, shows such a record. Examine it.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

JULY, 1868.

Gross receipts,	- - -	\$601,730 61
Current expenses,	- - -	396,163 66

Net profit,	- - -	\$205,566 95
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Above expenses include an unusual outlay of \$35,129.87 for reconstruction.

THE Economist, of August 15, notices at length the prospectus of the Societe du Cable Transatlantique Francais for a direct line of cable to the United States. The Government concession is to Baron d'Erlanger and Julius Reuter, for twenty years from September 1, 1869. A wire has been secured between England and Dieppe. It thus appears that the route of the cable is from France to England, thence to Brest, thence to the Island of St. Pierre, and thence to the United States. Total distance, 3047 miles. The steamer Great Eastern is engaged to lay the cables. The core wire is 400 lbs per knot. The minimum tariff will be £2. The capital is 60,000 shares of £20. The concessionaries receive 5000 paid up shares, also, one-fifth of the surplus over 10 per cent. and deducting 5 per cent. of profits as a reserve fund. Sir James Anderson is General Superintendent. M. Drouyn de L'Huys is on the Committee in France.

OVER FIFTY THOUSAND of the Brooks' Insulators have been sent to California this season, mostly for the Central Pacific Railroad. A letter from Mr. F. L. Vandenberg, Superintendent of the Telegraph, dated Sacramento, February 10, referring to their use there, says:

"I pronounce them the greatest improvement introduced into the telegraph since its existence." *

Telegraphers' Mutual Insurance Association.

It is known that for some months the Executive Committee of the Telegraphers' Mutual Life Insurance Association has declined applications from the extreme South. We are glad to say that this restriction is now removed. It was a measure of precaution.

We cannot avoid urging all to connect themselves with this organization. Two brother operators have died and their families been provided with ample means of burial. It is a noble and easy charity. Every policeman in New York is thus insured. Each pledges a dollar from his salary to be given to the family of the first man who falls. Does it not appeal to the generosity of every good man to do likewise? See advertisement.

ASSESSMENTS RECEIVED.

Mrs. E. M. Baker,	W. W. Shipman,
P. J. Casey,	E. T. Gilleland,
J. H. Way,	John W. Lewis,
W. C. Chapman,	Thomas Phillips,
Clarence A. Bolton,	A. J. Jarvis,
W. J. Purdon,	Celia E. Smith,
Tom. A. Graham,	John H. Emerick,
Thomas J. Hewlett,	John A. Wright,
J. M. Fairchild,	Alvah B. Walte,
Dwight B. Case,	H. A. Tuttle,
B. Dexter Hubbard,	F. C. Eckensberger,
Zebina Hubbard,	Alva G. Scranton,
George M. Hubbard,	George Farrell,
Henry L. Barber,	Charles N. Scott,
Jacob P. Bogar,	George K. Walcott,
James P. Bogar,	Thomas J. Landy,
H. P. Dwight,	Arthur K. Ingraham,
B. B. Toye,	Theodore Fullen,
A. Hunter,	J. A. Cure,
E. C. Armstrong,	Ernest C. Meyer,
Charles L. Snyder,	Gilbert M. Simmons,
R. D. Williams,	W. R. Munroe,
James P. Golden,	David McDonald,
Daniel T. Francis,	J. S. Hunter,
Henry Denver,	C. A. Lathrop,
A. Kern,	D. J. Ludwig,
Philip Degen,	Henry S. Upson,
Jacob M. Rhoads,	

TRIP TO TIP-TOP.

Opening of the Mount Washington Railroad.

BY A TELEGRAPH SUPERINTENDENT.

To the Editor of the Journal of the Telegraph.

On the 13th of the present month a party consisting of delegations from the New England Railroad Companies, members of the press, and of the Western Union Telegraph Company, left Concord for the White Mountains, to inaugurate the opening of the Mount Washington Railroad. This is the Cog railroad to the summit, of which there has been so much talk for two or three years past.

Stopping at Plymouth, we dined at "Pemigewasset." This is a magnificent Summer house, and well patronized. The scene here was gay and festive. Two long trains stopping in front of the house for the passengers to dine (none of your "five minutes for refreshments," but a good half hour), the long wide platform filled with guests of the house and passengers who had already dined, and were now enjoying their cigars and meerschaums before taking to the rail again, the band discoursing their sweetest strains, altogether gave an impression of the pleasantest character, and many were heard to exclaim, "I mean to come here again."

Leaving the Pemigewasset we went on to Littleton, some sixty miles, where we left the cars, and were transferred to coaches, provided for the occasion, and after riding 5 miles stopped at Bethlehem (not of Judea). Here there was some discussion as to whether we should stop all night or go on to the White Mountain House, some 12 miles further. Knowing how some people dislike to turn out in the morning, I was decidedly opposed to camping so far from the scene of the next day's labor. It was finally decided that the bulk of the party should go on, and we accordingly started, and arrived at the White Mountain House about 8½ P. M. We found the House crowded with guests. The landlords were pleasant and courteous, and did all they could do under the circumstances.

I was blandly informed that I could have a berth down on the floor, but disdaining so downy a couch, I reckoned I knew a game worth two of that, and going to the "Instrument" called up Crawford House and asked "Doyle" if he could take care of myself and a few friends. "Yes, Sirree!" was his pleasant response, "come along and we will do you good." So in a few minutes, with half a dozen companions, we were on our way to Crawfords, in the best coach I ever rode in.

In less than an hour we were pleasantly received and comfortably located in the Crawford House, by mine host, Doyle. A nice supper was discussed and a cigar enjoyed, when we were shown to our rooms, and for one, I can say my slumbers were peaceful and serene.

In the morning Messrs. Wolcott & Doyle fitted us out with a spanking four-horse team and after partaking of a hearty breakfast of trout that had leaped from the brook into the frying pan, we started for a 11 mile ride to the depot of the Mt. Washington R. R. Co., which we did in about an hour and a half. We found about two hundred people congregated and the cars in possession, so that one of the Directors was obliged to state to them in a gentle manner, but without circumlocution, that the excursion today was for invited guests. Most of them took the hint and vacated, and in a few moments we were under way.

I first took a good look at the underpinning and made a careful inspection of the running gear, and satisfied myself that there was no chance for a sudden slide, and then took my seat in the car without a single apprehension. We had a heavy load and went rather slowly. We stopped several times to "water up" and give the passengers a chance to

look around and enjoy the landscape. These stops were facetiously termed "ten minutes for refreshments." The engine shoves or pushes the car up. Each car is controlled by brakes in a peculiar manner, so that it really seems impossible that anything should so give way as to let the cars slide.

Our telegraph wire runs along on the stringers as far as the road is completed and then goes off on its own hook up to the Tip Top and down the other side to the Glen House.

This trip was all the more interesting to me, as I had the honor and the pleasure a few years since, in company with Gen. M. Lefferts, then general superintendent of the American Telegraph Co., of introducing the public to Mount Washington by telegraph, and two or three years more will develop a rail road depot, and, I hope, a large and commodious hotel on the summit.

The premises being in litigation, has alone prevented the erection of a fine house.

Next season the public can go over the Mountains either way. Up one side by rail, and down the other by carriage, or *vice-versa*.

If any telegrapher should stray up there with a limited amount of funds, I would advise them not to put on any airs, but to make tracks before they obliged to throw themselves upon the generosity of the hotel keepers.

A case of this kind occurred a few days ago, and I trust the young man found his way home a wiser and more humble man, than when he booked his name with such a flourish on the hotel register.

I might tell you something of the difficulties attending the running of and the maintaining of a telegraph wire in these mountain regions, but I have already written too much. I send you a few photographs of the railroad, which will give you some idea of it, and hope that next season you may be able to see and try it yourself. Very truly yours,

J. S. B.

In a lecture delivered at the Royal Institution On the Doctrine of the Correlation of Force in its bearing on mind, Professor Alexander Bain shows that the extension of that correlation to mind must be made through the nerve-force. According as the mind is exerted, force is drawn away from the proper corporeal functions, which are to that extent weakened. We all know by common experience that great mental exertion is rarely combined with great physical robustness; neither do we find many principles of a combination of different modes of mental excellence. Leonardo de Vinci was a great artist and a great man of science; but how few have there been like him! Great sensibility is seldom associated with great activity of temperament, nor intellectual originality with emotional exuberance.

WE call attention to the advertisement of Jos. J. B. Frey. These keys will be very neat and, by necessity, self-closing. Chester makes them. Chester is always neat. Any circuit can be worked with them. The car takes the back stroke readily. Though the manipulator is on an open circuit, the change is scarcely perceptible, sometimes not at all. The circuit is closed when the key is open!

WE regret to learn of the suicide of Joshua Rab-bath, delivery clerk of the Louisville office of the Western Union Telegraph Company, after a faithful service of nearly fifteen years. He has two sons in the service, both of whom are excellent operators as well as excellent men. Suicide suggests some heavy mental burden of which life has become weary. Suicide at 69 seems very sad.

WE are obliged to place several valuable advertisements on page 6.

For the corrected cable tariff see page 6.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
September 1, 1898.

To all Offices on W. U. Lines—

The following changes have occurred since August 15, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Bismarck, Mo., tariff same as Dent Station, Mo.
Canton, Mo., tariff same as Palmyra, Mo.
Croton, Iowa, tariff same as Summit, Iowa.
Flushing, L. I., tariff 30 and 3 more than New York City.
Howlett, Ill., tariff same as Niantic, Ill.
Lagrange, Mo., tariff same as Palmyra, Mo.
Lees Summit, Mo., tariff same as Independence, Mo.
Marseilles, Ill., tariff same as Leland, Ill.
Pikeville, O., tariff same as Union City, Ind.,
Putney, Vt., tariff same as Brattleboro, Vt.
Sand Prairie, Iowa, tariff 90 and 6 from Chicago, 75 and 5 from St. Louis.
Sheridan, Ka., tariff same as Monument, Ka.

NEW OFFICES ON OTHER LINES.

Rochester, N. H., tariff 25 and 2 from Great Falls, N. H. Check Great Falls.
Union, N. H., tariff 25 and 2 from Great Falls, N. H. Check Great Falls.
Alton Bay, N. H., tariff 30 and 3 from Dover, N. H. Check Dover.
Ft. Ancient, O., tariff same as Morrow. Check Morrow, O.

OFFICES CLOSED.

Dent Station, Mo., Monument, Ka., and Nanuet, N. Y. Business for Nanuet will be mailed at Suffern, N. Y.

All offices having "special sheet A" will hereafter use the "special rate" to Nashua, N. H., when computing tariff to offices, on Nashua, Milford and Peterboro Telegraph Line, paying to W. U. Co. at Nashua.

GENERAL INFORMATION.

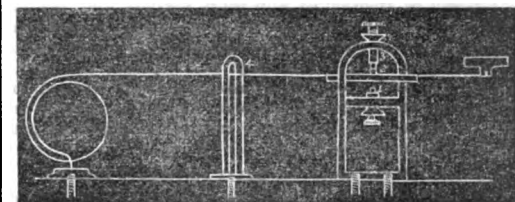
The name of the office heretofore known as Weber, Utah, has been changed to Echo City, Utah, and Lyons, Ill., to Riverside, Ill. All offices west of Buffalo, N. Y., should check Buffalo on all business for Binghamton, N. Y. It is an Erie line office.

WILLIAM ORTON,
President.

MARRIED.

On Thursday, August 20, by the Rev. Dr. Gallaudet, Watson D. Schram, Manager of the Western Union Telegraph Co.'s office at the Board of Brokers, N. Y., to Josie, youngest daughter of John Sneekner, all of N. Y. city.

FREY'S SELF-CLOSING TELEGRAPH KEY.



- 1.—Hard Rubber Point.
- 2 and 3.—Platina Point.
- 4.—Negative Anvil.

Invention can be adopted to any pattern or style of key. See Editorial description. The Right of Manufacture and use in Foreign Countries for sale. Address

JOS. J. B. FREY, INVENTOR,
New York City.

WM. KIDD,
A. BOODY.

KIDD, PEIRCE & Co.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,
NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission.

S. S. STAFFORD'S

COMBINED

WRITING AND COPYING FLUID,

Labelled by me, for the last ten (10) years, **ARNOLD'S FLUID** Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33 1/3 per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

Digitized by Google S. S. STAFFORD,
Chemist, N. Y.

EXECUTIVE ORDER No. 64.

Reduction of Tariff on Atlantic Cable Business.

On and after September 1, 1868, the rates of tariff on Atlantic Cable business will be as follows:

TARIFF IN GOLD TO ANY POINT IN GREAT BRITAIN AND IRELAND.

	10 words or less.	Each additional word.
From all points in Nova Scotia and New Brunswick, except Sackville, . . .	\$16.35	\$1.63
" Sackville, N. B.,	16.10	1.61
" Boston, Mass.,	16.65	1.66
" New York City,	16.85	1.67
" all points in Maine, New Hampshire, Vermont, Massachusetts (except Boston), Rhode Island, Connecticut, New York (except N. Y. City), New Jersey, Pennsylvania, Delaware, Maryland; and District of Columbia,	17.35	1.72
" All points in Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Tennessee, Kentucky, Ohio, Indiana, Illinois, Michigan, and Wisconsin; also, from St. Louis, Mo., and Lake City, Tallahassee and St. Marks, Fla., . . .	19.00	1.83
" All other points in Florida, . . .	22.50	2.13
" All points in Texas, Arkansas, Missouri (except St. Louis), Kansas, Nebraska, Iowa, Minnesota, Colorado, Dacotah, Wyoming, New Mexico, Utah, Idaho, Montana, Nevada, California and Arizona, . .	21.75	2.06
" All points in Oregon, Washington Territory and British Columbia, . .	24.75	2.33

We are notified of following changes in rules for Checking, Counting, etc., which otherwise remain unaltered, as per Executive Order No. 58, published in the JOURNAL OF THE TELEGRAPH, February 15, 1868.

Figures in ordinary messages must be expressed in words, thus "2," two—"4-5," four fifths. The charge will be for the number of words and letters without regard to the figures they represent.

Count two-pence, three-pence, &c., up to eleven-pence inclusive, each one word.

Prepaid answers must be presented for transmission not later than eight days after arrival of original at delivery station. If answer of only ten words is prepaid, it is sufficient to insert in original message "reply paid."

In messages repeated back from destination to originating station, the words "repetition paid" must be inserted after address and charged for.

Code messages, constructed, for purposes of secrecy, of disjointed sentences or words, rendering the meaning unintelligible, will be transmitted with every possible care, but the Telegraph Companies while willing to investigate, by post, complaints respecting errors in such messages, will not return the charges upon them unless they be "repeated messages." Should the receiver of such a message have it repeated, the amount paid for application and reply will not be returned unless the message was originally a "repeated message" and paid for as such by the sender.

TARIFF TO PLACES BEYOND GREAT BRITAIN AND IRELAND.

On messages to places beyond Great Britain and Ireland, charge the following rates, in gold, in addition to the tariff to Great Britain and Ireland:

20 words or less. \$	20 words or less. 3.25
Belgium, 63	Spain,
France, 84	Algeria, Portugal, Tur-
Holland, 94	key in Asia, 4.00
Switzerland, 1.46	Ionian Isles, 4.25
Prussia, Austria, Ger-	Russia in Asia, 5.63
man States, 1.50	Tripoli, 7.38
Channel Islands, 1.67	Alexandria, 12.88
Denmark, 1.75	Cairo, 18.38
Sweden, 2.00	Suez, 15.63
Norway, 2.18	India, 25.25
Italy, Turkey in Eu-	Ceylon, 26.75
rope, and Greece, 2.25	China, Port Galle, 27.00
Russia in Europe and	
Sicily, 2.50	

For each 10, or fraction of 10 words above 20, charge in addition, one-half of these rates.

We are notified of following changes in Rules relating to Continental business:

Determine the number of chargeable words by count of actual words in the entire message, including address, date and signature, without reference to the number of letters.

All compound names and words count for as many words as they contain.

The Continental Telegraph Companies will not entertain or investigate complaints of error or delay in unreported messages.

In all other respects Rules contained in Executive Order No. 58, remain unchanged.

WILLIAM ORTON, President.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

General Agent.

STICKWELL & CO'S

EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China. Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding or any other man. It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 3OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFF RD,
Sole Proprietor, . Y

Test of Insulators Made at India Rubber Gutta Percha Telegraph Works Company, Silvertown, Essex, England.

Description of Insulator.	Constant of Galvanometer, 1 Daniel Cell Through 1,000,000 Ohms.	Date.	Temperature, 47 deg. Fahrenheit.	State of Weather, Constant of Insulator.	Number of Calls.	Number of Insulators Tested.	Deduction in degrees on Thomson's Asiatic Galvanometer, Per Insulator.	Deduction in degrees on Thomson's Asiatic Galvanometer, Per Insulator.	Deduction in degrees on Thomson's Asiatic Galvanometer, Per Insulator.	Deduction in degrees on Thomson's Asiatic Galvanometer, Per Insulator.	Deduction in degrees on Thomson's Asiatic Galvanometer, Per Insulator.
United Kingdom Telegraph Company's large Porcelain.		March 1, 1868.	47 deg. Fahrenheit.	Very Dull.	884	4	3,500	380	50,000	10,600	40,000
Varley's Double Porcelain Cup.		March 9, 1868.	49 deg. Fahrenheit.	During and after Rain.	895	4	4,500	450	57,500	35,000	50,000
British and Irish Magnetic Telegraph Company's Porcelain.		March 20, 1868.	48 deg. Fahrenheit.	At day, Fair, calm.	896	4	30,000	1,600	35,000	18,500	50,000
United Kingdom Telegraph Company's small Porcelain.		March 26, 1868.	48 deg. Fahrenheit.	During and after rain.	897	4	800	150	11,850	14,500	50,000
Brook's Patent Paraffine Insulator with 6th. Screw Shank, Iron Cap.		March 26, 1868.	48 deg. Fahrenheit.	During and after rain.	898	5	2	0	2	1	4
do.		March 26, 1868.	48 deg. Fahrenheit.	During and after rain.	899	6	3	0	11	6	4
do.		March 26, 1868.	48 deg. Fahrenheit.	During and after rain.	900	6	7	0	4	6	1
Brook's Patent Paraffine Insulator with Lug for Cross Arm.		March 26, 1868.	48 deg. Fahrenheit.	During and after rain.	901	1	200	80	194	80	8

(Signed)

MATTHEW GRAY,
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I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

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Executive Committee.

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2. Apply by letter, enclosing *one dollar and a half and a three cent postage stamp for each application*, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage: and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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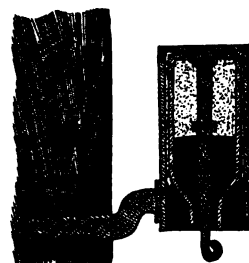
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JOURNAL OF THE TELEGRAPH.

NO. 21.

NEW YORK, SEPTEMBER 15, 1868.

VOL. I

SCIENTIFIC.

A New System of Telegraphing.

TOMAWANDA, N. Y., August 31, 1868.

A remarkable and extraordinary discovery has taken place in this small town, that bids fair from its nature to accomplish a great revolution in telegraphy, and, in fact, in all existing systems of communication. The discoverer, Mr. J. H. Mower, has allowed me to furnish the following account of his experiments and aspirations, which is his first disclosure of his important secret:

About the time that the Atlantic cable was in its incipient stages of success, and by way of diversion Mr. Mower turned his attention to electricity as a communicating agent and subjected it to minute examination in this direction. He noted the enormous expenditure that was made in laying the Atlantic cable and sought to obtain some cheap and desirable conductor. Everything that was susceptible of a high degree of electricity was brought into requisition, and he continued his investigations for upwards of six months. He then, having exhausted all magnetic concrete bodies, resorted to the electricity of Franklin, lightning, electricity, too, in its most powerful and dangerous form. From time to time, as nature afforded, he sought to mould it to his use by different combinations. He used a substance of high conductivity and received the lightning and discharged it into water. He observed the decomposition of the water by this powerful chemical agent, and resolved, by artificial means, to generate a current great in intensity and profuse in quantity. To this end, by a curious and ingenious method of uniting the Voltaic pile of great producing power with an electrical machine of his own construction, a fluid of astonishing qualities was emitted, possessing all the desirable requisites to a quick and thorough decomposition of water. It now became necessary to test the efficacy of this combination for purposes of communication, and accordingly a reservoir twenty-five feet long and six feet deep was built, and the different portions of the apparatus were immersed. A series of experiments showed that a succession of distinct electrical shocks would, without regard to external influences, decompose the water in a straight line of transmission at a uniform depth from the surface, separating the water into its constituent elements, oxygen and hydrogen, from one end of the reservoir to the other. The transmission was instantaneous—so quick, in fact, that its transit could not be measured by the smallest division of time. Having thus far been successful in establishing such encouraging results, he caused to be made an instrument to receive the chemical ingredients as decomposed and measure them successively as transmitted, both in weight and volume; and their quantitative relations to each other being known (oxygen to hydrogen as one to two in volume and as eight to one in weight), he easily tabulated a set of signals by which at last was secured intelligible, facile and rapid communication. This evolution is known among chemists as the electrolysis of water, though, of course, it is greatly modified. This, then, was his discovery in miniature.

The limits of the farm house were now too small for the advanced state of his operations, and he soon collected his material and set out for Buffalo to make his experiments upon an enlarged plan in the waters of Lake Ontario. He remained there until the 17th of June, 1868, and it became necessary for him, in order to effect his new purpose, to take into his confidence a gentleman whose scientific attainments would assist him in such matters of astronomy as would be requisite to find the most exact degrees of latitude at the termini of a line parallel to the equator, and, therefore, to have each point bear from the other due east and west. For the western terminus of this line a point near the city of Toronto, C. W., was selected, and its latitude was found to be 43 degrees 38 minutes 28 seconds north. Several days were spent in reducing a set of intricate astronomical observations to the extreme delicacy of finding the latitude to inches on the surface of the earth. This being done they went to the eastern end, in the town of Sandy Creek, Oswego county, in this State, and located it with the same degree of precision as in the first instance, not neglecting to verify both by accurate surveys. The line joining these two points is about one hundred and thirty miles long, and is, as before stated, due east and west. The apparatus was then immersed at a considerable distance from the shore in twenty-five feet of water, and was protected from the violence of the waves and currents by temporary wooden bulkheads completely surrounding it.

Accompanied by your correspondent the experimenter went again to the western station, and the other portion of the apparatus was sunk in the same depth of water (when uninfluenced by the tide) and upon the same mathematical parallel of latitude. It was likewise protected by a wooden casing. Reservoirs of sheet iron construction, of forty cubic feet capacity, were placed at each end and properly adjusted to receive and measure the constituents as they should be resolved to conform to the previously codified signals by which the electrical effects were to be interpreted. On the 6th day of July everything had been arranged with scrupulous care, the various parts of his battery, machine and connecting apparatus were appropriately adjusted and the final trial commenced. A dozen fruitless attempts were made to make the instruments perform their offices. At last the various parts were brought up for inspection and the fault was soon discovered and the co-worker was duly informed by telegraph. Three days passed, and on Monday, the 10th of July, at two o'clock, everything was again got in position, the weather being calm and the water smooth and unagitated. A scow was secured from which to operate and was finally anchored at each end. He then commenced to generate a powerful stream and an immense quantity of the decomposing fluid, which he stood ready to let loose upon the susceptible medium, a hundred radiating agents converging to a common centre, all charged with electricity, and which were only waiting for the needed touch to speed the fluid upon its impulsive errand. At seventeen minutes past two o'clock he handled the operating screw and sent the following despatch:

J. B. SPEARMAN:

Success at last is mine.

JAMES H. MOWER.

At nineteen minutes past two o'clock back came the response:

Mr. MOWER:

The world will acknowledge your triumph.

J. B. SPEARMAN.

The theory upon which he determined to take the line of transmission—a parallel of latitude—founded upon the natural disposition of electricity over the earth; but as to the particulars Mr. Mower declined to enlighten me, as was also the case in regard to many points of his apparatus.

As to the whole evolution of despatching messages through water, using it as the only medium, without the aid of any wire or insulating conductor, it may be explained thus: The water at the point of contact with the fluid is decomposed in the first drop, when the chemical separation advances to the second globule and there effects a like change, communicating the evolution to the third, and so on in the line of transmission, always in the same stratum of water, to the end of the series; and when positive decomposition takes place in the first, negative decomposition is evolved in the last. It will be seen at once that the quantity of electricity required to resolve the evolution is in constant proportion to the force of chemical affinity by which the elements are united, and it therefore only requires great propulsion to send the decomposed ingredients on *ad infinitum* in the direction of the promulgation of the agent effecting the same. Why this line of invariable decomposition is always east and west, Mr. Mower, as I remarked before, will not now disclose. The reason for the electricity's acting in the same stratum is explained in the unequal densities of different strata; and that the intensity of gravitation acts as well for unponderable bodies as for those of considerable weight. Nor can any salt or base, held in solution by water, deflect the line of transmission from its parallelism to the surface of still water; first, because of the laws of gravitation; and, secondly, for the reason that these bodies are themselves acted upon by magnetic influences. The only obstacles to the action of this mode of telegraphy will be the tidal waves rising and falling in the two hemispheres at different times; but these barriers can be easily surmounted by sinking the apparatus to a depth beyond their influence.

Mr. Mower called his assistant to Albany and compared the chronometers which they had in use during the trial and found that, allowing for the difference of time in the two places, the average time of transmission was less than three-eighths of a second for a distance of over one hundred miles. From this fact it is plain that some particular law governs this new discovery.

Mr. Mower has placed his legal interests in the hands of responsible parties, who are preparing his caveats which will soon be filed in Washington. He is about to sail for Europe to secure the same rights there, when he will establish a line of telegraph between Montauk Point and the Spanish coast, which, he assures me, can be done for less than \$10,000.—*Correspondence of the N. Y. Herald.*

Correspondence.

Telegraphers' Insurance.

To the Editor Journal of the Telegraph:

In sending you the enclosed assessments and need subscriptions, I am minded to enclose also some good wishes for the success of the association in the form of a few suggestions. I cannot help feeling the deepest solicitude in regard to it, and whilst wishing it were possible to increase these few cents into as many dollars or thousands of dollars, I have been pondering over the best means of eventually arriving at complete success. The association is one of the very best I know of. Quoting a friend, who did not need to be asked twice for his name, "I think it is tip-top, for it looks as if operators had not all turned fossils." They are so selfish and indifferent sometimes that I cannot help speaking earnestly. I work myself up to a pitch of generous enthusiasm and expect to find the majority co-operate with me in some scheme for our general good, like our Insurance Association; but I met instead with such good natured, careless indifference, that I am sometimes tempted to let them be buried in Potter's Field, if they prefer it, or to let them severely alone for the future. Have you met with no such instances, no such replies as: "Oh, my life ain't worth that!" "My good fellow I would, but I'm broke." "Yes, sometime, not now." "Very good thing, but how many will die yearly, do you know?" or a dozen other replies equally as exasperating. It seems marvellous that they cannot see it at a glance, and so make it needless to urge them to what is their own advantage. Every little while somebody pays out in charity sums they never expect to see returned, and the known prospect of an assessment, much smaller, seems a terrible burden, when it is sure to be returned. They forget the object, that is all. Here, one suggestion I have to make, is *appropos*. These assessments might be much more equally divided and be made much lighter, thereby if each member was assessed a percentage on salary instead of any stated sum. For instance, one per cent. on one month's salary would be proportionate. A salary of fifty dollars would scarcely feel the deduction of fifty cents. Collection could be made with more speed, ease and accuracy were the Superintendents to take this, as a trifling charitable burden, upon themselves in each of their districts. Besides this, it seems to me the mode proposed of paying up a liability is a trifle faulty. For instance, in case of a death where collections—as in our migratory hard-to-get-at fraternity—are not prompt or fail entirely, the stipulated fund, of course, is lessened. Would it not be advisable, as the association grows and its property accumulates, to have its property in a fund to guard against contingencies of this kind, and have the assessments in the proportion of a dollar, or one per cent. on salary, to each member? This is not mentioned, I believe, at all. I am convinced that this provision will be found necessary in time. I will not trespass upon your time and space farther, although I am in the mood to continue indefinitely, but I would very much like to have you tell me what you think of my gratis advice.

Believe me, always,

Yours sincerely,

LOGANNE.

BUFFALO, N. Y., August 5, 1868.

To the Editor Journal of the Telegraph:

DEAR SIR:—We have several "Hicks' Repeaters" here, and are frequently troubled with weak extra locals. Suppose a set at work and a weak extra local on the west side, the east sending; can you inform us what causes the west side to sputter and break back? It is natural to suppose that the extra local being weak, the main circuit magnet would have more power over the armature and keep it closed.

A reply through the columns of the JOURNAL will oblige many of the operators, and

Yours truly,

S.

The extra local on the west gains in strength during the moment that the eastern main and western extra local circuits are open, and at the instant these circuits are closed, acts with more than its average power. This momentary strength which passes off at once is sufficient to overcome the strength of the western main circuit on the western relay for an instant, thus causing the breaking back and sputtering.

WESTERN UNION TEL. OFFICE,
August 6th, 1868.

To the Editor Journal of the Telegraph:

Will you please explain through the columns of the JOURNAL the following: During a recent thunder storm I was sitting about two feet distant from my instrument and local battery, when a report and flash occurred directly over my register, equal to the report from a small pistol—did not notice any lightning within the space of three minutes, either before or after the occurrence—felt no shock except when I sit on my chair after jumping about fifteen inches straight up in the air. Please explain and oblige,

YOUNG OPERATOR.

If "young operator" was shocked because he "sit" in his chair "after jumping about fifteen inches straight up in the air," we really cannot see why. But if he asks if a shock may be received strong enough to make an operator jump like a kitten before a bee-hive without hearing thunder or seeing lightning, we think it quite likely. Perhaps the flash and the jump were so synchronous that the astonishment of the power acting on young operator's understanding was so great as to make him oblivious to its cause. Heavy shocks are often felt when the cause is distant, or otherwise unobserved.

CHICAGO, September 4, 1868.

To the Editor of the Journal of the Telegraph.

In your issue of September 1, you give a sketch and explanation of Mr. Frey's Self-Closing Key, and say "all that is necessary is to deaden the ordinary anvil of the sounder and read from the back stroke." Should such a system come into practical use, why not reverse the local points in the relay and close the local circuit by the back stroke of the relay armature?

WESTERN.

Quite right friend "Western," and something more. This plan would save local batteries all action when the line is not in use, as the local circuits would be held open by the relay magnet armature. We confess to having given little attention to this discussion except as a pastime, but see that there is in it something worthy of more careful attention.

Curious Discovery in Medicine.

Dr. Humboldt, nephew of the late illustrious German, in his practice at Havana, has ascertained that the poison of the scorpion tribe is a remedy for yellow fever. He inoculated two thousand four hundred and seventy-eight men of the military and naval garrison; six hundred and seventy-six afterward caught the fever, of whom not more than sixteen died. A distinguished Frenchman, M. de Gasparin, having heard of the facts cited by one Dr. Desmarts, communicated to him a fact in his own experience. He had long been afflicted with rheumatism, which kept him almost constantly infirm. One day, in picking up a handful of weeds in his garden, he was stung by a wasp on the wrist. The arm swelled; but the rheumatic pain disappeared. Seeing this result, he caused himself to be stung the next day along the seat of pain in his leg, and was again delivered from suffering, and was able to walk with ease. This happened three years ago, and every subsequent reappearance of the malady has been cured by similar means; and by a wasp-sting on the neck of M. de Gasparin an attack of bronchitis was overcome.

Hill's Battery.

To the Editor Journal of the Telegraph:

DEAR SIR—As it has ever been much thought of and talked about as to what is the *best* and *cheapest* main battery for working our Morse lines, will you permit me space enough to present my experience for the last two months with the "Hill's" battery. The months of April and May have been remarkable for frequency of severe lightning and heavy rains. I have worked this line, 180 miles in length, with thirty magnets constantly in circuit, with 123 cups of "Hill's" battery, sixty at one end and sixty-three at the other, at an expense for the two months of \$3.26, being actual cost of Sul. copper used. Our line is insulated with the "Wade" insulator, with the exception of about 100 Brooks' four inch improved insulator, and we have invariably worked the whole circuit in and through every storm with ease.

MILWAUKIE.

PROFESSOR TYNDALL, in his lecture on "Vibratory Motion" at the Royal Institution, illustrated the very low conducting power of hydrogen for sound by a novel experiment. A bell struck by clockwork was placed under the receiver of an air pump, and the air exhausted as perfectly as possible. By applying the ear close to the glass a faint sound could still be heard. The exhausted receiver was then filled with hydrogen, when the bell was again heard to sound, but faintly. On pumping out the hydrogen all trace of sound ceased, even when the ear was placed close to the receiver. Hydrogen being about fifteen times lighter than air, it might be supposed that its low conducting power arose from its tenuity. But such is not the case; the conducting power of air, rarefied fifteen fold, and therefore of the same density, exceeds that of hydrogen in a marked degree.

Patents.

80,452.—TELEGRAPH INSTRUMENT.—Paul Antoine Marie Chavassaignes and Jacques Paul Lambrigt, Paris, France.

We claim, 1st. The combination of the devices herein described for effecting the notation and automatic transmission of telegraphic messages, the same being constructed and arranged to operate in the manner and for the purposes set forth.

2d. An insulating-ink, composed of the ingredients herein named, taken in the proportions substantially as specified.

3d. A decomposable liquid, made of the ingredients herein named, taken in the proportions substantially as specified.

80,298.—TELEGRAPH INSTRUMENTS.—George Little, Hudson City, N. J.

I claim, 1st. The combination of a pen with a reservoir.

2d. The combination of a pen, reservoir, and coil.

3d. The combination of a pen, reservoir, and coil, with paper properly actuated.

4th. The combination of a pen, reservoir, and properly moved paper.

5th. The combination of a pen, float, and reservoir, and a. of these in combination with coil, and all of these also in combination with properly actuated paper.

6th. The combination of a pen and a reservoir, having as opening therein for the protrusion of the pen, with air-gluing tube, and all of these in combination, first, with a float, second with a coil, and third, with properly actuated paper.

7th. The combination of a pen with a reservoir of fluid and a permanent magnet properly located, and all of these in combination, first, with a float, and second, with a coil, and thirdly with both a coil and float.

8th. The combination of a pen, a reservoir, and a coil, when the reservoir is vertical and provided with an opening at the bottom thereof, and the pen passes through the opening, and the coil surrounds the vertical reservoir, and these parts thus relatively arranged in combination with a regulating tube.

9th. The combination of a pen, a vertical reservoir, open at bottom, a coil surrounding the reservoir, and a permanent magnet, located above the reservoir, and all these parts thus relatively arranged, in combination with a permanent magnet, located below the reservoir and pen.

10th. The combination of the following parts, viz., a pen, a float, a reservoir of fluid, a regulating tube, a coil, a paper properly actuated, and these in combination with a permanent magnet, so located as to influence the pen, all these combinations, and the parts or elements making up the combinations, being substantially such as herein specified and set forth.

1.—Hard Rubber Point.
2 and 3.—Platina Point.
4.—Guide.

Invention can be adopted to any pattern or style of key. See Editorial description. The Right of Manufacture and use in Foreign Countries for sale. Address

JOS. J. B. FREY, INVENTOR,
New York City.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—**JAMES D. REID, Editor,**
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, SEPTEMBER 15, 1868.

Politics and the Telegraph.

We have received a letter from one of the most faithful and conscientious of our office managers, asking whether he can properly accept the chairmanship of a political executive committee to which his fellow citizens desire to appoint him. He himself doubts its propriety, yet his political convictions being somewhat intense, asks advice. He, however, evidently wants to "pitch in."

In this matter we must confirm his doubts, and advise a prompt declination of the offered honor. We claim for every man the right to hold manfully and fearlessly his political convictions, but there are positions in which, by the very necessities of the case, these must be held unobtrusively and delicately. The most prominent of these is the managership of a telegraph office. Both parties must use the wires to accomplish party ends and to execute political purposes. In such a position it is not in human nature to be satisfied to leave a message in the hands of the active partisan of hostile politics. It is equally hard for an active partisan manager to be entrusted with his opponents arrangements and not in some way have it sway his own movements. There is thus forced upon an office manager such a manly and discreet carriage of his sentiments as to inspire confidence and quench distrust. When Government assumes the appointments in telegraph offices we may expect to meet the Ku Kluxes of the reigning party at the telegraph counter; but until then we must keep in mind that we serve our citizens of all creeds, and bear ourselves as if having none. We must be blind as justice, and as true.

New Telegraphs.

We publish the "new mode of telegraphing" as a part of the current telegraphic gossip. It will not do to laugh at anything now-a-days. The Tona-wanda experimenter, of modest mein and quiet manners, has the honor of our first page. The rhapsodies of the narrator we omit. We await the grand experiment between Spain and Montauk Point. By the way, what has become of the man who established the frog telegraph? He was said to have had one intelligent no-tailed toad on the American and an equally enlightened froggy vertebrate on the trans-Atlantic coast. When one of these yellow gentlemen winked his eye, the other did ditto. So, also, when he gaped or shook his sides or said *ke cheuk*. And thus a series of signals were to be arranged. The closing of the right eye was to mean "Seward mad, look out for war." The shrug of the left shoulder was to mean "keep dark and buy all you can." How convenient such a system would be need not be stated. Frogs would be the pets of the world.

Well, we invite Mr. Mower to call and enlighten us. It has long been known that water can be used as a part of a circuit. Good currents have been obtained across a river without wire many years ago. Who knows how many Reapers may result from this new Mower.

Operators' Life Insurance.

A young, handsome, flaxen-haired lady came into our sanctum a few mornings ago, full of enthusiasm for the success of the Operators' Insurance Association. She only needed the possession of that wonderful alembic in which so many puzzles are solved, a long and full purse, to have provided a magnificent death fund for all her associates on the spot. It was quite animating to see the flaxen ringlets and the long *souvez moi jeune homme*, toss themselves in the animation of the mutual conversation. Were all the members equally anxious, and each existing member would send in two new names, it would make the organization a handsome success. Indeed there seems reason to believe that it will soon be a success any way. A number of new applicants have been added to the organization and more are coming.

On another page will be found an article by our enthusiastic and warm-hearted visitor under the *nom de plume* of Loganne. There is a very wise and practical suggestion in it very wonderful to have come out of such a gay and pretty little head. It is wonderful how much philosophy sometimes wings itself from beneath so small a bonnet. Loganne proposes, which we second, that assessments be made on incomes instead of by arbitrary amounts. Thus an operator receiving \$50 per month, would pay 50 cents when a death occurred, while one receiving \$100 per month, would pay \$1. Were the District Superintendents to become sub-treasurers, and all operators enter into such a system, it would provide a large and handsome fund at death to each.

There is one drawback to this. As numbers increased, the exposure to assessments would increase also. Yet we would be glad to see it inaugurated. Personally, we desire every operator insured, even were he in the last stages of decline. We want to see and feel that something warm and generous and fraternal binds the members of the profession to each other.

Courtesy.

Under this caption the editor of this paper is accused of discourtesy to a cotemporary. We certainly never received anything from the source of the accusation under its present editorship to elicit any peculiar respect. We have been rarely mentioned by it except in ridicule, and the paper we edit never but in terms of contempt. This is true of the very issue in which "Courtesy" is a caption. It is the last caption which should ever appear under such a guidance.

The advertisement, non-publication of which is complained of, was handed to a lad in the office in our absence, who advised us by telegraph of the fact. It was ordered printed, and placed in the editorial page, although the paper was made up. On learning subsequently, however, that it would occupy a column, we had to order its publication omitted.

On our return the lad who received it knew nothing of any desire to have the advertisement appear in a later number, and its nature suggested otherwise. We received no note or request of any kind respecting it, and when the day for publication came, it was omitted although all ready for use. This is the extent of our sinning, which we only state for those who may be surprised at the accusation.

MR. FREY'S KEY, the advertisement of which appears on the third page, has been modified by the combination of the guide and anvil, so as to make the former as it appears in the cut, unnecessary. A perfect, simple, homogeneous, trunnionless key is thus supplied. By changing the points of the receiving magnet, the local batteries are kept from action, except when in actual use. These are valuable accomplishments and deserve attention.

For Tariff Circular see page 6.

The Electric Telegraph.

Eloquent, though all unheard,
Swiftly speeds the secret word,
Light or dark, or foul or fair,
Still a message prompt to bear:
None can read it on the way,
None its unseen transit stay.
Now it comes in sentence brief,
Now it tells of loss and grief,
Now of sorrow, now of mirth,
Now a wedding, now a birth,
Now of cunning, now of crime,
Now of trade in wane or prime,
Now of safe or sunken ships,
Now the murderer outstrips,
Now it warns of falling breath,
Strikes or stays the stroke of death.
Sing who will of Orphean lyre,
Ours the wonder-working wire!

THE discovery of the loss of a package of editorial and other matter on its way to the printer, unknown to us until the last moment, must apologize for any infelicity in arrangement and imperfection in either style or matter. We prefer to let the paper go as it is to delaying the usual period of publication.

Curious Effect of Lightning.

The following singular fact has been communicated to the French Academy of Sciences by M. A. Robierre, a well known physicist. In August the city of Nantes was visited by a violent storm. Flashes of lightning followed each other in quick succession, and a gentleman who happened to be crossing one of the bridges of the Canal de Bretagne at the time, suddenly found himself enveloped in a blaze of light. The phenomenon lasted little more than a second, and caused no unpleasant effect. On returning home the informant, having occasion to count the money in his purse, arrived at the conclusion that he must have received a piece of fifty centimes instead of a half-Napoleon. But, on a closer investigation, he discovered, to his astonishment, that the piece of money he had taken for silver was really the gold one, but covered with a thin film of silver. The following is the explanation given by M. A. Robierre of this strange occurrence. The half-Napoleon had been put into the compartment of the purse adjoining that containing silver coin. The electric fluid volatilized part of the latter metal, which, in this state, had penetrated through the leather partition and deposited itself on the gold piece with remarkable uniformity. This is the first time such an effect has ever been observed.

An advertisement in the *London Times* seriously announces a new song, with the modest request, "Oh, give me back but yesterday!" A companion to the above, "Oh, could you spare to-morrow, love?" is in preparation; to be afterward followed by the sequel lyric of "You haven't got such a thing as next week about you, have you?"

M. JOSE CACERES has received exclusive right to lay a cable between Mexico and the Spanish Antilles.

Telegraphers' Mutual Life Insurance.

ASSESSMENTS RECEIVED.

Charles E. Case,	A. R. Phillips,
John Colvert,	A. S. Farwell,
Tunis J. Powell,	William T. Lindley,
John B. Van Every,	Alonzo J. Burton,
Frank C. Ward,	D. N. Turner,
John Norton Hills,	Sidney B. Gifford,
C. B. Munday,	J. D. Stone,
James R. Heenan,	A. J. Stoddard,
C. A. W. Briggs,	James Edwin Moore,
W. H. Sawyer,	J. C. Mattoon,
M. C. Newman,	F. Stevens,
	D. W. Warner.

MARKED.

In Fall River, Mass., 8th inst., Mr. Albert L. Suesman of the W. U. Tel. Co at Providence, and Miss Adelaide M. Hutchinson of the former city.

BASE BALL.

The North Bends and Night Owls.

CINCINNATI, September 9, 1868.

To the Editor Journal of the Telegraph:

Bad sixpences are proverbial for turning up. As I feel worth just about ten cents this morning, I believe I will turn up for the benefit of all concerned.

Acting upon your suggestion, the day and night operators of the Western Union office here each formed themselves into a Base Ball Club, and have had several tilts together, the Owls coming out victorious after hard contested fights. On Monday last the night men proceeded to Cleves, Ohio, where Mr. Williams resides during the summer months, and played a game with the North Bend Club of that place. The telegraphers, who played remarkably well for beginners, again led the score, which I subjoin and which included clean homeruns by Superintendent Williams and Charlie Scott.

NORTH BEND.			NIGHT OWLS.		
	O.	R.		O.	R.
Walmsley, r. f.	2	6	Jones, c.	4	4
Carr, p.	0	7	Williams, c. f.	3	7
E. B. Hayes, c.	3	5	Baker, p.	1	6
Job Hayes, l. f.	2	6	Scott, s. s.	1	6
Jas. Hayes, 2 b.	1	4	Kerr, 2 b.	1	7
Ben. Childlaw, c. f.	5	3	Neal, r. f.	4	4
Carlin, 1 b.	6	3	Splink, 1 b.	4	6
Lewis, s. s.	5	3	Peabody, 3 b.	3	6
Rice, 3 b.	3	4	Gilliland, l. f.	6	3
Totals	27	41		37	46

Umpire—J. W. Warner, Cincinnati B. B. C.

What fun the boys did have and how they did enjoy their fresh bread, cheese and pure milk eaten under the shade of the giant oaks which abound in such numbers round the pretty village of Cleves. And what a laugh we did have when on our arrival at Delhi we contrasted Scotty's six feet odd inches surmounted by several more inches of "beaver," with the slight form of Charlie Best, the operator there, who stands three feet five inches in his boots and weighs fifty-four pounds. He is, however, a good, sound operator and a perfect little gentleman.

But to another topic. Messrs. Gilliland & Scott of this office have opened an establishment here for the manufacturing and repairing of telegraphic and electrical apparatus. As they are both old telegraphers and experienced electricians they will doubtless succeed, as the Queen City furnishes a good field for an institution of this kind. The firm is also engaged in the manufacture of a new instrument, invented by Mr. Gilliland, and designed to be used by business firms. A two mile circuit has already been placed in successful operation for the firm of Proctor & Gamble. Several others are in process of construction. This instrument is very highly spoken of, being an improvement on the dial telegraph now in use, and with a few minutes instruction a person can send at the rate of seven and eight words per minute.

Ed. M. Harris, Ellis Wilson and Charlie Lithgow have accepted situations with the Western Union Company here, while Mr. Doan has resigned for the purpose of entering other business. Lee Hensley, formerly of St. James Hotel office here, has been given a berth on Minnesota Valley lines at St. Paul. Mr. J. D. Watt, his successor, on being asked "134" the other day, replied "Watt." Mr. Inquisitive still undecided, again asked: "Watt (what) did you say?" As they can't get that "what" through each others heads, they are probably "fighting it out on that line" yet.

Yours, as ever,

VOYAGEUR.

We have published during several numbers testimonials of the merits of the Brooks' insulator, furnished us by the inventor. In this number additional testimony appears from sources entitled to weight. Devotion to a single end, intelligently pursued, is usually successful. We want to see perfection attained in this troublesome department, and the recognition of some insulator as a standard.

OFFICE OF S. S. LOW'S REPORTING TELEGRAPH,
18 NEW STREET, NEW YORK,
August 7th, 1868.

D. BROOKS, DEAR SIR:

We have used your patent Paraffine Insulator upon our lines in this city with the most satisfactory results. The nature of our system and the character of the business transacted by us, are such as to render the absolute insulation of the wires a matter of the utmost importance, and the perfection of the insulator in this respect leaves nothing to be desired. Our largest circuit of about a mile and a half when tested in a heavy rain storm, with 25 cups of carbon battery, gave no perceptible leakage upon the galvanometer.

Yours truly,

FRANK L. POPE, Supt.

WM. KIDD,
A. BOODY.C. H. PEIRCE,
C. S. OTIS.

KIDD, PEIRCE & CO.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,
NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission.

WANTED—A SITUATION AS OPERATOR IN A TELEGRAPH Office by one every way competent. Address—
L. M. JONES,
N. Vineland, N. J.

S. S. STAFFORD'S

COMBINED

WRITING AND COPYING FLUID.

Labelled by me, for the last ten (10) years, ARNOLD'S FLUID

Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 85% per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD,
Chemist, N. Y.

STOLEN.

\$3,700.00 WESTERN UNION TELEGRAPH COUPON BONDS,
ON THE NIGHT OF THE 17TH OF APRIL.

NUMBERS AND DENOMINATIONS AS FOLLOWS:

No. 17	\$600.00
" 48	600.00
" 187	500.00
" 188	500.00
" 189	500.00
" 200	500.00
" 842	500.00

\$3,700.00

The public are cautioned against purchasing these Bonds, as payment has been stopped.

A reasonable reward will be paid for their return to the owner.

WM. HUNTER,
86 Liberty Street.

The Tidal Wave on the North Pacific.

On the 31st of August there was a telegram received from San Francisco as follows:

On the 15th instant, a singular tidal phenomenon occurred off San Pedro, Southern California. A series of waves commenced flowing upon the coast, causing the tide to rise 63 or 64 feet above the ordinary high water mark, which was followed by the falling of the tide an equal distance below the usual low water mark. The rise and fall occurred regularly every half hour for several hours.

Of course the cause is now clear. These waves were started by the great earthquake in Peru, and must have traveled nearly 4,000 miles within the two days or less that intervened between the shock in Peru and the effect in California—that is, nearly 100 miles an hour.

CHARLES DICKENS once said: "There is nothing—no, nothing—beautiful and good that dies and is forgotten. An infant, a prattling child, dying in its cradle, will live again in the better thoughts of those who loved it, and play its part, though its body be burned to ashes or buried in the deepest sea. There is not an angel added to the hosts of heaven but does its blessed work on earth in those who loved it here. Dead! Oh, if the good deeds of human creatures could be traced to their source, how beautiful would even death appear!—for how much charity, mercy and purified affection would be seen to have their growth in dusty graves."

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY.

LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Day Street, New York.BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY.

113 LIBERTY STREET.

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S

EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 3OZ. FLAT, 3OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,
Sole Proprietor, Y

Digitized by

The Spot in the Sun.

The existence of a large spot in the disk of the sun was mentioned in the *Evening Post* a few days ago.

The length of the spot was 5,500 miles, the black portion extending for 24,000 miles; or, to give a more familiar idea of its magnitude, two planets, each as large as our earth, could have been engulfed within this chasm without squeezing. The periphery of the central spot was mottled with black and gray dots.

The lithograph has a very curious appearance, somewhat resembling a capital Q, or a comet with a curled tail surrounded by an infinite number of small specks of a grayish tint.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York.
September 15, 1888.

To all Offices on W. U. Lines—

The following changes have occurred since Sept. 1, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Adair, Iowa, tariff same as Boone, Iowa.
Afton, Iowa, tariff same as Scranton, Iowa.
Alburtis, Pa., tariff same as Millerstown, Pa.
Benton Harbor, Mich., tariff same as St. Josephs, Mich.
Charlemont, Mass., tariff same as Greenfield, Mass.
Cohasset, Mass., tariff same as heretofore.
Davidsburg, Mich., tariff same as Holly, Mich.
De Soto, Iowa, tariff same as Des Moines, Iowa.
Dexter, Iowa, tariff same as Des Moines, Iowa.
Durant, Iowa, tariff same as Wilton, Iowa.
Frankfort, Ky., tariff 50 more than Atchison, Ky.
Hoosac Tunnel, Mass., (east side) tariff same as Greenfield, Mass.

Irondale, Mo., tariff same as Bismarck, Mo.
Lowmoor, Iowa, tariff same as Dewitt, Iowa.
Millville, Ind., tariff same as Hagerstown, Ind.
North Granville, N. Y., tariff same as Comestocks, N. Y.
Quarry, Iowa, tariff same as Marshalltown, Iowa.
St. Josephs, Mich., tariff 10 more than Niles, Mich.
San Jose, Ill., tariff same as Delevan, Ill.
South Dennis, Mass., tariff same as E. Dennis, Mass.
Sulphur Springs, Ind., tariff same as Newcastle, Ind.
Summitt, Iowa, tariff same as Panora, Iowa.
Sycamore, Ill., tariff same as Courtland, Ill.

OFFICES OPENED ON OTHER LINES.

Dundee, Quebec, tariff 25 and 2 from Montreal, Quebec.
Check same point as business for Montreal.
Houlton, Me., tariff 20 and 1 from Woodstock, N. B. Check Woodstock.

OFFICES CLOSED.

East Dennis, Mass., Middleville, N. Y., Newport, N. Y.,
Sykeville, Md., Weehawken, N. J., Elk Mountain, Dac.,
Velonia, Ind., and Locke, N. Y. Business for East Dennis,
Mass., will be delivered by stage from South Dennis.
Ocean House, Rye Beach, N. H., Mt. Vernon, N. H., Craw-
ford House, Glen House and Mt. Washington, N. H., and
Pequot House, Conn., closed for the season. Business for
Pequot House will be delivered from New London, Conn.;
charge for delivery, \$1.25.

GENERAL INFORMATION.

Offices on the lines heretofore known as the I. and M. and C. and M., will add the following to their list of offices of the Western Union Company:

Bronsons, Mich.,	tariff from Chicago, 65;	from St. Louis, 155
Clayton, Mich.,	" " 65 "	" 155
Clymer, N. Y.,	" " 165 "	" 150
Columbiana, O.,	" " 115 "	" 135
Emlenton, Ind.,	" " 170 "	" 195
Euclid, O.,	" " 100 "	" 135
Evanston, Ill.,	" " 40 "	" 130
Highland Park, Ill.,	" " 40 "	" 130
Kingsville, O.,	" " 115 "	" 135
Lake Forest, Ill.,	" " 40 "	" 130
Lenawee Junc., Mich.,	" " 70 "	" 130
Milan, Ind.,	" " 135 "	" 90
Oak Creek, Wis.,	" " 40 "	" 130
Pine, Ind.,	" " 40 "	" 130
Saybrook, O.,	" " 110 "	" 135
Waterloo, Ind.,	" " 85 "	" 90
Waukegan, Ill.,	" " 40 "	" 130
Wauseon, O.,	" " 65 "	" 125
Whentland, Ind.,	" " 120 "	" 65
White Pigeon, Mich.,	" " 50 "	" 140
Wyandotte, Mich.,	" " 85 "	" 175

Offices in the Eastern and Southern Divisions, and offices in the Central Division not on the I. & M. and C. & M. lines will add the following offices to tariff sheet dated Sept. 1.

The rates from Chicago and St. Louis will be used by offices in the Eastern and Central Divisions, and those from Louisville and Washington by offices in the Southern Division.

	Tariff from Chicago.	Tariff from St. Louis.	Tariff from Louisville.	Tariff from Wash'n.
Brighton, Ill.,	80	25	95	230
Cario, Ill.,	105	70		
Canton, Mo.,	90	70	110	250
Checaqua, Iowa,	90	80	130	250
Clinton, Wis.,	50	100	110	220
Columbia, Mo.,	110	85	135	230
Croton, Iowa,	90	75	115	215
De Soto, Iowa,	100	100	150	285
Elk Horn, Wis.,	60	105	110	220
Farmington, Iowa,	90	80	115	250
Grinnell, Iowa,	100	95	125	265
Howlett, Ill.,	80	65	90	220
Girard, Ill.,	75	60	90	225
Kewanee, Ill.,	60	85	110	230
Knoxville, Ill.,	75	75	110	235
LeGrange, Mo.,	90	70	110	250
New Cambria, Mo.,	100	75	135	230
Poplar Grove, Ill.,	60	100	110	220
Plank Road, Ill.,	35	100	105	205
Sycamore, Ill.,	45	95	110	215
Utica, Mo.,	125	85	140	245

The post-office address of Berwick, Ohio, office, is Green Camp, Ohio.

Stanstead, Quebec, is a Western Union office, and should be checked direct. The tariff is the same as to Newport, Vt.

On and after September 20th offices having "Special Sheet A" will check Trenton, N. J., at 25 added to "special rate" to New York or Philadelphia, which ever may be the lower.

WILLIAM ORTON,
President.

Signs of Dreams.

Dr. Hammond's *Quarterly Journal of Physiological Medicine and Medical Jurisprudence* contains a long communication on "Dreaming," from which we extract the following: "Lively dreams are, in general, a sign of excitement of nervous action; soft dreams a sign of slight irritation of the brain, often, in nervous fevers, announcing the approach of a favorable crisis. Frightful dreams are a sign of determination of blood to the head. Dreams about fire are, in woman, signs of impending hemorrhage. Dreams about blood and red objects are signs of inflammatory conditions. Dreams about rain and water are often signs of diseased mucous membrane and dropsy. Dreams of distorted forms are frequently a sign of abdominal obstructions and disorders of the liver. Dreams in which the patient sees any part of the body especially suffering indicate disease in that part. Dreams about death often produce apoplexy, which is connected with determination of blood to the head. The nightmare (*incubus epithalms*) with great sensitiveness is a sign of determination of blood to the chest. 'To these,' says Baron Von Fechtelsleben, 'we may add that dreams of dogs, after the bite of a mad dog, often precede the appearance of hydrophobia, but may be only the consequences of excited imagination. Dr. Forbes Winslow quotes several cases in which dreams are said to have been prognostics: Arnaud de Villeneuve dreamed one night that a black cat bithim on the arm. The next day an anthrax appeared on the part bitten. A patient of Galen's dreamed that one of his limbs was changed to stone. Some days after his leg was paralyzed. Roger d'Oxteyn, knight of the company of Douglas, went to sleep in good health; towards the middle of the night he saw in his dream a man infected with the plague, quite naked, who attacked him with fury, threw him on the ground after a desperate struggle, and, holding him between his open thighs, vomited the plague into his mouth. Three days after he was seized with the plague and died. Hippocrates remarks that dreams in which one sees black spectres are a bad omen."

Fun calls Cyrus W. a Field for enterprise.

It is said that Mr. Field contemplates purchasing a home on the Hudson and retiring from active business. We don't think Mr. Field is ready for such oblivion.

Electrical Phenomena—Balls of Fire, &c.

A correspondent of the *Detroit Free Press*, writing from Midland, Michigan, June 15, says:

"On the night of the 14th, Sunday, we witnessed in Midland one of the most extraordinary exhibitions of electrical phenomena perhaps ever beheld in a temperate climate, and at so high a latitude. About five o'clock in the afternoon a low lying, long, sinuous mass of dark clouds seemed to come climbing up against the wind over the valley of the Tittibiwassee from the southeast, meeting a light scirrhous fugitive series of clouds from the opposite direction, but apparently higher.

"About 11 p.m. the ball seemed to open in earnest. The lightning not only became constant, but four, five, six, and even seven flashes would shoot from different parts of the sky at the same time; round the horizon they chased or crossed each other's path like fierce serpents, from zenith to nadir they poured like a falling shower of meteors.

"We seemed to be about the centre of the movement. As some of the higher lightnings flashed along the zenith, I could count five or six strata of clouds betrayed by their illuminated edges beneath it. The whole firmament was one blazing, fiery mass, and forcibly reminded the beholder of the sublime description of the Evangelist, of the period 'when the heavens shall pass away like a scroll, and the elements melt with fervent heat.' I watched at least eleven balls of fire dart to earth within a mile radius and an angle of less than 160 degrees from where I sat.

"The only casualty, and that not fatal, is the most singular I ever heard of. Toward the east end of Midland, James Spencer and his wife and child slept in an eight by ten room in a cottage, and a younger brother occupied the next bedroom. One of the flashes struck a tall pine close to the corner of his bedroom, and descending it leaped about twenty feet from the ground through the gable end of the house. Through the bedroom ceiling it passed, leaving a hole like a musket ball. Thence it struck the upper corner of the mirror hanging against the wall, and running down its back again pierced the glass with a three-eighth inch hole, and slightly shivering the frame made for the bed. It took hold of Mr. Spencer at the wrist, and winding upwards around his arm, darted across his body, leaving a burnt mark on his skin and a singed mark on his woolen shirt on its passage, and leaving him insensible. It next took hold of his infant, about six months of age, singed the hair off its scalp, knocking it also senseless, but turned before more than frightening the mother by its side, and made for the next room where Johnny Spencer was lying. It tore through that, leaving a mark like the trace of a bullet, and again made for the outside. Johnny 'never even dreamed of it.' He was fast asleep when the screams of Mrs. Spencer brought Mr. Charbonneau, who, with his family, slept in the other end of the house, to the rescue.

"Mr. Charbonneau describes the scene as frightful, a room densely crowded with sulphurous smoke, a woman screaming for dear life, a father insensible, a child but barely breathing, and the prospects of fire imminent. It took two hours of cold water ducking and a plentiful application of internal stimulant to bring Mr. Spencer to consciousness, and then he did not know what had happened. The babe to-day breathes slowly and is unconscious, but its rate of pulsation is evidently on the increase. I visited the place this morning, and the scene is wonderful: the pine is risen, the end of the house all shattered to atoms outside, the interior distributed promiscuously about, and what was twenty-four hours ago a fair, sound looking cottage, is now all but a ruin. And still more wonderful, its inmates are all as yet alive and promise to do well if no relapse sets in."

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Telegraphers'**Mutual Life Insurance Association.****INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.**

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

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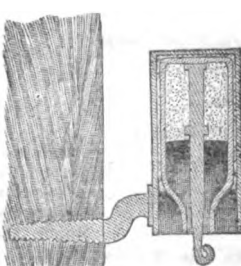
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JOURNAL OF THE TELEGRAPH.

NO. 22.

NEW YORK, OCTOBER 1, 1868.

VOL. I.

Concentrated Progress of the World.

Few phenomena are more remarkable, yet few have been less remarked, than the degree in which the progress of mankind in all those contrivances which oil the wheels and promote the comfort of daily life, has been concentrated in the last half century. It is not too much to say that in these respects more has been done, richer and more prolific discoveries have been made, grander achievements have been realized, in the course of the fifty years of our own lifetime than in all the previous lifetime of the race.

It is in the three momentous matters of light, locomotion, and communication that the progress effected in this generation contrasts most surprisingly with the aggregate of the progress effected in all generations put together since the earliest dawn of authentic history. The lamps and torches which illuminated Belshazzar's feast were probably just as brilliant, and framed out of nearly the same materials, as those which shone upon the splendid *fetes* of Versailles when Maria Antoinette presided over them, or those of the Tuileries during the Imperial magnificence of the First Napoleon. Pine wood, oil, and perhaps wax, lighted the banquet halls of the wealthiest nobles, alike in the eighteenth century before Christ and in the eighteenth century after Christ. There was little difference between the lamps used in the days of the Pyramids, the days of the Coliseum, and days of Kensington Palace. Fifty years ago, that is, we burnt the same articles, and got about the same amount of light from them as we did five thousand years ago. Now, we use gas of which each burner is equal to fifteen or twenty candles; and when we wish for more can have recourse to the electric light or analogous inventions, which are fifty fold more brilliant and far-reaching than even the best gas.

All the advance that has been made in these respects has been made since many of us were children. We remember light as it was in the days of Solomon; we see it as Drummond and Faraday have made it.

The same thing may be said of locomotion. Nimrod and Noah traveled just in the same way, and just at the same rate, as Thomas Asaheton Smith and Mr. Coke of Norfolk. The chariots of the Olympic Games went just as fast as the chariots that conveyed our nobles to the Derby, "in our hot youth, when George the Third was King." When Abraham wanted to send a message to Lot he despatched a man on horseback, who galloped twelve miles an hour. When our fathers wanted to send a message to their nephews, they could do no better and go no quicker. When we were young, if we wished to travel we thought ourselves lucky if we could average eight miles an hour—just as Robert Bruce might have done. Now, in our old age, we feel ourselves aggrieved if we do not average forty miles.

The same at sea. Probably, when the wind was favorable, Ulysses, who was a bold and skillful navigator, sailed as fast as a Dutch merchantman of the year 1800, nearly as fast at times as an American yacht or clipper of our fathers' day. Now, we steam twelve and fifteen miles an hour with wonderful regularity, whether wind and tide be favorable or not; nor is it likely that we shall ever be able to go much faster. But the progress in the means of communication is the most remarkable of all. In this respect Mr. Pitt was no better off than Pericles or Agamemnon. If Ruth had wished to write to Naomi, or David to send a word of love to Jonathan when he was a hundred miles away, they could not possibly have done it under twelve hours. Nor could we to



our friends 30 years ago. In 1868 the humblest citizen can send such a message, not a hundred miles, but a thousand, in twelve minutes.—*Spectator*.

THE French transatlantic telegraph seems to meet with unexpected difficulties. Napoleon III. has refused to permit M. Vandal, the director-general of the French post, to become one of the directors of the company. It is also feared in Paris that the intimate connection with the enterprise of M. Erlanger, who was the banker of the Confederacy throughout the rebellion, will prejudice the undertaking in the United States.—*Times*.

Correspondence.

The Other Side of the Story.

WYOMING TERRITORY, Sept. 9th, 1868.

To the Editor of the Journal of the Telegraph:

Permit me to address a few lines through your valuable columns to the telegraphers in the East. A good many know very little about this vast American desert, through which the Union Pacific passes, and which, at a not very remote date, will connect by the closest ties the commercial interests of the Eastern States with those of the Pacific. Operators coming out and engaging in the service of the Union Pacific have but a very faint idea of the duties that are to be imposed upon them, much less the salary they are

to receive. Only those who have been through the "mill" can give any idea of what is undergone by telegraphers, who are the poorest paid and have the most arduous duties of any class of men on the road. Please follow me, and I will try and give you as near as possible my experience. Arriving at Omaha, after a very fatiguing journey, I reported to Mr. H. H. Cook, superintendent of telegraphy. He offered a position as night operator, salary \$65 per month, on his division, which extends to Cheyenne, 500 miles west of Omaha, but gave me to understand that by going west to the end of the track, 800 miles, I would receive \$100 or \$125 per month. I could not account for this, but supposed it was on account of the Indian troubles, and having a strong desire to see and perhaps have a brush with the "reds," I concluded to go as far west as possible. Accordingly got orders to report to J. K. Painter, at Laramie, 600 miles west of Omaha. He also gave me a very flattering account of what the country was 700 miles west, and again I was sent forward (not that I desired to do so, but could not help myself), and reported to Mr. J. N. Orrell, chief operator of the most western division, whom I found to be a very gentlemanly person, and willing to do all in his power for the operators in his employ. I now started to take charge of my new office, near the end of the track, which I found to consist

of a small tent set on the sand, a soap box for an operating table, a small barrel for a chair, one rifle and forty rounds of cartridges, and two common goat blankets. Had promissory visions of a good mattress, cook stove and cooking utensils. I found the nights very cold—ice will form on a pail of water almost any night in the year in this climate. Having no night operator, I had to commence work at four or five in the morning and work till nine P. M., and sometimes till midnight. Then I was at liberty to "turn in." Turn into what? Why, roll up in my blankets, with my boots for a pillow, and lay down in the sand and alkali dust, which latter so irritated the nostrils as to cause

the nose to bleed almost constantly. There is at every station a water tank, (which, in many places, has to be supplied by a regular water train, there not being water in many places), one or two section houses or tents and telegraph office. The only board I can get is at one of these section houses with the track laborers. Friends, have you ever taken a meal in an Irish shanty? You all must have seen some along any of the Eastern railways. If you have, you know the quality of board we get out here. The first day I eat nothing; the second I made a meal of sour bread and strong butter. Perhaps you know the effects of such diet. Suffering from the cold for over three weeks, my stove and mattress at length arrived. The former consisted of sheet iron, made in the form of a cone, two feet high and eighteen inches broad at the base, a small door on the side and no bottom, with about six inches of pipe attached. After some study I found I would have to build a mound of earth or stone, and elevate my stove so that the pipe would reach through the canvas of the tent. The mattress was about thirty inches wide by six feet long, and could be bought in the States for \$1. What water there is is so impregnated with alkali, iron, salt, sulphur, &c., as to be almost impossible to wash in, and as a beverage is only equalled by a good dose of salts. Graybacks of enormous size are very plentiful. I have not yet seen any person who could not find some on their persons. The only redeeming quality is the grandeur of the scenery. You see rocks piled up in all fantastic shapes thousands of feet high. The peaks of the snowy range of the Rocky mountains, covered with the snow and ice of centuries, tower up 12,000 or 15,000 feet above the sea level. For those romantically inclined this is all very pleasant, but soon becomes tedious. No sweet fields of waving grain, not even a spear of green grass, meets the weary eye. Nothing but level plains of sand, dotted with wild sage and hardy mosses; on the mountain side a few hardy and stunted cedars cling to the rocks. Nought save these and barren rocks are to be seen for hundreds of miles. As yet I have not seen ANY redeeming qualities in the railroad. You are sent here; if you do not like it, why, go HOME, but you get no passes; 800 miles or more from civilization, and railroad fares about eight cents per mile. Some of the boys have had the mountain fever, brought on by overwork and exposure, and were sent to the hospital, where they had poor attention, in fact none save what they received from brother operators, and I believe had the privilege of paying the doctor a fee of \$5 per visit. Everything is lively now, and will be so while the road is in process of building, but so soon as finished, and nothing but the regular routine of duty, no company save the section men within ten or fifteen miles on either side of you. Pleasant reflections for the operator who has to winter in these mountains, where it is likely to snow up so that trains will be blocked up a month or more at a time. Now we will see how profitable it is to work for this company. They only pay \$75 per month; board at from seven to ten dollars per week, and is such as none would have at any price in the East; washing from twenty-five to fifty cents per article. Alkali dust settles in your clothes and boots, and when once wet eats them up in a short time. Every thing is four or five times the price that they are in the East. I have given a correct account, and if any of you have the Western fever come out and try it. Am sure you will soon find a cure, if you do not get the mountain fever, after a month's "residence" here.

I am yours,

A TOTAL WRECK.

THE line from New York to Havana, although from Punta Rassa to Havana there is not a foot of wire above ground, is capable of being worked as rapidly as any land air line, and is operated with much care and correctness.

Telegraph Instrument.

Robert K. Boyle, New York city. This invention relates to a new telegraphic printing apparatus, which is so arranged that it will adapt itself to every variation of the weather, and that it will utilize the whole power of the current. The invention consists, first, in a new arrangement of connecting the magnet with the electro magnets. In this apparatus four electro magnets are employed, a pair being arranged on each side of the horseshoe magnet. The two electro magnets on each side are arranged one above the other. Two horseshoe magnets are firmly secured to an oscillating horizontal bar, in such a manner that each end of each horseshoe is between the two opposite face plates of two opposite electro magnets. By means of this arrangement the through current, which is generally obtained, is avoided, and the horseshoe magnet will more easily change its position when the polarity of the electro magnets is reversed.

Effect of the Galvanic Current upon the Tenacity of Wire.

Mr. James Wylde has made public the results of some experiments which are of great importance to telegraphic science. He says that he found, some years since, that when intense currents were passed through the best copper wire, in only one direction, its tenacity was gradually destroyed, so that it could finally be crushed to pieces by the fingers. This loss of tenacity occurred first and in a greater degree at the negative pole. An examination with a microscope revealed at the broken surface a complete molecular change, a crystalline structure having taken the place of the fibrous. He states that, having entered upon some extended experiments in connection with submarine explosions by means of the voltaic current, he was frequently annoyed by the breaking of one of the wires, and in all cases found the structure at the broken part crystalline. From these facts he infers that intense currents passed through submarine cables must eventually deteriorate them, and counsels their avoidance. The frequent reversal of the current, in regard to direction, lessens or entirely prevents the molecular change in the wire. —*Scientific American*.

Death of the German Chemist Schonbein.

The telegraph announces the death of another eminent philosopher, whose labors have conduced greatly to the progress of science during the last half century. Christian Friedrich Schonbein was born in Wurtemberg, Oct. 18, 1799. At the age of twenty-five he was a professor of chemistry at Reihau. After visiting and spending considerable time in France and England, for the purpose of completing his scientific education, he commenced a brilliant career in the university of Basel. His first experiments in this celebrated institution led to important voltaic and electro-chemical investigations, which resulted in the demonstration of important principles. In 1839, his attention was attracted to certain peculiarities in the chemical action of oxygen, and its existence in the allotropic condition to which the name of ozone has been given, was made by him the same year. In 1845 he invented gun-cotton. The later portions of his life have been devoted to experiments with oxygen, and the production of numerous works upon abstruse physical and scientific subjects.

IMPORTANT concessions having been obtained from the French Government, a French company has been organized to lay a cable from Marseilles to Corsica, which will probably be extended to Algiers, and ultimately along the north coast of Africa to Suez. This will place Paris in connection with the great public works there which now approach completion, and which must have so important a bearing on the commerce of India.

A Massive Cable.

The new cable recently laid between Lowestoft and Tandoort (83 miles in length) to replace the one formerly landed farther to the north, on the English coast, is perhaps the heaviest and most carefully constructed ever prepared.

It has four conductors, each of which consists of a strand of seven number 22 wires of the weight of 107 lbs. per knot, with a resistance of not over 12.07 Ohms per knot, and a specific conductivity of 92.34 per cent. of pure copper. The insulator is of three coatings of gutta percha with three alternative coatings of compound, of the weight of 150 lbs per knot. The cable, when delivered, showed the following extraordinary conditions:

Resistance of Insulation, . . .	746 millions per knot.
Conductivity, . . .	96 per cent.
Inductive Capacity per knot, . . .	3784 Farads.

The sheathing in eighteen miles of the main cables consisted of 11 No. 1 best best galvanized soft iron wires; each wire was first passed through a bath of bituminous compound, and then served with two reverse servings of tarred Russian hemp. Weight of main cable, 12 tons per knot.

The shore end cable core after being wormed and served, was first sheathed with fifteen No. 5 best best galvanized iron wire, then covered with tarred jute and again with bituminous compound. The cable was then finally enclosed with an external sheathing of eleven strands, each containing three No. 5 galvanized iron wires, each strand having previously passed through a bath of compound and then covered with two reverse servings of tarred Russian hemp, the whole being covered with bituminous compound. This illustrates the immense care now taken in the manufacture of these world girders, and the perfection to which they have attained.

A Good Rule.

CHICAGO, Sept. 14th.

A most beneficial result has been effected in this district by the establishing and enforcing of a rule regarding delayed messages. The rule requires that in every case where a message is on the books over twenty minutes, that a record of the same be made, and sent to the superintendent, with a memorandum showing cause of delay. All cases of this kind are promptly investigated, and any employee at fault is made accountable. The rule has been in force about two weeks, and a marked change is already noticeable.

The Western Union Telegraph Company will put up another wire from Chicago to Omaha this month — 500 miles.

D.

An envelope with an S and P ingeniously twisted around each other and stamped thereon, is on our desk to-day. On opening it we find the name of Mary J. Prentiss on one card and Mr. and Mrs. S. J. Smith, Jr., at home, on the other. Another pair of doves! How thick they are on these cool fall nights! This is a very proper union. The lady has been a 'Prentice(ss) long enough, and is now taken into partnership. Happy Smiths! we kiss our hand to you.

Where is Gipsy?

Not a little fun was occasioned by the following messages that passed over the wire a few days since.

To —
"Our Gipsy is lost, what shall we do?"
(Answer.)

To —
"You say you have lost our Gipsy,
Well, my reply is, let her rip.
Tell Kennedy, and all his pack,
If they find her, not to bring her back.
'Twas ever thus, and thus it am,
Pay this despatch, I'm busted
SAM."

42, collect 1.78.

THE Atlantic cable of 1865 has never been interrupted since it was laid down.

The Speed of the Senses.

According to the researches of Helmholtz, a distinguished German physiologist, and others, it has been ascertained that the nervous fluid moves at the rate of about ninety-seven and one-tenth feet in a second. Now electricity travels with a speed exceeding 1,200,000 feet in a second, and light over 900,000,000. A shooting star moves with the velocity of 200,000 feet in a second, and the earth in its orbit around the sun 100,000. A cannon ball has a mean velocity of 1,800 feet in a second; an eagle, 130; and a locomotive, 95. The nervous fluid, it will be perceived, has no very remarkable rate of speed. A fact, which among many others it is asserted, serves to indicate its non-identity with electricity. Again, Professor Donders, of Utrecht, Holland, has recently been making some interesting experiments in regard to the rapidity of thought, which are likewise interesting. By means of two instruments, which he calls the *noemataehograph* and the *noematachometer*, he promises important results in the future. For the present he announces that the brain requires sixty-seven one-thousandths of the second for the elaboration of a simple idea. Further, it is stated that the eye requires seventy-seven one-thousandths of a second to communicate an impression to the brain, and that for the ear to communicate a sound one hundred and forty-nine one-thousandths of a second are necessary. The eye, therefore, acts with nearly twice the rapidity of the ear.

Perseverance.

In the *Archives du Christianisme* there is a deeply interesting account of a Spaniard who printed the New Testament in a deep cellar. He labored alone with a poor wooden machine and very few types. His work progressed slowly; he could print but a few pages at a time. Being shut out from his glorious Andalusian sun, and exhausted with labor, his health failed, and he raised blood. He was urged to rest for a while, but he refused, declaring that he would not leave the cellar until he could bear from it in his own hand a Spanish New Testament printed in Spain. He kept his word, and Christian friends have seen and handled this New Testament. There is great hope for Spain when such men, worthy contemporaries of Matamoras, rise up from the surrounding darkness, and prove themselves valiant for the truth even unto death.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing *one dollar and a half* and a *three cent postage stamp* for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

France.

PARIS, SEPTEMBER 24.—The *Moniteur* of this city announces officially this morning that the government concession lately granted in favor of MM. Erlanger and Reuter, of the Franco-American Telegraph Company, authorizing them to lay a submarine telegraph cable between France and America under certain reserved conditions, has become definite and complete, capital to the amount of 27,500,000 francs—the main condition—having been subscribed for the undertaking.

The concession for this great work bears date July 6, 1868, and confers the privilege of laying and working submarine telegraphs between France and the United States.

The cable will, as at present proposed, be laid in two sections; the first from Brest to the French island of St. Pierre, off Newfoundland; the second from St. Pierre either to New York direct or to a point between Boston and New York, with a special line to New York.

The length of the cable is as follows: First section, from Brest to St. Pierre, 2,225 miles; second section, from St. Pierre to the United States, about 722 miles. Total, 3,047 miles.

A contract has been entered into with the Telegraph Construction and Maintenance Company to manufacture and lay this cable for the sum of £920,000.

The financial calculations and scientific experiments of the new company set forth the following results: The power of transmission of the cable is estimated at a minimum of twelve words per minute, which, allowing fourteen hours a day for waste time, and only ten hours a day for actual work, and taking three hundred working days in the year, gives, at the rate of £2 per message, an annual income of £432,000. The working expenses of the line are calculated at £30,000 per annum.

In connection with this enterprise it is interesting to state that the French despatch boat *Travailleur*, from Rochefort, has been ordered to the Mediterranean to assist in laying down the submarine cable to connect the telegraphic lines of Algeria with the coasts of France.

Still Another.

Parties at Berlin are attempting the organization of another Atlantic cable company to lay a cable connecting with the United States, one of the features of which is to give subscribers credit for their subscriptions on the books of the company and have the amount returned in the sending of dispatches.

Personal.

H. McGregor and John L. Janes have been appointed assistant operators at Quincy, Ill.

J. M. Ellison, late manager of Joliet, Ill., who has been on a tour in the far West, will resume the management of that office Sept. 1st.

John Thode has resigned the management of Galena, Ill., office, and Wm. F. Altemeyer, from Chicago office, appointed as his successor.

A. A. Honey, late assistant at Quincy, Ill., has accepted the position vacated by Mr. Altemeyer in Chicago office.

Asa R. Swift has been appointed superintendent of the lines on the Chicago, Rock Island and Pacific railroad. Mr. Geo. W. Graham, late manager of Des Moines, Iowa, office, takes the position of operator in the office of the general superintendent of that road.

Mr. Samuel M. Allen has assumed the management of Jacksonville, Ill., office, vice T. Rice Smith (one of the oldest operators in the West) resigned.

Mr. A. H. Bliss has retired from the service of the Western Union Telegraph Company.

Among the Wires.

BY A LADY OPERATOR.

There was no evading the matter. There was the bald fact, and the woman herself staring me in the face. I listened to her story, and, listening, read again and again the message she handed me. It was in my own handwriting. I had but one lucid thought concerning it. It was that three days before I had read that message from the wires, copied it, and had it duly delivered to the woman before me. It was legibly written, alarmingly so:

"Send me one thousand (1000) dollars to-day's express without fail."

"And it was but ten dollars my son telegraphed for!" shrieked the woman. "But ten dollars! I have seen him. I shall get his message and you shall see it. Who is going to pay for this outrageous mistake? Do you think I am going to be dragged about here and there, getting a thousand dollars for my son, going with it myself to him, and after all my trouble and expense, finding him in good health and in no particular misfortune? Not I. Your villainous, detestable, diabolical company must settle for this damage!"

She said more, and, as I re-read the message, there was presently a marvelous blending of her accusations with it, and with the current of my own thought. I could not then have undertaken to defend myself even from the charge of having fabricated the message from date to signature. All the means for redress, inquiry and explanation, which had never hitherto forsaken me, seemed for the time obliterated. The message now no longer read: "Send me one thousand dollars." It was hundreds of thousands! millions! any sum at all!

My agony and remorse were boundless, and, overcome with confusion, I fainted. When I awoke to consciousness I was alone in my office. I heard the wind blowing, and the driving sleet against the window, as I had heard them mingled with the woman's voice, but where was the woman and the message? Ah, yes, I understood it. She had been trying to restore me to consciousness, and failing, had gone for assistance, so that, considering the hour was late, it was evident several moments must elapse before her return. I was not a little piqued at what might be the *denouement* of this mortifying affair. Business had lulled. For a few moments even "No. 4" wire was quiet. Instantly I called the station and asked for a repetition of the fatal message.

"Send me one thousand—"

"O. K.," said I. "The woman says he sent for ten dollars."

"Can't help it; he only wrote the figures, and put the dot in the wrong place. Run off before I had time to—"

"O. K., O. K.," I said, for I did not care to hear more, and, indeed, any vitality on my part was not at all befitting the occasion, considering a delegation from the village, headed by the woman and the doctor, just then came bursting in to restore me to life. And there was a glorious *restoration* presently thereafter.

Earthquakes and Electricity.

Mr. Daniel M. Donnelly, a civil engineer of Brooklyn, has for many years made meteorology a study, and has formed opinions respecting the agency of electricity in the production of earthquakes which possess interest in connection with the recent violent convulsions in South America. At our request he has kindly consented to communicate to us a paper on this subject, which we will lay before our readers. The whole subject of meteorology must soon engage more practically the minds of scientific men. There is not in all the world so fine a theatre for its elucidation as in the United States, and nowhere has so little been accomplished.

Journal of the 'Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 2,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address— JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, OCTOBER 1, 1868.

To Correspondents.

Several letters, well and kindly written, but which we are compelled to decline, have reached us during the past week. One is in defence of a Superintendent who does not require it. Another is in defence of ourself, which we accept from its fair writer kindly, but cannot use. We cannot consent to use the JOURNAL for the publication of articles which could only provoke a continuance of the abuse they are designed to expose.

As to any use of our own name, which may grieve our friends, we wish them to know that to us it is a matter of indifference, and, indeed, ought to be regarded as complimentary when any supposed "piety" of ours is made its occasion. There is no higher honor than to be known as a Christian gentleman, and which we would be glad to deserve. As an editor, we must expect to receive the perquisites which its duties generally secure, and occasional abuse is one of its normal endowments.

Gastronomics and Electricity.

There is much magnetism in a good dinner, especially if the cuisine be under French superintendence. We speak from profound experience, having just passed through the experiment on board of the French steamer *St. Laurent*, under the manipulation of its gallant commander, Captain Bocande. It was a highly successful process throughout, and a very pleasant preparation, bodily and mentally, for the exhibition of the electric light in use on this magnificent vessel which followed.

Coffee and cigars having performed their part in the conclusion of the gastronomic process, a select company of ladies and gentlemen, we being of the number, repaired to the pilot bridge to witness the operation of the electro-magnetic light recently introduced on this steamer. The electricity is generated by a combination of sixty-eight compound magnets in the engine room, kept in rapid revolution around an armature by a small donkey engine, the light being produced between carbon points in the usual way. The light was very powerful and was directed at will to different objects on the land and the water. By a simple switch the light was changed from the pilot bridge to the trucks of the main mast from whence a dazzling stream was thrown far across the river. This light is maintained without expense except for carbon points, and is regarded as a great acquisition to the means of securing safety from collision at sea. In dark nights also it can be so thrown that the dangerous process of reefing can be accomplished as in the light of day. We will refer to this again.

THE Anglo-Mediterranean Telegraph Company are engaged in taking soundings between Malta and Alexandria, a steamer having been despatched by the British Government for that purpose.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

AUGUST, 1868.

Gross receipts,	- - -	\$602,304 73
Current expenses,	- - -	376,452 03
Net profit,	- - -	\$225,852 70

This exhibit shows an increase of \$31,627.88 over the receipts of August, 1867, while the expenses have only increased \$481.86.

Six Hours a Day.

We have no desire to advocate prolonged or exhausting labor. Those who remember our management of lines will make no such charge. We put on the same harness as our men, and wore it longer. For nearly a score of years our personal labor was limited only by six hours taken for sleep. But we ever considered the comfort and health of those who served us. Whoever denies this, errs.

Since then we have not changed. We love labor. Congenial toil is the grandest thing under the sun. We like to see a good man at the key making his fingers go as if he loved it. Yet, we know that steady toil is not good. The finest and firmest organization will weary. So toil must have its limits, and rest and recreation and the jolly hours of home love and radiance must have their own.

Recently the remark has been attributed to us that "six hours labor per day is all of which an operator is capable and preserve health." Now, although we used language equivalent to this, the inference is false when made to argue a limitation of six hours per day for telegraph service. We used that expression in resisting the proposal of a Senator in the United States Senate to absorb the private lines of the country, in which he claimed a capacity of service such as we knew could not be sustained unless by a system of relays of men. We say now, and no operator will deny it, that there is no operator's brain strong enough to maintain a service of over six hours per day and transmit messages at the rate of 2,000 words per hour. The following are extracts from the paper referred to:

"A communication by telegraph has this marked peculiarity; it demands a calm, unoccupied brain, and a steady hand to manipulate its contents letter by letter, in a language of monotonies. A slip of the finger from the manipulating key changes its meaning; a truant thought alters the manuscript: a shadow of forgetfulness mars its whole design."

"One of the most effective means to secure freedom from error is the retention of qualified operators who become so accustomed to the address of parties, and acquire such an indescribable aptitude for the special service of the wire on which they are employed, as to enable them to transact their duties from month to month without error."

A Senator having given the capacity of six wires working twelve hours per day as $6 + 12 + 2000 + 365 = 52,560,000$ words per annum, we claimed that to do such labor would require relays of men and said:

"Now the truth of all this is, that although it is possible under favorable circumstances to send 2,000 words per hour, yet it is utterly impossible to send messages requiring care at anything like such an average rate by the present process. There is in the tension of the brain of an operator a limit to all such use of the wires when crowded to their capacity. The necessary absorption of the mind is exhausting. To crowd the work beyond a certain rate would require relays of men to relieve each other. Six hours continuous service of this character is all that a young person is capable of performing and maintain health."

Now, then, we are understood. We repeat, with all the emphasis we then felt, these statements. We oppose every overtaking of the brain, except our own, as foolish, unremunerative and wrong. No company is justified in doing it. We do not believe that, as a rule, it is done. In the most constantly operated wires, there are either such natural lapses of occupation as to give rest and recuperation, or relief is provided by change of force. Emergencies indeed occur, where all must submit to an unusual crowding. These, however, are very rare, and should

be met cheerfully and treated fairly. We like to see a Superintendent at such times sending for wholesome refreshments, and with his sleeves rolled up, cheering his men by his presence and personal interest. That is the plan we used to pursue and it is not abandoned yet. Prolonged extra service deserves remuneration, and always has it where managers are true to the interests of the company; but men who growl at an occasional extra pull to clear the wires should be sent to sea. We don't like them. They never have a cheerful face or a clean shirt.

The record of the New York office of the Western Union Telegraph Company shows that only three wires transmit over 300 messages per day and night, and there are seven which average 225 per day, sixteen which average 150, and twenty-five which average 100. These figures do not argue hard service, but indicate an extent of occupation consistent with cheerfulness and good health.

Managers of Offices are particularly directed to the Tariff Circular on the sixth and seventh pages.

Quick Work.

A gentleman came in to one of our Western cities one day last week and left a message for his friend in New York, enquiring the value of a certain stock. It was sent to the office at the room of the Gold Board. The person addressed happened to be present, and Manager Schram, whose eyes are always open, called him. The answer was written while the message was being received, and sent at once. An order to purchase was at once given, the first sender not having left the office. The whole business, the enquiry, the response, the order, occupied a minute and a half! Manager Schram thinks that good time. So do we.

Use a Lemon or Two.

One of those odd mistakes, which occur now and again in the best of families, was made at one of the small telegraph stations of the Western Union Telegraph Company in New Jersey, where little business is done, and where the old registering apparatus is in use. Having telegraphed to the family physician in New York, respecting some symptoms which needed attention. The doctor telegraphed as follows:

NEW YORK, August 25, 1868.

To JOHN ADAMS—

B—, New Jersey.

Use flannel stockings and dress bowels in flannel if milk don't curdle. See letters of two dates.

B. B.

The message was delivered as follows:

"Use flannel stockings and dress bowels in flannel. If milk don't curdle, use a lemon or two!"

The mistake was discovered from the fortunate fact that there were no lemons in the market, and the anxious parties telegraphed to know if the extract of lemon would do as well!

Has any one seen Superintendent J. C. Hinchman lately? He wears a new face, a softer eye, and has a touch of gentleness in the voice that indicate to us that something has happened. His boots, also, have a brighter lustre, and his linen somehow lays about him neatly and gently. Ah! here comes the Boston Post and the revelation. He has been to Vermont, and in passing through Boston was made prisoner to a fair lady by an Episcopalian Bishop, who fastened the chains. J. C., we congratulate you. Live long and be happy. Accept our benediction.

SUPERINTENDENT BEDLOW is busy. He has just finished the reconstruction of the lines between Brunswick and Bangor. He says they work byootiful. He has also built fourteen miles of new line from Beverly to Gloucester, and reinsulated and soldered the wires from Gloucester to Boston. A large amount of work remains to be done before snow falls, but these Maine men know to push things.

Governor Bullock.

The likeness on our first page is that of Governor Bullock, of Georgia, for a long time identified with the Printing Telegraph system in this and other States, both as operator and manager, and whom we still keep on record as "one of the boys." He entered the express business some years ago under Gen. Sanford, and soon after became President of one or more express companies in the South. We are glad to see our associates rising to posts of trust and honor, and hope Governor Bullock will be able to use his high trust for the good of the whole people of the great State over the fortunes of which he presides.

An Important Book.

Milton P. Jarnagin, Esq., of the law firm of Scott & Jarnagin, Memphis, Tenn., has left with us a synopsis of a book, of which the following is the title:

"A Treatise upon the Law of Telegraphs; with an Appendix, containing the general statutory provisions of England, Canada, the United States, and the States of the Union, upon the subject of Telegraphs. By William L. Scott, and Milton P. Jarnagin, Memphis, Tenn. Boston: Little, Brown & Co., 1868."

Reference is made to all the reported telegraph cases, and liberal extracts made, so as to give the reader a fair chance to know the course of reasoning, as well as the weight of authority upon the various controverted questions. The authors intend thus to make the book useful, aside from their own observations—so that if their deductions should be unsatisfactory, the materials are furnished in such abundance in the notes, that every one may judge for himself.

The English statute is given literally, as a model of careful and practical legislation. The volume is a royal octavo, printed at Cambridge, and of superior typography. Price six dollars. It is favorably noticed in the Law Review for October, and as a compilation of the history of telegraph legislation and jurisprudence must be valuable. We shall refer to it again.

Removed.

Chester, Partrick & Co., Telegraph and Electrical Engineers, Philadelphia, well known for the superior quality of their manufactures, have removed to more capacious premises at 38 South Fourth street, where they can carry on their enlarging business to more advantage. We have only time to say—"Success to you." See their advertisement.

Telegraphers' Mutual Life Insurance.**ASSESSMENTS RECEIVED.**

F. H. Seibert, Alfred H. Seymour,
Hattie C. Reade, Samuel C. Taylor,
W. H. Stanton.

ONE of the new structures erecting this season by the Western Union Telegraph Company is a line from Columbus, Texas, to Indianola, on the Gulf of Mexico, about one hundred miles in length. From Indianola it proceeds along the Lavaca bay to Lavaca, and thence twenty-five miles by railroad to Victoria, and thence to Columbus, connecting with the existing lines to San Antonio and New Orleans.

MARRIED.

In Manchester, Vermont, on Tuesday, September 15, 1868, at the Equinox House, by the Rt. Rev. W. H. A. Bissell, Bishop of Vermont, J. C. Hinchman, of New York, to Miss Caroline M. Orris, of the former place.

On Tuesday, September 8, at the residence of the brides mother, Troy, Pa., by the Rev. Mr. Fine, Mr. F. W. Garnsey of the Western Union Telegraph office, Elmira, N. Y., to Miss E. Estelle Furman.

On Tuesday, September 8, by the Rev. J. K. Beecher, Mr. W. N. Eastabrook, operator, Western Union Telegraph Co.'s office, Elmira, to Miss Viola Murdoch, all of Elmira, N. Y.

OLD WIRE! OLD WIRE!

Parties having old Telegraph Wire on hand can dispose of the same at a fair price to

L. G. TILLOTSON & CO.,

11 Dey Street,
New York.

Box 1714.

OFFICE OF WORL & CO.,
TELEGRAPHIC ENGINEERS AND CONTRACTORS,
No 501 Chestnut St., Rooms Nos. 3, 4, 6 and 7.
PHILADELPHIA, September 22, 1868.

DAVID BROOKS, Esq.:

DEAR SIR—We have used your Insulators on many of the Telegraph lines constructed by us, and have no hesitation in saying that its success, as a perfect insulation, is beyond a doubt or question, while everything else that we have seen during an experience of twenty years, makes a very imperfect and unreliable telegraph line in rainy weather.

In conclusion, we cheerfully recommend them to all who wish good working lines.

Yours, with high regard, &c.,

WORL & CO.

FREY'S SELF-CLOSING TELEGRAPH KEY.

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—*Journal of the Telegraph.*

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Labelled by me, for the last ten (10) years, *ARNOLD'S FLUID*

Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 83% per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

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Chemist, N. Y.

A. S. CHUBBUCK,

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(Adjoining the Post Office.)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY.

LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., *Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.*

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realise the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

113 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE-OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding or any other man. It is as cheap as the worthless trash sold under another name. It saves the piece. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

Digitized by S. S. STAFFORD,
Sole Proprietor, N. Y.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
October 1, 1903.

To all Offices on W. U. Lines—

The following changes have occurred since Sept. 15, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Hollis, Ill., tariff same as Peoria, Ill.
La Plate, Mo., tariff 10 more than Macon, Mo.
Milan, Tenn., tariff 125 from Louisville, and 275 from Washington.
Montizuma, Ga., tariff same as Oglethorpe, Ga.
Neshanic, N. J., tariff same as Flemington, N. J.
Troy, Tenn., tariff same as Trenton, Tenn.
Kenia, Ind., tariff same as Kokomo, Ind.
York, Ala., tariff same as Bennet's Station, Ala.

OFFICES OPENED ON OTHER LINES.

Bar Mills, Me. Tariff 25 and 2 from Portland, Me. Check Portland.

OFFICES CLOSED.

Chapel Hill, Tex., Oakland, Md., and St. Charles, Mich.
Business for Oakland will be mailed at Cranberry Summit, W. Va.
Chaumont, N. Y., Cozzens' Hotel, West Point, N. Y., Catskill Mountain House, N. Y., Cornwall Landing, N. Y., Lake Mahopac, N. Y., Trenton Falls, N. Y., and Athens, N. Y., closed for the season.

GENERAL INFORMATION.

The tariff to Clymer, Mayville, Sherman, and West Panama, N. Y., should be same as Dunkirk, N. Y., from all offices, except those on Erie Railway and branches.

TARIFF TO POINTS ON ERIE RAILWAY AND BRANCHES.

The following is a list of offices on the Erie Railway, and connecting lines, with through tariff from W. U. connecting points.

Business for these offices will be sent by the cheapest route and checked accordingly.

Offices that check direct with any that are named in the list, will continue to do so, using the present rate.

TO	FROM						
	New York.	Binghamton.	Elmira.	Buffalo.	Salamanca.	Dunkirk.	Acon.
New York	N. Y. ...	65 4	65 4	75 5	75 5		
Jersey City	N. J. ...	25 2	65 4	65 4	75 5	75 5	
Hudson City	"	25 2	65 4	65 4	75 5	75 5	
Rutherford Park	"	25 2	65 4	65 4	75 5	75 5	
Passaic	"	25 2	65 4	65 4	75 5	75 5	
Paterson	"	25 2	50 3	65 4	75 5	75 5	
Godwinville or Ridgewood	"	25 2	50 3	65 4	75 5	75 5	
Hohokus	"	25 2	50 3	65 4	70 5	70 5	
Piermont	N. Y. ...	35 2	50 3	65 4	70 5	70 5	
Suffern	"	35 2	50 3	65 4	70 5	70 5	
Sloatsburg	"	35 2	50 3	65 4	70 5	70 5	
Southfields	"	35 2	50 3	65 4	70 5	70 5	
Turner's	"	35 2	50 3	65 4	70 5	70 5	
Monroe	"	35 2	50 3	65 4	70 5	70 5	
Greycourt	"	35 2	50 3	65 4	70 5	70 5	
Washingtonville	"	35 2	50 3	65 4	70 5	70 5	
Salisbury	"	35 2	50 3	65 4	70 5	70 5	
Vail's Gate	"	35 2	50 3	65 4	70 5	70 5	
Newburgh	"	35 2	50 3	65 4	70 5	70 5	
Chester	"	35 2	50 3	65 4	70 5	70 5	
Goshen	"	35 2	50 3	65 4	70 5	70 5	
Middletown	"	40 3	50 3	65 4	70 5	70 5	
Otisville	"	40 3	50 3	65 4	70 5	70 5	
Port Jervis	"	40 3	50 3	65 4	70 5	70 5	
Rosa	Pa. ...	40 3	50 3	65 4	70 5	70 5	
Middaugh's	"	40 3	50 3	65 4	70 5	70 5	
Shohola	"	40 3	50 3	65 4	70 5	70 5	
Lackawaxen	"	40 3	50 3	65 4	70 5	70 5	
Mast Hope	"	50 3	40 3	50 3	70 5	65 4	
Narrowsburg	N. Y. ...	50 3	40 3	50 3	70 5	65 4	
Cochecton	"	50 3	40 3	50 3	65 4	65 4	
Callicoon	"	50 3	40 3	50 3	65 4	65 4	
Hankins	"	50 3	40 3	50 3	65 4	65 4	
Basket	"	50 3	40 3	50 3	65 4	65 4	
Lordville	"	50 3	40 3	50 3	65 4	65 4	
Stockport	"	50 3	35 2	50 3	65 4	65 4	
Hancock	"	50 3	35 2	50 3	65 4	65 4	
Hale's Eddy	"	50 3	35 2	50 3	65 4	65 4	
Deposit	"	50 3	35 2	40 3	65 4	65 4	
Susquehanna	Pa. ...	50 3	35 2	40 3	65 4	65 4	
Great Bend	"	65 4	35 2	40 3	65 4	65 4	
Binghamton	N. Y. ...	65 4	35 2	50 3	50 3		
Campville	"	65 4	35 2	35 2	50 3	50 3	
Owego	"	65 4	35 2	35 2	50 3	50 3	
Smithboro'	"	65 4	35 2	35 2	50 3	50 3	
Waverly	"	65 4	35 2	35 2	50 3	50 3	

TO	FROM						
	New York.	Binghamton.	Elmira.	Buffalo.	Salamanca.	Dunkirk.	Acon.
Chemung	"	65 4	35 2	35 2	50 3	50 3	
Elmira	"	65 4	35 2	35 2	50 3	50 3	
Big Flats	"	65 4	40 3	35 2	50 3	50 3	
Corning	"	65 4	40 3	35 2	50 3	50 3	
Painted Post	"	65 4	40 3	35 2	50 3	50 3	
Addison	"	70 5	40 3	35 2	50 3	50 3	
Rathboneville	N. Y. ...	70 5	40 3	35 2	50 3	50 3	
Cameron	"	70 5	40 3	35 2	50 3	50 3	
Adrian	"	70 5	50 3	35 2	40 3	50 3	
Canisteo	"	70 5	50 3	35 2	40 3	40 3	
Honnellsville	"	70 5	50 3	35 2	40 3	40 3	
Almond	"	70 5	50 3	40 3	40 3	50 3	
Alfred	"	70 5	50 3	40 3	40 3	50 3	
Andover	"	70 5	50 3	40 3	40 3	50 3	
Genesee	"	70 5	50 3	40 3	35 2	50 3	
Scio	"	70 5	50 3	40 3	35 2	40 3	
Phillipsville	"	70 5	50 3	40 3	35 2	40 3	
Belvidere	"	70 5	50 3	40 3	35 2	40 3	
Friendship	"	70 5	50 3	50 3	35 2	40 3	
Cuba	"	70 5	50 3	50 3	35 2	40 3	
Hinsdale	"	70 5	50 3	50 3	35 2	40 3	
Olean	"	70 5	50 3	50 3	35 2	40 3	
Allegany	"	70 5	50 3	50 3	35 2	40 3	
Carrollton	"	75 5	50 3	50 3	35 2	35 2	
Great Valley	"	75 5	50 3	50 3	35 2	35 2	
Salamanca	"	70 5	50 3		35 2		
Little Valley	"	75 5	65 4	50 3	35 2	35 2	
Cattaraugus	"	75 5	65 4	50 3	35 2	35 2	
Dayton	"	75 5	65 4	50 3	35 2	35 2	
Perryburg	"	75 5	65 4	50 3	35 2	35 2	
Smith's Mills	"	75 5	65 4	50 3	35 2	35 2	
Forestville	"	75 5	65 4	50 3	35 2	35 2	
Burns	"	70 5	50 3	40 3	40 3	40 3	35 2
Canaseraga	"	70 5	50 3	40 3	40 3	40 3	35 2
Swainville	"	70 5	50 3	40 3	40 3	40 3	35 2
Nunda	"	70 5	50 3	40 3	40 3	40 3	35 2
Hunt's	"	70 5	50 3	40 3	40 3	40 3	35 2
Portage	"	70 5	50 3	40 3	40 3	40 3	35 2
Castile	"	70 5	50 3	40 3	35 2	50 3	35 2
Gainesville	"	70 5	50 3	40 3	35 2	50 3	35 2
Warsaw	"	70 5	50 3	40 3	35 2	50 3	35 2
Dale	"	70 5	50 3	40 3	35 2	50 3	35 2
Linden	"	70 5	50 3	40 3	35 2	50 3	35 2
Attica	"	75 5	50 3	40 3	35 2	50 3	35 2
Campbell	"	70 5	40 3	35 2	50 3	50 3	40 3
Savona	"	70 5	40 3	35 2	50 3	50 3	40 3
Bath	"	75 5	40 3	35 2	50 3	50 3	35 2
Avoca	"	75 5	50 3	35 2	50 3	50 3	35 2
Liberty	"	75 5	50 3	35 2	50 3	50 3	35 2
Blood's	"	75 5	50 3	35 2	50 3	50 3	35 2
Wayland	"	75 5	50 3	40 3	40 3	50 3	35 2
Springwater	"	75 5	50 3	40 3	40 3	50 3	35 2
Conesus	"	75 5	50 3	40 3	40 3	50 3	35 2
Livonia	"	75 5	50 3	40 3	40 3	50 3	35 2
Alexander	"	75 5	50 3	40 3	35 2	50 3	35 2
Darien	"	75 5	50 3	40 3	35 2	50 3	35 2
Alden	"	75 5	50 3	40 3	35 2	50 3	35 2
Town Line	"	75 5	50 3	40 3	35 2	50 3	35 2
Lancaster	"	75 5	50 3	40 3	35 2	50 3	35 2
Bradford	Pa. ...	75 5	65 4	50 3	50 3	35 2	
Alton	"	75 5	65 4	50 3	50 3	35 2	

OTHER LINES—ERIE RAILWAY.

Warwick,	N. Y.,	25 2, in addition to the rate to Grey-court, N. Y.
Unionville,	"	25 2, in addition to the rate to Mid-dletown, N. Y.
Milford,	Pa.	25 2, in addition to the rate to Port Jervis, N. Y.
Eddeville,	N. Y.	
High Falls,	"	
Phillipsport,	"	
Wartsboro,	"	
Neversink Locks,	"	
Cuddebeckville,	"	
Pond Eddy,	"	
Barryville,	"	
Archibald,	Pa.	35 & 3, in addition to the rate to Lackawaxen, Pa.
Carbondale,	"	
Ellenville,	N. Y.	
Hawley,	Pa.	
Olyphant,	"	
Providence,	"	
Waymart,	"	
Kerhonkson, or	N. Y.	
Middleport,	"	
Mongaup,	"	
Erwin Centre,	"	35 2, in addition to the rate to Corn-ing, N. Y.
Lawrenceville,	Pa.	35 2, " " "
Tioga,	"	35 2, " " "

Mansfield,	Pa.	35 2, in addition to the rate to Corn-ing, N. Y.
Blossburg,	"	35 2, " " "
Somerville,	"	35 2, " " "
Fall Brook,	"	35 2, " " "
Morris Run,	"	35 2, " " "
Athens,	Pa.	25 2, in addition to the rate to Wa-verly, N. Y.
Towanda,	"	25 2, " " "
Gillet's	"	40 3, in addition to the rate to El-mira, N. Y.
Troy,	"	40 3, " " "
Canton,	"	40 3, " " "
Ralston,	"	40 3, " " "
Trout Run,	"	40 3, " " "
Smethport,	Pa.	35 2, in addition to the rate to Alton, Pa.

Hammondsport,	N. Y.	25 2, in addition to the rate to Bath, N. Y.
Honesdale,	Pa.	30 2, in addition to the rate to Lack-awaxen, N. Y.

Messages to and from points North and West of Milwaukee, Wis., will hereafter be transferred at Chicago, Ill., instead of Milwaukee. Offices will check such business with Chicago, but collect their Milwaukee tariff as heretofore, together with the rates given below.

	Tariff from Milwaukee.		Tariff from Milwaukee.	
Adams, Minn.,	120	7	Manitowoc, Wis.	50 3
Anoka, Minn.,	170	9	Mankato, Minn.	180 10
Appleton, Wis.	60	4	Marquette, Wis.	135 8
Arena, Wis.	60	4	Marquette, Mich.	210 11
Austin, Minn.	120	7	Mauston, Wis.	65 4
Avoca, Wis.	65	4	Mazomanie, Wis.	55 3
			McGregor, Iowa	80 5
Bangor, Wis.	80	5	Medford, Minn.	140 8
Beaver Dam, Wis.	40	3	Mendota, Minn.	140 8
Belle Plain, Minn.	180	10	Menomonie, Mich.	175 8
Beloit, Wis.			Minnekaunee, Wis.	135 8
Berlin, Wis.	50	3	Middleton, Wis.	50 3
Big Lake, Minn.	180	10	Midland, Wis.	50 3
Black Earth, Wis.	55	3		
Bloomington Prairie, Minn.	130	7	Milton, Wis.	30 2
Boscobel, Wis.	70	4	Milton Junction, Wis.	30 2
Brandon, Wis.	45	3	Minneapolis, Minn.	150 8
Bridgeport, Wis.	80	5	Minneiska, Minn.	100 6
Brookfield, Wis.	30	2	Minneapolis Junc., Wis.	40 3
Burnett Junction, Wis.	40	3	Monona, Iowa	85 5
			Morgan, Mich.	200 11
Calmar, Iowa.	100	6	Muscoda, Wis.	65 4
Calumet, Mich.	250	15		
Cambria, Wis.	45	3	Neenah, Wis.	60 4
Cedar River, Mich.	150	8	Negaunee, Mich.	180 10
Champion, Mich.	200	11	New Lisbon, Wis.	65 4
Chester, Wis.	45	3	Northfield, Minn.	140 8
Clarksburg, Mich.	200	11	North McGregor, Iowa	80 5
Columbus, Wis.	40	3	North Prairie, Wis.	35 2
Conover, Iowa	100	6		
Cresco, Iowa	100	6	Oconomowoc, Wis.	30 2
Cross Plains, Wis.	50	3	Oconto, Wis.	130 7
			Oregon, Wis.	70 4
Decorah, Iowa	150	9	Oshkosh, Wis.	55 3
Depere, Wis.			Ossian, Iowa	90 5
Dundas, Minn.	140	8	Otsego, Wis.	45 3
			Owatonna, Minn.	140 8
Eagle, Wis.	35	2	Ozaukee, Wis.	30 2
Eagle River, Mich.	280	17		
Edgerton, Wis.	45	3	Palmyra, Wis.	35 2
Elk River, Minn.	180	10	Pennsauke, Wis.	125 7
Elm Grove, Wis.	30	2	Peshigo, Wis.	135 8
Escanaba, Mich.	160	9	Pewaukee, Wis.	30 2
Evansville, Wis.	70	4	Pine Lake, Wis.	30 2
Eyota, Minn.	110	6	Portage City, Wis.	50 3
			Postville, Iowa	90 5
Fall River, Wis.	45	3	Prairie du Chien, Wis.	80 5
Faribault, Minn.	140	8	Prescott, Wis.	130 7
Farlington, Minn.	140	8		
Fon du Lac, Wis.	65	4	Randolph, Wis.	45 3
Ft. Atkinson, Wis.	60	4	Red Wing, Minn.	120 7
Fox Lake, Wis.	45	3	Reed's Landing, Minn.	110 6
			Richfield, Wis.	30 2
Granville, Wis.	30	2	Rio, Wis.	45 3
Green Bay, Wis.	75	4	Ripon, Wis.	50 3
Greenfield, Wis.	75	4	River Falls, Wis.	180 7
Greenwood, Mich.	200	11	Rochester, Minn.	120 7
			Rosemount, Minn.	140 8
Hamilton, Minn.	170	9		
Hancock, Mich.	230	13	St. Peter, Minn.	190 10
Hanover, Wis.	65	4	Sauk Rapids, Minn.	200 11
Hartford, Wis.	35	2	Shakopee, Minn.	170 9
Hartland, Wis.	30	2	Sheboygan, Wis.	40 3
Hastings, Minn.	190	7	Sparta, Wis.	80 5
Horicon, Wis.	40	3	Spring Green, Wis.	60 4
Houghton, Mich.	220	12	Stillwater, Minn.	140 8
Hudson, Wis.	140	8	Stoughton, Wis.	45 3
			St. Anthony, Minn.	150 8
Ishpeming, Mich.	200	11	St. Charles, Minn.	100 6
			St. Cloud, Minn.	200 11

Jefferson, Wis.	80	2	St. Paul, Minn.	140	8
Juneau, Wis.	40	8			
			Tomah, Wis.	75	4
Kasson, Minn.	180	7	Trompelean, Wis.	90	5
Kilbourn City, Wis.	60	4			
			Wabasha, Minn.	110	6
La Crosse, Wis.	85	5	Waseca, "	160	9
Lake City, Minn.	110	6	Watertown, Wis.	85	2
Lansing, Minn.	180	7	Waukesha, "	30	2
L'Ance, Mich.	210	11	Waupun, "	45	3
Leroy, Minn.	110	6	Wauzeka, "	75	4
Le Sueur, Minn.	180	10	West Salem, "	80	5
Lewiston, Minn.	110	6	West St. Paul, Minn.	140	8
Lime Springs, Iowa	110	6	Whitewater, Wis.	35	2
Lone Rock, Wis.	65	4	Winona, Minn.	90	5
Lowell, Wis.	40	8	Woodland, Wis.	35	2
Lyndon, Wis.	60	4	Wrightstown, Wis.	65	5
			Wyocena, Wis.	50	8
Madison, Wis.	50	8			

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35 "	2 Cents	36 "		66 "	46 Cents
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50 "		39 "		69 "	
55 "	4 "	40 "		70 "	48 "
60 "		41 "		71 "	
65 "	5 "	42 "		72 "	49 "
70 "		43 "		73 "	
75 "	6 "	44 "		74 "	50 "
80 "		45 "		75 "	
85 "	7 "	46 "		76 "	51 "
90 "		47 "		77 "	
95 "	8 "	48 "		78 "	52 "
100 "		49 "		79 "	
105 "	9 "	50 "		80 "	53 "
110 "		51 "		81 "	
115 "	10 "	52 "		82 "	54 "
120 "		53 "		83 "	
125 "	11 "	54 "		84 "	55 "
130 "		55 "		85 "	
135 "	12 "	56 "		86 "	56 "
140 "		57 "		87 "	
145 "	13 "	58 "		88 "	57 "
150 "		59 "		89 "	
155 "	14 "	60 "		90 "	58 "
160 "		61 "		91 "	
165 "	15 "	62 "		92 "	59 "
170 "		63 "		93 "	
175 "	16 "	64 "		94 "	60 "
180 "		65 "		95 "	
185 "	17 "	66 "		96 "	61 "
190 "		67 "		97 "	
195 "	18 "	68 "		98 "	62 "
200 "		69 "		99 "	
205 "	19 "	70 "		100 "	63 "
210 "		71 "			
215 "	20 "	72 "			64 "
220 "		73 "			
225 "	21 "	74 "			65 "
230 "		75 "			
235 "	22 "	76 "			66 "
240 "		77 "			
245 "	23 "	78 "			67 "
250 "		79 "			
255 "		80 "			
260 "		81 "			
265 "		82 "			
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275 "		84 "			
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305 "		90 "			
310 "		91 "			
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325 "		94 "			
330 "		95 "			
335 "		96 "			
340 "		97 "			
345 "		98 "			
350 "		99 "			
355 "		100 "			

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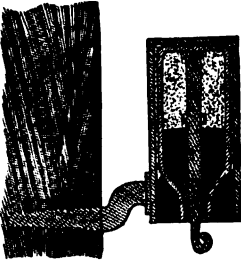
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JOURNAL OF THE TELEGRAPH.

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NEW YORK, OCTOBER 15, 1868.

VOL. I.

MEMORIES OF OTHER DAYS.

A Narrow Escape.

BY THE EDITOR.

The circular of Parker Spring & Co., of which notice is made elsewhere, recalls to mind an incident in which we think Park, as we used to call him then, was a party. It was in the summer of 1847 when a new line was being built under our superintendence along the railroad between Philadelphia and Lancaster, Pa. We were at this time at work near Paoli, about twenty miles from Philadelphia, and at supper time had all congregated at that station. We had done a good day's work and were pretty wearied, but it was necessary on account of the number of trains passing over that busy thoroughfare to wait until all had passed before distributing the material to be used by the workmen on the following day. The last of these was the night express from Philadelphia, leaving thence at 12 P.M., and for that we waited patiently, beguiling the time between books and papers, chequers and story-telling as the humor led.

It was therefore long past midnight when the distributing party sallied out with their well laden hand-car. Park Spring, John Reed, Jake Campbell, and we think David Brooks (Dave as wethen called him), who had come up to have a hand in the work, were among the party.

The night was very quiet and dark, and as they started with their lanterns on their midnight work, with a kind of joy such as we all used to feel in those good old fraternal days, we stood long after the car was out of sight enjoying a pleasant thought of the delight of cheerful labor, which could thus steal from sleep her needed rest in order to perform a necessary service. The track of the railroad was a double one, and the men had started on the north side so as to be nearer the holes at the side of which the arms were to be thrown. Off they went full of glee, and I waited till long after their voices were lost in the distance and all was still.

While thus standing and just about to return to the hotel, the noise of a train coming from the South became perceptible, and putting my ear to the track I could distinctly hear its low thundering growl every moment growing louder. I was struck with horror. The hand-car had taken the northern track. That was the road of the up trains. Not expecting any, and prevented from hearing the sound of this unexpected one by the noise of their own car, I imagined the whole party destroyed, and my brain became hot as I pictured to myself the figures of these good men in mangled fragments on the track. Just then a large class new locomotive on its way to Altoona shot past me like a flash and was out of sight in an instant. As its bright rods and shining cylinder glared for an instant upon me in the light of my lantern, the gleam seemed fiendish as it were the glint of an assassin's dagger as he hurried from his bloody work.

Under the excitement which thus overwhelmed me, I hurried down the road, anxious to hear the sound of living men, and was soon cheered by the rumble of the returning hand car and the well-known

ring of Jake Campbell's voice, as he called out to the distributors to heave an arm, as the car came to the appropriate place. When they stopped, I found that after proceeding along the road for some distance, John Reed, without any reason which he could assign, and with no knowledge of danger, suggested to the party to put the car on the other track. To this, notwithstanding it was a work of some labor, all the rest had assented without question. The car had just been removed, and the party entering it to commence their journey east, when the locomotive referred to shot past them at the rate of forty miles an hour. It was a marvellous escape, and made these strong men silent and weak. The memory of it haunts us to the present hour, and as we occasionally stand at night by a railroad track waiting for a coming train, there will still, in imagination, flash through the darkness a spectral locomotive with its glittering steel, and with it a sense of horror, such as broke upon us in that dark summer night at the Paoli station.

Vandalism.

One of the peculiar faculties of the late Prof. Faraday consisted in his great mechanical ingenuity and constructiveness, as evidenced in the apparatus for conducting the original and elaborate experiments by which he arrived at such great results. Their main character was simplicity, which is indeed the perfection of ingenuity, and the distinguishing feature of the work of genius. As has lately been remarked by a good judge, "the practical powers were never perhaps more strikingly displayed by man than in the various contrivances he adopted while conducting his researches—some of them being almost equivalent in ingenuity to the compilation of a steam engine." We regret to have to record the fate of these contrivances. Shortly after Mr. Faraday's death they were given by his wife to the porter of the Royal Institution, who, we need not say, could scarcely appreciate them. He accordingly sold them piece-meal, and even parts of the same apparatus to different buyers, thus breaking up combinations that probably were understood by few except their gifted inventor. Thus it is probable that all this splendid collection is destined to be scattered and distributed among those to whom their only value will be as souvenirs of departed greatness.—*Scientific American*.

Is THERE any limit to electrical wonders? The American *Artisan* describes a book containing 24,993 ems of solid matter which was both set and distributed by an electrical type-setting machine in six hours thirty-nine minutes. One of these machines, it is said, may be placed in a newspaper office in Boston or New York, and be operated on by a reporter in any other place connected with the machine by telegraph. That is, the reporter may take his notes to the telegraph and set them up in type at the distant office. Truly this is the age of inventions!

CON.—Why is Vice President Wade ahead of Congress?

Because he brought "nigger heads" to the "poles" years ago.

METEOROLOGY.

The Agency of Electricity in Storms.

BY DANIEL M. DONNELLY, CIVIL ENGINEER.

The physical convulsions, which have been in operation during the last year, force on the attention of science phenomena which unmistakably connect all terrestrial changes with a common principle.

It is a well attested fact that the earthquake and volcano have a common origin, and it is equally well ascertained that the various atmospheric commotions—typhoons, hurricanes, etc.—are governed by a common law. It has been proven that all precipitations from the atmosphere, as rain, snow, etc., originate in a common cause. But now it begins to be apparent there is a unity of origin common to all meteors in the three great divisions of the earth—land, water and atmosphere. A careful comparison of the phenomena that attends the meteoric display in each division presents a similarity of operation to that of the other two, and this similarity of operation unmistakably points to a common agent as the disturbing cause in them all.

Earthquakes divide themselves into two very distinct classes, the Undulatory and the Rotatory.

In the undulatory earthquake the earth has an undulatory or rolling motion over an extent of surface with an irregular outline, much longer than it is broad. The noise produced in every respect resembles thunder, and is heard at the same moment of time along the whole major axis, so that a person situated at any particular point hears a rumbling noise, as the sound of successive detonations arrive from successive distances, and the tone of the sound is modulated accordingly. The undulating motion of the earth's surface rolls back the sea, which, returning, carries itself up a distance on the shore in proportion to the momentum it has acquired, and it rolls hither and thither as it receives an impulse or encounters an obstacle. But this motion of the water is not to be confounded with the storm wave, which will be explained further on. The earthquake of Lisbon in 1795, during which sixty thousand persons lost their lives, was a perfect type of this class.

The earthquake of Calabria, Italy, in 1783, during which one hundred thousand persons were destroyed, and two hundred towns and villages were demolished, was a type of the Rotatory class. The town of Opido formed the centre of the convulsion, round which, within a circle described by a radius of twenty-two miles, not a structure was left standing, and the whole face of the country was so altered that it was found impossible to locate property, as the landmarks of one title would be found on the claim by the survey of another. In this class of earthquake the motions are round a core or centre, the greatest violence being at the centre, and decreasing towards the circumference. The detonations are quick, sharp and loud. Where it operates on water, it causes a storm wave which is simply a rotatory motion of the waters round a center and lifting the whole mass to a prodigious height.

Physicists have enumerated two other classes of earthquakes, which they designate Vertical, as that of Piobamba Viaja, at the foot of Chimborazo, in 1797, where the bodies of many of the inhabitants were thrown up a hill several hundred feet high; and the Tremblores, which frequently occur along the Andes mountains; but these are only modifications of the Undulatory form, and should not ever have been set down as separate classes.

In water—the body next in density to the land—we have two classes of meteor, corresponding in their general features to Rotatory and Undulatory Earthquakes, modified, of course, by the yielding nature of the material on which they operate. The first corresponding to the Rotatory are the warm veins of water which are found to exist far below the surface, but further than that they do exist we possess no other data, the super strata always yielding, and transmitting no commotion to the surface. The tide rip which frequently appears at the surface belongs to this class, and its operation bears a strict resemblance to that of the Tremblores Earthquake of the Andes. The water-spout corresponds to the second class, or Rotatory. This meteor originates under the water, which gives the first indications by a rotatory motion on the surface, then the water raises in the atmosphere, still continuing its gyrations. This operation gives motion to the air, and creates the whirlwind, which has been mistaken for the original cause, when it is only the effect of the water-spout. It is true that spouts are frequently formed high in the air, and over both land and water, but it is seen that they are formed in one case without the agency of the air. It follows that whatever agency operated in that one case operates also in the other, and in the latter, as in the former, the whirling motion of the air is the effect and not the cause. The sand-spout—if I may be allowed to coin an expression for the sake of consistency—is a meteor of the deserts of Africa and Asia, which corresponds in every particular with the water-spout. During their progress they present all the features of a whirlwind, but they commence by a rotatory motion in the sand, which is raised into innumerable little cones, then assumes the shape of a column, and is raised high into the atmosphere, and from this spout falls the only rain that ever waters the desert, and which is precipitated in very large drops.

In the atmosphere, the third physical division of the earth, we have also two classes of meteors which correspond to the classes of the other two divisions, and correspond also to their general features, modified, of course, by the elastic nature of the substance on which the disturbing agent has to operate. The lineal storm of wind or rain, or both, including snow and hail, form the first class. They are always attended by two or more strata of clouds and wind, moving in different directions, and so soon as either stratum is exhausted, the storm is at an end.

The second class comprehends rotatory storms, as typhoons, hurricanes, pampers, etc., which move in horizontal circular gyrations, and seem to precipitate their water from the contact of vertical strata. This water they retain in the vortex of the spout until broken, when it descends in a deluge.

Thus the case is stated so far as ascertained, and now the question presents itself: "What is the disturbing element, the first cause, the prime mover in all those meteoric operations which evidently bear so striking a resemblance to each other." There is an element which is present in them all; this element is evidently their life and being. Let it be examined apart, and its ability to produce such results investigated.

Electricity is an imponderable body whose effects introduces us to an acquaintance with its existence. When excited or created—it is of no consequence which, in observing its practical operations—it separates into two distinct bodies or states, called negative and positive electricity. During their separation

they have a powerful affinity for each other, and the attraction between their bodies is very strong. Now, all nature is divided into two classes, conductors and non-conductors, and if a non-conductor is interposed between the separate bodies of electricity, they cannot unite, but remain attached close on either side of it, the attraction of the body operates through the non-conductor, although the fluid is unable to pass through. Now, let a conducting substance be brought into contact with both of them, and let this conducting substance have a continuous connection with itself, no matter how great the distance, no matter how complicated the contortions, the negative and positive electricity will instantly unite with a shock greater or less in proportion to the amount, and in proportion to the volume and conducting power of the medium of reunion. No electricity can be produced without the presence of water in some of its states, and water is always present at the reunion. Water is a conductor of electricity, except in a state below 13°, when it becomes an electric. Air is not a conductor at any temperature, but becomes a good conductor in proportion as it becomes saturated with watery vapor. Air is said to be saturated when it holds about two per cent., and it cannot contain any more, nor will it accept any more by evaporation no matter what heat may be applied. The lower stratum of atmosphere is always the driest, and it increases in humidity as we ascend. A vapor cloud that will remain suspended in the atmosphere cannot be formed by artificial means. These few axioms will aid the judgment materially in forming a conclusion.

Now, every evolution of the earth gives existence to enormous quantities of electric fluid, one kind always seeking the earth, and the other the upper air, the lower strata of the air holding very little aqueous vapor, forming an insulating medium between them, so that the earth and atmosphere combined form an immense electric battery, and certain portions of the matter of the earth form immense jars, where electricity is retained until connection is made with some conductor which forms a union and restores equilibrium.

Here then will be found the key to the secret cabinet of Meteorology. There are certain physical features on the globe which become as it were the circuit wires of this tremendous battery, and certain physical states of the atmosphere which form a connection, or insulate as the case may be. But some features, as mountains, are nearly always in connection, and their conductors go on accumulating heat from year to year until the last particle fires the train. Fusion commences, with fusion motion, when, instantly, the whole latent power of heat is called into activity and fuses every substance that comes within its reach. The body meanwhile expanding, the crust above it must shake and quake until it accommodates itself to the enlarged volume below. Sometimes it bursts through the crust and forms a volcano which lessens in a small degree the violence of the shock.

The principle must here be borne in mind, "that a solid body in a quiescent condition, (and a liquid in this sense is a solid) confined within a sufficiently strong envelope, will hold enough heat to dissipate it into gas without changing state."

It becomes necessary here to give a passing notice to a theory that has taken a firm grip of the scientific imagination, viz: That the earth was originally a molten mass and is gradually cooling down; that the crust now is say ten miles thick, and that once in a while, by some means not even conjectured, this crust gets broken and spews out its interior mass of molten matter. This stupid theory carries its own refutation. The earth being always subjected to the same condition of velocity, and the same balanced condition of weight, will somebody explain how it is that this crust gets broken? Or being broken—the earth under this condition being an enormous centrifugal machine—by what power is the outflow of

matter stopped? But Dana, than whom I know no higher authority, sets the matter at rest by actual demonstration. I quote from memory: "The mountain cones are invariably rocks of the azoic age, being the lowest stratum of the earth's crust with which we are acquainted, but all volcanoes have their beds higher up and generally in the rocks of the carboniferous age." The subsequent discovery "that all crystalline rocks are not of the primitive age, piles proof on the shoulders of demonstration." Now the rocks of the carboniferous age occupies a position about midway up the crust, say five miles above the lowest or azoic stratum. Will any advocate of this theory tell us why if it be the interior molten mass of the earth that feeds the volcano, the lowest stratum of rocks never come to the surface? Why is it that a particle of these rocks never make their appearance? The only recommendation that I can see for this absurd theory is one that is certainly not valid with the mass of scientific mind, namely: That it warps the whole trend of science, if I may be allowed the expression, into direct antagonism with revelation.

To return to the subject, we find the water-spout, sand-spout and warm vein presenting such phenomena as leave no doubt that the union of two opposite kinds of electricity is the primary cause, and leaving as little doubt that the agent is the same with that producing the phenomena of earthquakes. Then turning to the atmosphere, the lineal storm and the hurricane are found to present the same destructive features, which inevitably leads us to the conclusion that all meteoric convulsions in earth, water and air have a common origin.

Having got an understanding thus far, the two classes of meteors may now be reduced to one, keeping in mind that the conducting mediums are vast plains, and that the electric matter in re-uniting must roll over a core or center which increases as it progresses. If this plain lies horizontal in the earth it will cause an Undulatory; if vertical, a Rotatory Earthquake. If horizontal in the water, a warm stratum; if vertical, a water-spout; in the deserts, a sand-spout. If horizontal in the air, a lineal storm; if vertical, a hurricane. And thus the whole operation of terrestrial change is traced to a single law—the necessity of electric equilibrium.

The Chinese Woman's Telegraph.

During the recent visit here of the Chinese Ambassadors, one of them stated in reply to the inquiries of a physician, "that it was not customary in China, except among the lower classes of the people, for the doctor to see or touch female patients. In order to ascertain the pulse of the sick woman, a string is tied around her wrist and extended outside the window to the doctor, who holds the string between thumb and finger, and by this sort of telegraph is enabled to count the pulsations. This seems a ludicrous plan, but it is far less mischievous than our custom of admitting men doctors to the private apartments of females. The opportunities for the medical education of women in this country are yearly increasing; and we hope the day is not far distant when the ladies will be able to rout the men from the sick room, and compel them to stand out in the cold, under the window sill. In China only women nurses attend during child-birth.

OFFICIAL information has been received of the completion of another section of twenty miles of the Union Pacific railroad, extending to the eight hundredth mile post west from Omaha, and about 300 miles this side of Great Salt Lake city. The section having been approved by the Government commissioners and the Secretary of the Interior, it is recommended that bonds be issued to the Company.

THERE passes between London and Bombay 30,000 telegraphic messages per annum, at an average cost of \$27 each, or \$810,000 a year.

Insurance.

To the Editor Journal of the Telegraph:

DEAR SIR—With due admiration for Loganne's "gay and pretty little head," and respect for her feelings, I must say I think her rather severe (not intentionally, of course).

"They are so selfish and indifferent sometimes, etc." We will admit they are—for argument's sake. Is there not a reason for it? I think the error is with the *instrument* of organization itself. Every operator becoming a member would deem himself in honor bound to comply with every assessment made. The salary of the great majority of operators ranges from forty to sixty dollars per month. There is probably not more than one in a hundred of this class of operators who would join an association which would demand of them one dollar per month, and could demand more. I think they are justified in doing so.

There is another objection. The instrument says: "Any person may become a member provided they are or have been employed in the telegraph business." The majority of operators rarely follow it more than from three to five years. If I join this association and pay my assessments for three or five years, and then change my occupation, am I still a member and entitled to its benefits, or am I not? This the *instrument* leaves in doubt.

My plan would be to assess every member one per cent. of his salary per month, and *no more*. With this understanding the membership could be increased to any extent. The enlarged membership would make the liabilities more frequent but the assessments would be so much greater in proportion that it would probably be policy to make the donation a stated amount. By this means the donation could be liberal, and, at the same time, leave funds in the treasury. I would favor reducing initiation fee to one dollar or fifty cents. What is wanted is a start. Better obtain one hundred members at fifty cents each than five or ten at one dollar and a half.

I sincerely believe if changes something like the above were made, and then each superintendent see how many members he can get, that the numbers could be largely increased. Respectfully, &c.,

OHIO.

NOTE. To assess operator's salaries "one per cent. a month" is more than any usual mortality is ever likely to require. Only one death from disease has occurred during the current year. Persons once admitted as members remain so until they withdraw. Withdrawal from business does not require exclusion.

Check Errors.

For the sake of good feeling between the employees and the Company, we should like to ask: Why is it that in the inevitable monthly receipt of check errors no mention is ever made of the amount which we overcheck ourselves with other offices?

We think in all fairness that we should be permitted to see both sides of the account; not that we wish the Check Department to place both the discrepancies on one sheet, and charge or credit us with the difference, as the case may be, but that they make out two slips and thereby enable us to ascertain with greater facility the amounts which we *must* sometimes inadvertently overcheck ourselves.

We do not wish to use these errors beyond what is right and proper to an equitable settlement of our accounts, and will expect to return vouchers and explanations for mistakes in our favor as well as for those against us.

No one will, we think, venture to say that such errors never occur; for one of us, at least, has purposely and on several occasions overchecked himself small amounts, and that was the last of it.

BATON ROUGE.

NOTE.—The immense labor of the Check Depart-

ment has compelled the adoption of the Government system of checking only errors against the Company, leaving managers to look out for errors against themselves, which are always allowed when proved. Thus both sides are left to watch their own interests, and with equal facilities for ascertaining the facts, besides economizing labor. To do more than this would require double the present force in the Check Department and would not be so promotive of care as the present arrangement. Such, at least, is the opinion of those whose long experience entitles their judgment to acceptance and adoption.

Personal.

Cyrus W. Field returns from Europe on the *China*, about the first of November.

Messrs. Webb and Morse have been added to the night force of the Western Union office, Cincinnati.

Mr. Charles Taylor, formerly of Adams Express office, Cincinnati, has gone to Memphis.

W. H. Stanton, of St. Louis, has accepted a position as night operator at Hillsboro, Ill.

W. P. Baker, who went to California some time since, has returned to Cincinnati, not liking the way of the people on the Pacific coast.

S. P. Peabody, a favorite Cincinnati operator, has resigned for the purpose of entering other business.

Charles Kelley, of the Western Union Company's Schenectady office has been obliged to go home on account of illness. His position is being filled by H. A. Brasie, of Sherburn, N. Y.

W. D. Phillips, late night operator at the bridge office, Albany, has accepted a position in the freight office, Syracuse. D. W. Daley, of Huntington, Mass., is his successor.

W. B. French, late of New York, is filling the place of Teneyck Fonda in the Fonda, N. Y., office for a short time.

F. Evans, late with the A. & P. Co., has accepted a position with the Western Union Company in their Albany office.

H. M. Hoffman, Manager, Frederick, Md., resigned Sept. 1st, and J. F. Morrison appointed Manager of that office.

W. J. Bassett, Manager, Cheshire, Conn., resigned, and P. G. Payne has been appointed in his stead.

Office at Cohasset, Mass., reopened Sept. 7th, A. B. Churchill appointed Manager.

Office at South Dennis, Mass., opened Sept. 1st, L. B. Nickerson appointed Manager.

Jas. B. Crocker, Manager, Yarmouthport, Mass., resigned Sept. 1st, and Miss Celia E. Davis appointed in his stead.

Electric Clock in London.

A remarkable clock has been erected for public use at the top of the offices of the Liverpool and London and Globe Insurance Companies, at the junction of Cornhill and Lombard streets, where it forms one of the most conspicuous objects to be seen in the city. The *Mechanic's Magazine* contains the following description of it:

"The object of the Electric Clock Company, by whom it was erected, was to make the 'globe' do duty as a clock face; some of its convexity has, therefore, been sacrificed, but the result is a novel and beautiful object, the interest of which is only exceeded by its utility. The globe is surrounded by gilt stars which indicate the hours, and by the shape of the dial so much light is thrown upon them that they are visible by night and by day, while the pointers contribute greatly to the general effect of the design. The clock requires no winding up. The dial is illuminated by Schaeffer's patent double burners: and by an ingenious apparatus the gas is turned off every morning and evening two minutes earlier and two minutes later every day as the days are lengthening or shortening, and it is adjustable as well for the foggy days of November as for the light nights of summer."

He Does Insure.

"Insured!" "insured!" dear me, I think
Your tongue would some day stop
From always running on this theme,
Do let the matter drop!
You very soon will grow to be
As much a bore as Doan,
Who is a first-rate sort of chap,
But always "on the loan."
It used to be, "Say, Tom, my boy,
Just let me have a V
A day or two; I'll do the same
Sometime you ask of me."
Then, soon, he used to ask an X
And other little sums,
Until his face would make such thoughts
As, "Here that fellow comes!"
And now I shun him like the plague
For fear he'll ask for more,
And always as he enters one
I leave the other door.
But I "won't listen," won't I? ah!
Why don't I hear enough?
You're always talking of this thing
And giving it a puff.
"Don't know a thing about it," la!
Now really that is good!
I guess there is not much of it
Worth being understood.
Cheap? y-e-s, no doubt, a dollar, and
Another half to that,
And then a dozen deaths a year,
I'd sooner buy a hat.
Or else a pair of "patent" boots,
Gloves, perfume for the hair,
Or else some like extravagance—
Bah! I'm no millionaire.
What's that, "I have no charity?"
I say that is not true;
For that is just one reason why
I'll not give ear to you.
Why, boy, I live on salary,
And still my money goes
So fast to widows, beggars, alms,
And what else goodness knows.
Until my wife dines in my ears
"Save! save!" and beggars "give!"
And what to do between them both
I know not as I live.
"I ought to try economy,
Or I'll be always poor!"
That's very fair advice, I think,
So I will not insure.
"Save for the future, too." How's that?
Pray just be good enough
To tell me how with my stipend
You'd pay heed to such stuff?
"Insurance is the simplest mode;"
"Spend Charity in that."
Oh, that's it! eh! at last I know
What you are driving at!
Hm! yes, I see, upon my word
That shows it in new light,
How selfish I have been indeed,
My boy I think you're right.
I'm always ready (*thus*) to own
When I have been a dunce,
Let's see, eight shillings—twelve—now there!
Put down my name at once.

LOGANNE.

Cooking by Sunlight.

The *Scientific Review*, speaking of the extraordinary heat and drouth experienced in England, says: "The southerly winds have prevailed for an unusually long interval, and the weather has consequently been very hot and very dry. On the 22d of July it was possible to cook a beef steak on the south side of Westminster Bridge by the heat of the sun's rays alone. The apparatus employed was of a very simple kind: it consisted of an empty cigar box, the inside of which had been blackened, and the top closed with three panes of glass about one inch apart. In the course of twenty minutes the steak was done on both sides, while a few potatoes were baked around it."

Mr. Brooks has contracted to insulate the wires of the Western Union Telegraph Company between New York and Harrisburg, and is now engaged on that work. After so many years' study, with the added experience of other inventors, he can scarcely fail to accomplish his undertaking successfully.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, OCTOBER 15, 1868.

Wise at Last.

With the restoration of the cable of 1866 comes a new proof of advancing civilization in the abrogation of the rule by which a word was understood to be five letters. An order, which will be found elsewhere, directs that after November 1, words will be counted as such irrespective of the letters they contain, and thus "wheat" and "whisky" will be sent for the same price. John Bull is a very slow gentleman and stubborn in his ways, but is capable of enlightenment, of which we regard this new order as a cheering indication.

Cook's Telegraph.

We have before us, as we write, some very beautiful specimens of printing by Cook's improvement of the late Gaetano Bonelli's automatic printing apparatus, just received from Paris. The printing is done in fine bold letters, the words well compacted and spaced, and printed—not on a continuous strip, but line under line as in a printed circular. It is certainly a very admirable result, and indicative of a perfection in telegraphy and a use of the subtle powers of electricity which must enhance the acceptability of the telegraph to the public. The great advantage of the autographic process is that it renders error next to impossible, or rather, that it does not leave to the action of outside causes, or the use of arbitrary characters whose relations to each other may be misunderstood, or to the vagaries of an operator's brain as he manipulates his messages, letter by letter, the opportunity to change their composition. The message is set up and compared before it is transmitted, and if it goes at all, must go exactly as first prepared.

The paragraph before us is one of 35 words, transmitted in 20 seconds, a speed equal to 315 messages of 20 words each per hour. This fact is suggestive of a future in which the entire labor of our offices will be changed, and the operation of transmission become simply mechanical and comparatively unlaborious. We will not be surprised if, in time, parties, who prosecute much of their business by telegraph, should supply themselves with telegraphic type, arrange their messages for transmission in a case adopted for that purpose, prove them before sending to the telegraph office, and the operator have nothing to do but pass them through the manipulating instrument. By such processes as these only can large quantities of matter be sent over the wires without the fatigue connected therewith, and, what is equally desirable, with the utmost assurance of correctness which mechanism can afford.

THERE was never more inventive activity in telegraph appliances than now. Of insulators there are several new forms. Of City Broker telegraphs we hear of half a dozen. Mr. Phelps and Mr. Boyle are perfecting printing instruments of increased capacity and simplicity, and many other devices are occupying the attention of busy brains.

Meteorological Observations.

There is an increasing desire apparent to adopt some system by which our great atmospheric changes may be watched and grouped. Europe has long cultivated this interesting field, and we have before us one of the circulars by which is conveyed, in a neat and easily understood formula, the direction of the wind at various points, the state of the thermometer, and all those indications by which changes are prognosticated. It is in the form of a map, embracing the shores of England, France, Spain, Denmark, Norway, &c., and is largely circulated.

The Telegraph Companies in the United States have, without charge, published, from time to time, the state of the thermometer and weather at numerous and far separated points, and have hoped thus to attract the notice of men of science and the department of Government to which such an undertaking would naturally be given, to the establishment of some well-considered system by which these observations could be utilized. To some extent attention has been aroused. Prof. Henry, of the Smithsonian Institute, Prof. Abbe, of Cincinnati, and others, are anxious to inaugurate measures to accomplish in the United States what has been so useful in Europe. We hope something practical and possible may soon result. The conformation of our country, the extended coasts both on the Pacific and Atlantic, to numerous points on both of which the wires extend, make this the finest field which the world presents for meteorological observations. The undertaking should, however, take some national form, and Congress should aid in its introduction. Whenever such a scheme is perfected, the Telegraph Company is ready with its wires and men to perform its part in such a work liberally and effectively. The intelligent communication of Engineer Donnelly, whose articles in the *N. Y. Herald* have been extensively read, is a contribution in the same direction, for which we thank him.

Telegraphers' Insurance Association.

It must be very gratifying to the members of the Telegraphers' Mutual Insurance Association to know that during the first year of its organization, now nearly closed, it has afforded genuine relief to the relatives of two of its members. We have already referred to the case of Seba B. Christie, to whose widowed mother the prompt payment of his policy was a comfort and relief. Mr. Hall, who was killed by a fall the night succeeding Christie's death, left the avails of his policy to a younger sister to whom it comes as a token of brotherly affection and an aid to her in her own struggles, much needed, and highly prized.

On the whole, the payment of the double assessment which these deaths occasioned has been prompt and satisfactory. Some have withheld payment through inability, and some because, as is always the case, earnest giving loses its relish. The places of these delinquents have, however, been more than supplied by additions, some 70 members having been added to the list since the assessment was made, while not over a third of that number have withheld their dues.

We commend again the association to all the fraternity, and trust to see its numbers largely increased.

WHATEVER may be said of the Morse alphabet, the fact of such a mass of work daily transmitted over the wires without, or with so few errors, is the highest testimony of its merit. We have desired the change of the c and r, and perhaps one or two other letters, but the successful use of the present form lessens the necessity. We do want, however, to have brought into use an autographic telegraph writer. In that we confess to have great interest, and desire to see its successful introduction.

To the Members of the Telegraphers' Mutual Life Insurance Association.

The second annual meeting of the Association will be held at 145 Broadway, N. Y., on Monday, Nov. 2d, at 5:30, P.M. The terms of the present officers will then expire, and new ones will be elected for the ensuing year. Members living at a distance, who may wish to vote, may send their proxies to the Secretary. Full reports of the condition and prospects of the Association will be presented.

D. R. DOWNER, Secretary.

The Broken Cable Repaired.

LONDON, Oct. 12.—The Direction announces that the cable, known as the 1866 cable, between Ireland and Newfoundland, was repaired at 4 o'clock Sunday afternoon, and is now in perfect working order.

Too Bad.

A message passing through the hands of a lady operator addressed to

"A. Gillespie, Clerk, Steamer Magnolia,"

was ungraciously written off as follows:

A. Gilles,
Ple Clerk,
Steamer Magnolia.

Now that is too bad, and must have been perpetrated somewhere toward noon when pies are warm and in demand.

On the same day a male operator slandered one of our "truly loyal" counties, by addressing a message to "Jacob Smith, Whitesboro, One idea Co., N. Y." That is as bad as the pie.

A MAN, very impatient about a pair of boots he had ordered, sent a message by telegraph to know "if the calf of that cow had yet been born out of whose hide his boots were expected to be made, and if not, why not, and when might the event be expected."

MR. WILLIAM WHITE, an operator in the Western Union office in Buffalo for some time past, died at his home (Dunnville, C. W.) on the eve of the 25th ultimo. Mr. White was much respected by all who knew him, and many mourn his loss.

THE enthusiastic article about the great discovery at Memphis, which has been in type for the last two or three months, waiting its chance for publication, is the work, of course, of a friendly editor, who wants to make the most of a very simple and, where conditions favor it, a very good thing. Alexander Bain worked in 1844 a printing telegraph between London and Wimbledon, some six miles, with no battery except a zinc plate at one end and a copper plate at the other. It requires moist earth to make it effectual, and we would like to see offices make the experiment to see how far they can use these simple elements, noting the power developed, and the rate of decomposition.

THE Manhattan Telegraphic Institute, 20 Fourth avenue, New York, and 219 Fulton avenue, Brooklyn, is under the direction of Parker Spring, one of the oldest telegraphers of the country, a good, genial fellow, who has seen telegraph life in all its phases. We think it was he who managed the balloon for observation for the Army of the Potomac, and has probably been higher up in the air than any other telegraph man, although some of them are still occasionally knocked "higher than a kite." Mr. Spring deserves success, and is abundantly qualified for the work he has undertaken. He used to be good in overtaking a train, and is not much the worse for twenty years' active service.

Telegraph Base Ball Clubs.**OWLS AND DAYLIGHTS.**

The base ball season being about to close we have been furnished the following scores of games played by the "Night Owls" of Cincinnati lately. They made a trip to Lawrenceburg, Ind., on the 15th of September, and played a game with the Enterprise of that place, being badly defeated by a score of 54 to 19. The Enterprise boys treated the Owls to a fine dinner, and the game was of the most friendly description. Subsequently the Owls beat the Osceolas of Cincinnati by a score of 19 to 9, and played a tie game with the Daylights, the score being called at the end of the fourth inning to enable the Daylights to get to work. The St. Louis telegraphers suffered a Waterloo defeat at the hands of the Atlantic third nine—score 64 to 16.

The Association for the Prevention of Gambling.

Its object is to save employees and others by keeping detectives in gambling houses, who report all who go there to their employers, and publish in all daily papers a monthly report, which warns them to keep away. It has closed up 318 houses in this way in the last six months. Most of the large houses in New York employ this Association, and no employee can long evade detection whose practices are dishonest or whose habits and haunts excite suspicion.

ROCKFORD, ILL., Oct. 7, 1868.

To the Editor of the Journal of the Telegraph:

A few days since a lady whose ancestors evidently had hailed from Cork, stepped into my office, requesting me to "send a message to Mishter Quigly for some money." After no little trouble in dotting it down to her satisfaction, check fixed, &c., she turned to leave, when an idea seemed to strike her. It struck me, too; I have scarcely recovered yet. She exclaimed: "Say, Mishter, can't yees jist tell Mishter Quigly to send a message back, and send the money in the message?" This upset my gravity, and I gravitated toward my frugal meal, with a much improved appetite from the merry humor into which my practical Hibernian customer had thrown me.

Yours, H. D. S.

THE automatic process in transmitting messages seems to be quite successful in England. We suppose this to be the punching process, by which messages are first punctured on paper and then rolled through under a connecting stylus.

MOST of the marriage notices sent to us are carelessly written. We are willing to credit this to the bewildered state of the parties concerned, but wish there could be some improvement. A signature to the note requesting publication is always necessary.

BORN.

September 27, to N. H. Rugg, manager of the Saratoga Springs office, a son.

MARRIED.

At the residence of the bride's parents, on Wednesday evening, September 30, by the Rev. John E. Cookman, W. W. Burhans to Ella E., only daughter of G. V. Rellay, all of New York city.

In Trenton, N. J., September 10, at the United States House, by Rev. Mr. Perry, L. R. Beers, operator Western Union Telegraph Company, Washington Crossing, N. J., to Miss Lucy Weller of Mauch Chunk, Pa.

Wood's Hole, September 17, in the Church of Messiah, by Rev. H. Carleton, Capt. Benj. Dexter, of Holmes Hole, to Miss Sarah L. Hinckley, daughter of Capt. Thos. Hinckley and Manager of the office of the Western Union Telegraph Company at that place.

DIED.

In Brooklyn, on the morning of the 9th instant, the infant daughter of W. W. Shipman, aged seven months.

In Albany, September 29, of consumption, Richard Gay, late manager of the Western Union Company's West Troy office, in the 27th year of his age.

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
October 15, 1868.

To all Offices on W. U. Lines—

ATLANTIC CABLE BUSINESS.—LETTER COUNT ABOLISHED.

We are notified by the Atlantic Cable Company that on and after November 1, 1868, messages will be counted by words only, without reference to the number of letters.

The following changes have occurred since Sept. 15, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Charles City, Minn., tariff same as Nashua, Iowa.
Ghent, N. Y., tariff same as Chatham, N. Y.
Gosport Depot, N. Y., tariff same as Suspension Bridge, N. Y.
Greenwich, or Union Village, N. Y., tariff same as Cambridge, N. Y.
Hilliards, O., tariff same as Columbus, O.
North Platte, Neb., tariff same as Ft. McPherson, Neb.
Ononwa, Iowa, tariff same as Liberty, Iowa.
Victor, Iowa, tariff same as Brooklyn, Iowa.
Washington, Iowa, tariff same as Iowa City, Iowa.
Wetumpka, Ala., tariff same as Montgomery, Ala.
New Canaan, Conn., reopened, tariff same as heretofore.

OFFICES CLOSED.

Kingston Springs, Tenn., Allegheny Springs, Va., and Beverly, Mass. Messages for Beverly will be checked to Salem, Mass., adding 25 cents for delivery.

GENERAL INFORMATION.

Hereafter all business for the following points in Cape Breton Island will be checked to Plaster Cove, N. S., at the rates here given.

The amount to be collected, whether on a message sent or received will be the "currency rate."

If a message is sent paid or collect it should be checked at "gold rate."

	Gold.	Cur.		Gold.	Cur.
Arichat,	12 & 1	20 & 2	North Sidney,	24 & 2	35 & 3
Bridgeport,	24 & 2	35 & 3	Port Hood,	12 & 1	20 & 2
Cow Bay,	24 & 2	35 & 3	St. Peters,	12 & 1	20 & 2
Hawkesbury,	12 & 1	20 & 2	Sidney,	24 & 2	35 & 3
Little Glace Bay,	24 & 2	35 & 3			

WILLIAM ORTON,
President.

OFFICE OF CHESTER, PARTRICK & CO.,
Telegraphic and Electrical Engineers.
No. 38 South Fourth street,
PHILADELPHIA, October 1, 1868.

DAVID BROOKS, Esq.:

DEAR SIR—We have used your Insulators on many of the Telegraph lines constructed by us, and consider it everything desired. All other devices hitherto used we consider imperfect, increasing the liabilities to error and the transmission of dispatches, and requiring experienced operators to work the lines in unfavorable weather.

Yours, &c.,

CHESTER, PARTRICK, & CO.

FREY'S SELF-CLOSING TELEGRAPH KEY.

"A perfect, simple, homogeneous trunnionless self-closing key."
—Journal of the Telegraph.

The Right of Manufacture in Foreign Countries for sale.

Address—

JOS. J. B. FREY, INVENTOR,
New York City.

WM. KIDD, C. H. PEIRCE,
A. BOODY, C. S. OTIS.

KIDD, PEIRCE & Co.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,
NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission.

S. S. STAFFORD'S

COMBINED

WRITING AND COPYING FLUID,

Labelled by me, for the last ten (10) years, ARNOLD'S FLUID

Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33 1/2 per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD,
Chemist, N. Y.

AMERICAN COMPOUND TELEGRAPH WIRE.

SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT IN

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.

BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

115 LIBERTY STREET,

SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1868.

General Agent.

STICKWELL & CO'S
EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the Parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES

S. S. STAFFORD,
Sole Proprietor, N. Y.

Curious Telegraphic Phenomenon on the Mississippi.

The Theory of Submarine Transmission Without Wires.

[From the Memphis Appeal, October 7.]

A case of local interest has lately come under our observation which has caused electricians here no little perplexity. We allude to the late obstruction and restoration of telegraphic communication with the trans-Mississippi. For some weeks past the cable has been working very irregularly. At intervals no communication could be had for hours, and all at once it would revive and the fluid would pass through it as usual. This state of affairs continued for several weeks, and at last communication ceased entirely. After several ineffectual attempts to revive it, it was determined to raise it and find out the reason for the cessation. The cable crossing at this point is considered one of the best ever laid in this country, having been manufactured originally for the Red Sea, but for some reason not used, and afterwards was purchased and laid down by the Western Union Telegraph Company, at a very heavy expense. The operation of "under running" and taking the cable up was successfully performed by Colonel Coleman and Captain Baker, in a steam tug with a barge attached. As it was raised, and at intervals of a few yards, a needle was driven into the cable so as to touch the conducting wire, and instruments were applied to test the soundness of the portion raised. When near this shore by this means it was discovered that the disturbing cause lay within a space of twenty yards between two points. This piece was cut out, the two ends spliced and the cable immediately worked throughout its whole length. The piece cut out was brought ashore and examined by Colonel Coleman and Captain Baker at their leisure, and developed one of the most singular facts in telegraphing that has ever come under their notice. On cutting the cable it was found that about four inches of the conducting wire had been burned out, and was gone completely. It is supposed that a severe shock of lightning had passed along the land line of wires, and had left them and followed the cable, burning this piece out in its passage. The curious and inexplicable part of the affair is the action of the cable after the burning. At times a current of electricity passed through, and communication was kept up between Memphis and Little Rock; then ceasing entirely for awhile, it would again revive, keeping up this fitful action, as we have stated, for some time before its total suspension.

Many theories and surmises are advanced by the gentlemen connected with the telegraph office here as to the explanation of this remarkable phenomenon, the only one of which is at all satisfactory is that of Colonel Coleman: That "a slight connection was formed between the burnt ends of the conductor by moisture which had penetrated the cable in sufficient quantities to keep up the circuit, there being a battery on the Memphis end strong enough to drive the electricity through at intervals." This, says Colonel Coleman, to whom we are indebted for most of the above facts, is a remarkable case and may never occur again. The question now naturally suggests itself, cannot some mode be established whereby communications can be passed through large bodies of water without a cable? It has been proven in this instance that messages passed to and from across the Mississippi without a metal connection. Let the scientific work it out.

This case is analogous to that of the Atlantic cable in 1857, in which were parts found where connection had been broken, and yet which had worked in the spasmodic manner so familiar to all who took interest in the record of that interesting attempt. The wire of the Memphis cable could not have been consumed without leaving more or less of metallic remains, either in particles or on the surface of the gutta percha which inclosed it or in vapor. Could moisture have entered, communication would not have been broken, although it might have been defective. The effect of the current would seem to be to increase the dryness of the chamber, if indeed any moisture could have been present, and the strength of the battery, in time, may have consumed the metallic surface or vapor which remained. There is no proof as suggested, that the current passed without metallic connection, and there is a great difference between water inclosed in an insulating tube and the water of a river where no such inclosure is possible.

Electrical Novelties.

Man has lately entrapped electricity into a great many curious functions. Of its public services we need hardly speak; telegraphs have become too familiar to be longer regarded as curiosities. There have been difficulties in the way of getting a good

and cheap source of electricity, which have barred the way to their extensive introduction; but some of these are removed, and we may entertain better hopes for the future. A celebrated London photographer has erected a magneto-electric machine for conducting some of his operations which require an intensely bright illumination, and has thus apparently become independent of the sun: in reality, he is using the solar rays which came to our planet thousands of years ago, for what is coal but "bottled sunshine?" A Birmingham electro-plating firm also set up a similar machine for depositing their precious metals; and a sugar refinery another for generating ozone to bleach sugar. An ingenious inventor has proposed to illuminate buoys and beacons by electricity, and a French firm has offered to light the English channel by the same means.

Quite recently M. Blondeau brought before the French Academy of Sciences the results of some experiments for ripening fruits by electricity. He electrified apples, pears, and peaches, all of which ripened under the influence of the fluid, while other fruit on the same trees remained far from ripe. He electrified seeds and grains by steeping them in water and submitting them to the action of a powerful current. Peas, beans, and wheat were so treated and sown in good soil. By the side of them were sown similar seeds not electrified. The former sprouted sooner than the latter, developed more rapidly, and were more vigorous. Most mysterious of all, some electrified beans grew upside down, the roots in the air and the stem in the soil.

The most curious application of the electric light was that attempted lately at one of the Paris theaters. The actors were decked with glittering crowns, and, to add to their brilliancy, they were so made that a chaplet of electric sparks encircled the wearer's head, the necessary current being supplied and led to the coronet from a concealed battery. But the "sensation," pleasing enough doubtless to spectators, painfully verified the truth of the Shakspearian maxim touching the uneasiness of the head that wears a crown, for one of the performers was grievously injured by the passage of the current through his or her head, instead of through the star-spangled ornament. Not quite so striking, but still curious, are the electrical jewels made by MM. Thouve and Cudet-Picard. These consist chiefly of scarf pins and brooches, representing heads of men and animals which roll their eyes and work their jaws. Some are in the shape of tiny soldiers which beat drums, rabbits that play on tambours, and birds that flap their wings and fan their tails. They are worked by tiny electro-magnets concealed within them, and connected by fine wires with little batteries carried in the pocket or elsewhere about the dress.

A "Tell-Tale" Apparatus.

At the vast establishment of Dolfus, Mieg & Co., are four night watchmen, and they have to make ten visits to ninety-three stations, in all 930 visits. On commencing his rounds a card is delivered to each watchman which he carries about with him. At every station he has to visit is a frame the size of the card, at which, at a given time, a stamp presents itself and impresses a mark on the card. The marks are so arranged that when the whole are printed they form one complete design. Any delay or omission on the part of the watchman leaves a blank space on the card, which tells the hour at which the man failed in his duty. When going off duty, the men push their cards into a kind of letter-box, and as this is done the exact time at which they are delivered is printed. All this contrivance is completely beyond the men's control, and there is no possibility of tampering with the mechanism.

CON.—What two ladies are always to be found in telegraph offices? Mag n Et.

An Alarm.

We have in our house a little invention which we have several times noticed in other dwellings, but having no direct interest in its operation we have not paid much attention to its working. It is a little thing, and stands upon a little shelf in our sleeping room; but in an emergency it is capable of making a good deal of noise, and imparting useful information. It is an electric alarm, with wires entirely concealed from the eye, and which run from it to the doors and windows and scuttle of the house; and should any of these be disturbed, the alarm is at once sounded. By means of a "tell-tale" it can be ascertained at once in what part of the house to look for the disturbance.

The other night, before retiring to bed, we had the assurance of the servant that everything was close and secure. We set the alarm, but instantly it set to ringing, and we knew that something was wrong, and upon examining the "tell-tale" we found out where to look for the cause. The laundry window was dropped about an inch, and the little machine would not keep still until the matter was made right.

By the use of this little apparatus, thousands of dollars' worth of property have been saved from burglars.

Bridging the Great Rivers.

It is only within a few years that the project of bridging the Mississippi, or any of the larger tributaries, has been thought at all feasible. But the public have lately acquired a passion for bridges. A bridge over the Ohio was completed a little over a year ago, at Steubenville. A bridge at Wheeling, to connect the Baltimore and Ohio and Central Ohio railways, was built some years ago. A third bridge is under way at Parkersburg, to connect the West Virginia and the Marietta and Cincinnati railroads. A fourth bridge has just been completed at Cincinnati, at a cost of \$1,750,000. A fifth bridge is projected at Louisville. In addition to those built and projected over the Ohio, the largest tributary of the Mississippi, the great "Father of Waters" itself is to be bridged at Dubuque, Galena, and possibly at St. Louis. We live in a fast age. The people cannot wait "to be ferried over the stream," but prefer to walk over it hastily and "dry shod."—*Industrial Gazette*.

Great Discovery—Wonderful Improvement.

For months past we have longed to lay before the public the fact that a most wonderful discovery had been made in the art of telegraphing by two of our fellow citizens, George M. Dugan and Booker Ford, and Col. Coleman, of Memphis; and shall now proceed to record what we have seen in operation at the telegraph office in this place for weeks past. The discovery made does away with all the jars and fluids heretofore used in telegraph offices, and a current of electricity sufficiently strong for all purposes is drawn from mother earth by means of one sheet of copper and one sheet of zinc, which are buried to the depth of two feet, and having about four inches of earth between them. To the copper plate wires are attached, and the current thus procured seems inexhaustible. The operators at the telegraph office here long since dispensed with fluids of all kinds, and every message sent from Bolivar now is recorded by an instrument which receives its power from the buried battery, and which consists of nothing but one sheet of copper and one of zinc. The inventors have applied for a patent, and it is hoped that their prayer will be speedily answered, as this discovery of theirs is destined to work a most wonderful change in the art of telegraphing. Hereafter, we shall endeavor to give a full and complete account of this truly great discovery, and are proud to say that to Hardeman county belongs the credit.—*Bolivar Bulletin*.

Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postage, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

Western Union Telegraph Company.**BOARD OF DIRECTORS.**

D. N. Barney, New York.	Moses Taylor, New York.
R. S. Burrows, Albion, N. Y.	E. D. Morgan, New York.
John J. Cisco, New York.	W. E. Dodge, New York.
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John D. Caton, Ottawa, Ill.	C. Livingston, New York.
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E. Creighton, Omaha, Neb.	B. R. McAlpine, Rochester, N. Y.
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Wilson G. Hunt, New York.	J. H. Wade, Cleveland, O.
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O. H. Palmer, New York.	Alfred Gaither, Cincinnati.

Le Grand Lockwood, New York.

OFFICERS.

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Hiram Sibley,

N. Green,

B. R. McAlpine,

Vice-Presidents.

O. H. Palmer, *Secretary and Treasurer.*

W. H. Abel, *Auditor.*

R. H. Rochester, *Assistant Treasurer.*

Marshall Lefferts, *Engineer.*

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William Hunter, *Superintendent of Supplies and General Purchasing Agent, New York.*

A. H. Watson, *Storekeeper, New York.*

M. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.*

CENTRAL DIVISION.

Anson Stager, *General Superintendent.*

Residence, Cleveland, Ohio.

ASSISTANTS.**Superintendents of Districts.**

District	Superintendent	Residence.
District 1	J. J. S. Wilson,	Chicago, Ill.
" 2	R. C. Clowry,	St. Louis, Mo.
" 3	W. B. Hibbard,	Omaha, Neb.
" 4	T. B. A. David,	Pittsburg, Pa.
" 5	R. P. Wright,	Cleveland, O.
" 6	John F. Wallick,	Indianapolis, Ind.
" 7	George T. Williams,	Cincinnati, O.

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Thos. T. Eckert, *General Superintendent.*

Residence, New York City.

ASSISTANTS.**District Superintendents.**

District	Superintendent	Residence.
District 1	Jesse Hoyt,	New Glasgow, N. S.
" 2	Robert T. Clinch,	St. John, N. B.
" 3	James S. Bedlow,	Portland, Me.
" 4	George W. Gates,	White River Junction, Vt.
" 5	Charles F. Wood,	Boston, Mass.
" 6	George B. Prescott,	Albany, N. Y.
" 7	S. B. Gifford,	Syracuse, N. Y.
" 8	D. H. Bates,	Philadelphia, Penn.
Metropolitan District	J. C. Hinchman,	New York City.
B. & O. Railway District	A. G. Davis,	Baltimore Md.
Erie Railway District	W. J. Holmes,	New York.

SOUTHERN DIVISION.

John Van Horne, *General Superintendent.*

Residence, Louisville, Ky.

ASSISTANTS.**Superintendents of Districts.**

District	Superintendent	Residence.
District 1	J. R. Dowell,	Richmond, Va.
" 2	J. W. Kates,	Lynchburg, Va.
" 3	J. A. Brenner,	Augusta, Ga.
" 4	C. G. Meriwether,	Mobile, Ala.
" 5	James Compton,	Jackson, Miss.
" 6	James Coleman,	Memphis, Tenn.
" 7	Thomas Johnson,	Corinth, Miss.
" 8	Geo. W. Trabue,	Nashville, Tenn.
" 9	L. C. Baker,	Little Rock, Ark.
" 10	G. M. Baker,	Shreveport, La.
" 11	D. P. Shepherd,	Houston, Texas.
" 12	D. Flanery,	New Orleans, La.

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Manufacturers and Agents for every variety of

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AND ALL SUPPLIES FURNISHED PROMPTLY AND AT

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Particular attention given to the

CONSTRUCTION OF PRIVATE AND OTHER TELEGRAPH

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CHAS. T. & J. N. CHESTER,

104 CENTRE STREET, N. Y.,

TELEGRAPH ENGINEERS,

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AND EVERY DESCRIPTION OF TELEGRAPH SUPPLIES.

Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

A. S. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office.)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States

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11 DEY STREET, NEW YORK,
MANUFACTURERS OF
TELEGRAPH INSTRUMENTS
AND
MATERIALS OF EVERY DESCRIPTION.

We invite all Telegraphers to a close inspection of our Work.

WE ARE PREPARED TO CONTRACT FOR THE ENTIRE
CONSTRUCTION OR EQUIPMENT OF TELEGRAPH
LINES OF ANY EXTENT DESIRED.

OUR WORK WILL BE DONE PROMPTLY.

And it is particularly requested that any goods sold and recommended by us, not proving satisfactory, SHALL BE RETURNED.

We have on hand an assortment of other makers Instruments besides our own, and are prepared to supply them at their own prices—

BRADLEY'S,
CLARK'S
HALL'S
WILLIAMS'

Or any other, excepting such as we know to be of inferior quality.

OGDEN'S IMPROVED CARBONS
WITH THE
IMMERSED PLATINUM CONNECTION,

Make, beyond question, the most perfect Battery yet produced. We have abundant testimony of their GREAT SUPERIORITY OVER ANY OTHER.

We particularly invite attention to our whole arrangement of the
CARBON BATTERY,

Proving, as it does, that as much strength may be obtained from this Battery as the Grove, with far less expense.

DR. L. BRADLEY,
No. 7 EXCHANGE PLACE, JERSEY CITY, N. J.,

Keeps constantly on hand and for sale his

IMPROVED TELEGRAPH INSTRUMENTS,

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which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed.

His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1855. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine.....	\$19 50
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Medium Box Relays.....	17 00
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Main Sounders same as the above, with heavy armature lever, without local connections.....	75 cents less
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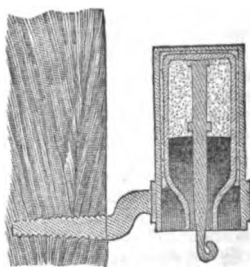
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JOHN POLHEMUS, Printer and Stationer, 102 Nassau St., N. Y.

JOURNAL OF THE TELEGRAPH.

NO. 24.

NEW YORK, NOVEMBER 2, 1868.

VOL. I.

MEMORIES.

PORTLAND, Me., Oct. 23, 1868.

DEAR SIR—While reading your reminiscence in the last issue of the JOURNAL, I was reminded of several hair breadth 'scapes and comical incidents which have occurred within my own experience, one of which I will give you. If you like now and then an off-hand sketch, I shall be happy to contribute.

In the month of April, 1857, a fearful gale sprang up one Sunday night, which prostrated the wires between Portland and Bangor, in a most discouraging manner. Taking a crew of men with the necessary materials, I started from Bangor on the early train, dropping a man at the stations as we went along, to foot it back and mend the break. I saw some fifty breaks within 75 miles, besides numerous crosses and trees on the wires. When I arrived at Lewiston, something over 100 miles from Bangor, I ran to the office and found it was O. K. to Portland. I at once telegraphed repairman Pierre to take the train and go through to Waterville without stopping, and I would meet him on his arrival there. This Pierre was a model repairman—always ready and willing, and not only anxious to do two men's work in a day, but generally did it. I had just time to jump on to a freight going East, and, as luck would have it, business was light that week on the road, and I pressed the conductor and engineer into service. They stopped the train at every break and helped me repair, and, when the regular passenger train overtook us near Waterville, I jumped on board, and, in a few moments found the wires were O. K. to Waterville. As soon as possible I obtained a hand car, and hiring a couple of Frenchmen to propel it, started with Pierre for a night "raid." It happened to be a bright moonlight night, the only one during that whole moon.

About midnight we were between Clinton and Burnham. The Frenchmen were clearing a heavy tree from the wires, and Pierre was some distance in advance, on top of a pole. I was near by, endeavoring to extricate the wire from a mass of roots in which it had become entangled, when I was startled by a crackling in the woods, like the stealthy tread of some heavy animal on the dry twigs. Involuntarily grasping my hatchet, I stood with ears and eyes wide open, and as, I peered around, I caught sight of what seemed to my excited imagination to be two black heads slowly and cautiously appearing above the clump. I thought to myself, "here is a situation for the father of a family!" It was of no use to run, for, as it appeared to me then, there was the bare (bear) fact of eight legs against two; but, as the black heads emerged and their bodies came into view, I saw that they were not bears at all, but two good-sized boys. The next instant I was horrified by seeing them raise their guns and take deliberate aim at Pierre, who was away up on the pole, quietly attending to his business, and utterly unconscious of the danger which menaced him. Like lightning it flashed into my mind that they took him for a bear, and I gave a yell which must have astonished all who heard it. It had the desired effect, however, and I came out of the wood and

explained to the boys that it was a "human" up that pole, and that I objected to their giving him a double dose of blue pills, as I didn't think his diaphragm would stand it.

Pierre was in a high state of wrath when he discovered how near he had come to having his connection broken, and he delivered a small speech from his cedar pulpit, which was anything but complimentary to the moonlight huntsmen. He advised them to go back to their muskrat hunting, and not attempt to shoot bears with homœopathic pills. The boys apologized to the best of their ability and flitted.

It was a narrow escape, but we could not stop to moralise. We kept on with our work, and made twenty miles that night, removing some fifty trees from the wires, and mending numerous breaks. At half past 10 A.M. we had the satisfaction of feeling the current both ways, and knowing that the wires were in working condition through. B.

Correspondence.

The Earth Battery.

To the Editor Journal of the Telegraph:

In your JOURNAL, of the 15th October, you give an account of an experiment from the *Bolivar Bulletin*, by Messrs. Dugan, Ford and Colman, under the caption of "Great Discovery—Wonderful Improvement." The editor of the *Bulletin* was doubtless ignorant of the fact that the experiment is not new. Prof. Morse, as Director of the Telegraph, directed Mr. Vail, in the year 1844, to make some experiments which he had conceived for the purpose of ascertaining the minimum of battery power necessary for operating the telegraph.

Mr. Vail, in his published account of these experiments, at pages 43 and 44 of his work, says:

"The first experiment made was to ascertain the number of cups absolutely required for operating the telegraph. Eighty cups had been in use. Upon experiment it was found that *two cups* would operate the telegraph from Washington to Baltimore. This success was more than had been anticipated, and urged on further experiments, which eventually proved that *the earth itself furnished sufficient galvanic power* to operate the electro-magnet *without the aid of a battery*. In the first experiment a *copper plate* was buried in the ground, and about three hundred yards from it a *zinc plate* was also buried in the ground. To each of these plates a wire was soldered, and properly connected with the key and electro-magnet of the register, the battery not being in connection. Upon manipulating at the key, it was found that the electro-magnet was operated, and the pen of the register recorded. This led to another experiment on a more magnificent scale, nothing less than that of *using a copper plate* at Washington and the *zinc plate* at Baltimore. Here, too, success followed the experiment, though with diminished effect. By the application of a more delicate apparatus the electro-magnet was operated, and the pen of the register recorded its success. From these experiments the fact appears conclusive that

the ground can, through the agency of metallic plates, constantly generate the galvanic fluid."

Mr. Vail, in a note on the same page, says: "Mr. Bain, in 1840, was the first to use the ground as a source of electricity in conjunction with its conducting power as a circuit, and Mr. Vail, in an experiment in 1844, succeeded in operating the electro-magnet, with its armature attached to a lever, without any battery"—that is, *ordinary battery*. The fact, therefore, that a battery (for it is a *battery*) can be constructed by burying the positive and negative plates in the ground is not new. But its *practical* application, that is, its *advantageous use* for telegraphy, is by no means clear. The galvanic effect is in proportion to the consumption of the zinc, as in the ordinary battery, and it is doubtful if the power of such a battery is generated, and the consumption of zinc used in the most economical manner, by this arrangement. TEL.

PROFESSOR WHEATSTONE has received the honor of Knighthood.

Additional Honors to Prof. Morse from Denmark.

In another column we have alluded to the fact that England claims the position of having "given the modern telegraph to the world." The honors conferred on the American inventor of the telegraph by all other nations except England, would seem to prove very conclusively that her claim is not acknowledged out of her own dominions. There are few Americans who have received so many honorary proofs of the regard of the principal nations of Europe as Prof. Morse. The usual mode of honorary acknowledgment, is by a decoration electing to a position in some of the honorary orders. Prof. Morse has received from different sovereigns no less than *six* decorations. The *Nishan Iftichan* from the Sultan of Turkey (or *order of glory*); the cross of a *Chevalier of the Legion of Honor* from the Emperor of the French; the cross of a *Chevalier of the Order of St. Maurice and Lazarus*, from the King of Italy; the cross of *Chevalier of the Order of the Tower and Sword*, from the King of Portugal; the cross of a *Knight Commander (de numero)* of the order of *Isabella the Catholic*, from the Queen of Spain; the cross of a *Chevalier of the Order of the Dannebrog*, from the late King of Denmark; and the intelligence has just reached us that Prof. Morse has been promoted to be a *Knight Commander* of the first class in the same order by the present King of Denmark, Christian the IX.

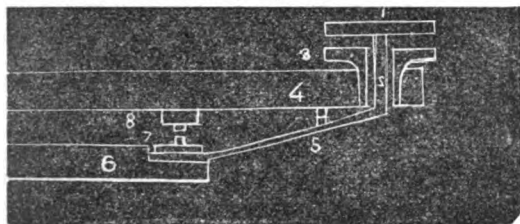
In Austria, Prussia and Wurtemberg also, the sovereigns of those countries have conferred upon him the *Scientific Gold Medal* of their respective nations, and in 1858 a special congress by ten of the European nations was convened at Paris at the instance of the Emperor Napoleon, to devise a *collective mark of acknowledgment* to Prof. Morse, which congress, under the presidency of the late Count Walewski, voted him, as an *honorary gratuity*, 400,000 francs. These facts at least show that the American invention is magnanimously acknowledged on the continent of Europe.

Telegraph Keys Once More.

To the Editor of the Journal of the Telegraph:

DEAR SIR: It is now some nine months or more since your correspondent first opened the discussion of telegraphic keys. The very considerable attention which has been given to the matter is my excuse for returning to it again, for I am anxious to shield the subject from the distrust which will inevitably overtake it if the present line of action be long pursued—distrust on the part of the profession, and disgust on that of the inventive genius which is now running riot and to waste.

It is unreasonable to expect the exclusive adoption of automatic circuit-closing keys, for on through lines they would possess no advantages which are not now obtained by the ordinary instrument, and would have to combat the prejudice natural to the introduction of a new and untried article. Hence, I am not in favor of a sudden and radical change in so important a part of the Morse mechanism as the key, as some of my friends appear to be, and hence, also, the pleasure which I take in introducing to your readers the circuit-closer designed by Mr. E. W. Ingraham, manager of the Pittsburgh and Connelville Railroad Company's line.



The only material change which Mr. Ingraham has made, it will be noticed, is in the knob, which is identical with that proposed by Mr. Gillespie. It is composed, as usual, of vulcanized rubber, but formed in two parts by being split horizontally, and having to the upper disk (1), a metallic or other rod (2), which passes through a circular opening in the lower disk (3), and key lever (4), and is attached at its lower end to the spring (5) of brass or steel, which reaches, either in a straight line or by a curve, with its convexity upwards, to the body of the key (6), to which it is united by the anvil (7), upon which the hammer (8) plays, in the ordinary work of manipulation. Near the junction of the rod (2) and the spring (5), there is attached to (5) a small piece of platinum wire, which, by the upward tension of the spring, is kept against a similar point fixed in the key lever above it—thus at all times giving an admirable connection, similar to that of the Caton key, and very much superior to the sliding contact between brass and brass, so largely in use.

Upon taking hold of the key to commence writing, the operator will necessarily separate these points by forcing the upper disk of the knob (1) upon the lower disk (3), and as it is necessary, in order to write firmly and correctly upon any key, that the knob be held securely, the operator will be obliged to keep 1 and 3 together during the time he is manipulating, and thus secure as open a circuit as though he had flung wide the switch in the usual form of key; the instant, however, he releases the knob, the two disks are forced apart, and the circuit surely and securely closed. I have been assured by Mr. Ingraham, who has been using one of these keys for more than six months, that there is not that strain on the muscles which the idea of the spring (5) might at first lead one to expect, but that the hand at once becomes accustomed to it; and I am convinced, from my own experience with raw operators, that its use will tend very materially to improve the writing of "plugs," by securing firmer manipulation.

The invention consists, then, in the use of a double disk knob, the lower of which shall be hollow at the center and through the lever, and of a spring moving

in unison with the disk, and connecting electrically the body and lever of the key, when unacted on by a force exterior to itself. It differs from the key of Mr. Gillespie in the absence of the little levers and helical springs, which, by needlessly and dangerously complicating the apparatus, are, I am afraid, fatal to its success in practice.

I have been led into describing this invention of Mr. Ingraham's, by a desire to show that a perfectly reliable instrument, differing but slightly from the usual form, is by no means an impossibility, and because I wish to protest against the re-proposal of the long since abandoned plans now being revived. I am convinced that a key which does not depend upon its trunnions for connections is necessary, but I am also convinced that such a key as Chester's, or the Western Union, or half a dozen other styles, so long as the spring remains between the body and lever of the key, and is not removed for an abominable gutta percha band strung over one end, the very worst possible position and substance, mechanically and electrically, which the "copying" habits of our operators have given us.

I am also convinced, and I judge there are few telegraphers who disagree with me, that any key which requires a change in the present method of operating lines will fail utterly. To talk of working the long "way" and railroad wires, upon which chiefly will automatic circuit closers be used, on the European "open circuit" plan, would be ridiculous if it was not so entirely and wholly impossible. We are not, it is true, advanced a very great way in the science of telegraphy in the United States, but it is rather unlikely that we will make much advance by adopting the old clothes of our transatlantic brethren. To those who wish to read by the back stroke of the sounder, I have, of course, nothing to say.

Respectfully, T.

A Century Ago and Now.

To the Editor Journal of the Telegraph:

BALTIMORE, October 25, 1868.

I have before me a copy, one of the original issues, of the *Maryland Gazette* of Thursday, May 5th, 1774. Printed by Anne Chatarine Green & Son, at Annapolis, Md. The latest news paragraphs are dated: Constantinople, January 3d, 1774, 4 months old, and London, February 5th, 1774, 3 months old, under which date appears the following: "Yesterday General Gage, Commander in Chief of his Majesty's forces in North America, was at Court, and had a long conference with his Majesty. The General will soon go again in that station."

"The place lately held by Dr. Franklin, of Post Master General in America, from which his Majesty was pleased to dismiss him on Saturday last, is given to Hugh Finlay, Esq., Surveyor of the Port there."

"Sensible judicious men think his Majesty has seen the last petition that will ever be presented to him from the aggrieved subjects of North America, and that the Privy Council, to their eternal honor, have reported on the last American petition that will ever be referred to that right honorable, impartial, and unerring board."

New York, April 25th, 1774, 19 days old, appears an article touching the great tea question which was agitating this country at that time.

Compare these dates with any of your New York daily papers of the present time, and the change must appear marvelous enough. D.

JOHN S. PARKER suggests, in an able essay on the subject of the variation of the compass, that they are caused by the revolution of the magnetic pole round the North Pole, and not, as popularly supposed, by the oscillation of the earth. This revolution of the magnetic pole is completed once in 640 years.

Religious Services by Telegraph.

The following comes without signature or date, and may have been sent as an experiment upon us, yet might have suggested a much more foolish thing. One of our wise scientific papers suggests the idea of preaching to people at their homes by a minister from his library. Prayer is another matter, however, which needs the sympathy of human voices, and for which the wires do not seem adapted. Yet if any manipulated prayer would drive obscenity from the wires, we would be glad to have it take the place of the executive order on that subject.

To the Editor Journal of the Telegraph:

Since the wires are used on the Lord's Day for commercial and other purposes, why not use them for religious purposes?

I suggest that there be on Sabbaths "morning service" instituted on the wires. Why may not the praying telegraphers (if there is a sufficient number of them on the different circuits), appoint a particular time to be at their instruments, and offer up fraternal praise to our common Lord, by transmitting a short prayer over the wires, the same as by kneeling together in one room, or any other place? To make of the wires an altar of praise, would make the ties stronger which bind us as co-laborers.

It would have a tendency to the extirpation of obscene language from the wires, which is carried on to a great extent by some in direct violation of the rules. It could in no way do harm, but would inevitably do much good; above all, it would advance our spiritual interests and promote the glory of God, if conducted in a proper spirit, which, of course, it should be or not at all. Who approves of the above suggestion?

Seba B. Christie.

To the Editor Journal of the Telegraph:

How little thought is given to the value of a life policy by those not insured. Indeed, some who are insured look upon it as money wasted. This was strikingly exemplified in Seba B. Christie's, my brother, case, who, from the time he received his certificate in the T. M. L. I. Co. up to the commencement of his illness, which terminated in death, was thoughtless of the benefits to be derived therefrom, and frequently remarked that he was young yet, in good health, and needed no policy upon his life for some years to come. But when it became apparent to him that death was inevitable, he called for his certificate, and requested it placed under his pillow. Every day it would receive a perusal from him, and when death was nigh he exclaimed: "I am happy I joined this association." It was noticeable that he took great comfort in being the possessor of a certificate, and thanked the projectors from the bottom of his heart.

How any telegrapher who has a care for the future can take this case to heart and still remain uninsured, is perplexing to solve. I hope that it may tend to enlarge our association, so that in time it may be counted by the thousands.

J. C. CHRISTIE.

A BATTERY which works for years has been invented by Herr Boettger. It retains its activity for several years, and is admirably adapted to the working of electric clocks, ringing of electric bells, &c. Each cell consists of a cylinder of thick plate zinc enclosed in a glass jar. In the centre of the cylinder is placed a bar of compact coke, and the intervening space is packed with a powder composed of a mixture of equal volumes of sulphate of magnesia and common salt, moistened with a saturated solution of these two substances. The salt mixture is moistened from time to time, and the zinc of one carefully joined to the coke of the rest, in the usual way.—*Artisan*.

Personal.

Jack Ingle, the veteran, has been given a position in Connorsville, Ind.

Mr. H. L. Smith has quit St. Louis and accepted a position in Memphis.

Mr. Dorchester of Chicago, has taken charge of Keokuk, Iowa office.

Billy Baker has resumed his old "posish" in Cincinnati office.

William E. Tinney has accepted a position at No. 145 Broadway, N.Y.

H. Cordes has been appointed manager at Millersburg, Pa., vice W. T. Jacoby.

A. M. Smith takes charge of the office at Bergen Point, N. J., vice George M. Lane.

L. J. Blades has been appointed to the office at Harrington, Delaware, vice T. J. Herbert.

Mr. W. L. Gentry, formerly of Cincinnati, takes charge of A. & P. Co.'s office in Nashville.

Fred. Gooderich of Keokuk, has been appointed to a position in Cincinnati, vice Gentry resigned.

Albert C. Snyder, late of New Orleans, takes charge of the Logan House office, Altoona, Penn.

Miss Minnie Mixsell has been appointed manager at Princeton, N. J., vice Miss Jennie Mixsell, recently married.

Mr. Gould, formerly of Leavenworth, has been placed on the night force in Western Union Cincinnati office.

J. A. Wright, a well known New Jersey telegrapher, is filling a position with the Atlantic and Pacific Company, at Albany.

John E. Zeublin, late of Pendleton, Indiana, takes a position in the Philadelphia office of the Western Union Telegraph Company.

Ed. H. Burd, formerly manager of the United States Telegraph Company's office Trenton, N. J., has been appointed manager of the Allentown, Pa., office.

The summer office at Lake George, N. Y., having been closed for the season, the operator, W. A. Crooks, has been transferred to the Lakeville (Conn.) office.

E. S. Grove has been appointed division operator Pennsylvania R. R., Philadelphia Division, vice J. W. Crouse, who has accepted a position with the Mississippi Valley Telegraph Company.

H. A. Bogardus, of Saratoga Springs, relieved from service by a reduction of force in that office, has accepted a situation in the Western Union Company's Springfield (Mass.) office.

J. B. Nelson, late of the Cornwall (N. Y.) office, has been appointed manager of the Western Union office recently opened in the New York Central Hotel, West Albany. This does not do away with the office in Hunter's Hotel, which still remains in charge of John Morgan.

The Western Union Company have recently strung a wire from Cambridge, Washington Co., N. Y., to Greenwich, and opened an office in the latter place. The operator in charge is Fred. Belden, late of the Mountain House office. It is the intention of the Company to immediately extend this wire to Schuylerville.

The Atlantic and Pacific Company have completed a wire to Saratoga Springs, and hired an office there, but are unable to get an operator to run it this winter, terms being all the receipts, minus the expenses. They have opened an office in Cohoes, which is in charge of John Gay, recently employed on the Harlem Railroad wire.

Mr. Charles H. Bogle, an accomplished telegrapher, who has occupied a position as operator in the Western Union office in this city for the past two years, has resigned and proceeds at once to Nebraska to accept a situation with the Union Pacific R. R. Co.

Mr. Alfred H. Betts, delivery clerk in the same office for several years, has made a like change. Both are intelligent, capable and zealous, and if there is such a thing as making a mark out in that crude country, they will make theirs. Success attend you, boys; the community could have better spared somebody else. —*Providence Journal*.

McKee's Signal Box.

The inventor of this valuable addition to the conveniences of railroad service may justly blame us for neglecting attention to it when first brought to our notice, some months ago. The limited size of the JOURNAL must be apology for the omission of many things equally deserving.

The invention is one by which signal lanterns and flags are placed under the control of the operator at a telegraph station, and can be shown the instant orders are received requiring them to be used. For this purpose a signal box is erected at some appropriate place, visible to the operator from his window, in which are placed lanterns and flags, so affixed to levers and ropes, which extend by a simple arrangement to the operating room, that the whole service of signaling can be done by the operator himself, without leaving his operating table. The following statement is the best evidence of its value, and we will be glad to hear of Mr. McKee's success in introducing his signals on other roads:

Mr. WILLIAM MCKEE:—Dear Sir—Your Signal Box meets the object aimed at, viz.: the putting out and taking in signals for trains, in such a satisfactory manner that I have instructed all our telegraph stations to be equipped with them. I have seen nothing that answers the purpose so well, and I have no doubt but you will be able to get it adopted on other roads.

Yours, truly,

ROBERT HARRIS,

Gen. Sup't C., B. & Q. R. R., Chicago.

I cheerfully concur in the statement made by the General Superintendent.

A. N. TOWNE,

Ass't Sup't C., B. & Q. R. R., Chicago.

Telegraphing in the Olden Times.

JOURNAL.		Receipts.
1846.		
April 13.	Wire broke—nothing done.....	\$—
14.	We began at 3 P.M.....	62
15.	Dull to-day in this office.....	50
16.	Extraordinary.....	06
17.	Fine weather, mystic meshes work well.....	87
18.	do. do. do.	50
Total per week.....		\$3 55
19.	Sunday.....	—
20.	Break.....	—
21.	Commenced at 10 A.M.....	1 25
22.	Worked well in clear weather.....	1 42
23.	Break commenced at 5 P.M.....	18
24.	Break—nothing done but mend wire.....	—
25.	Cloudy and signs of rain.....	68
May 3. Sunday.....		\$3 53
4.	Pleasant.....	81
5.	Received a terrible shock from lightning.....	25
6.	Stormy but worked.....	75
7.	do. do.	31
8.	Thunder.....	87
		\$3 49

The only authentic name on the book of records from which the above is taken, and for the possession of which we are indebted to our old friend "Billie Johnston," is the following, written eight years after the above date:

LANCASTER, Feb. 17, 1854.

From the office of the New York, Philadelphia, Pittsburg, Cincinnati and Louisville, the United States, New Orleans and Ohio and People's, St. Louis, Indiana and Lake Erie Telegraph Lines,
Miller's Row, Lancaster, Chestnut St.,
E. A. STACY, Operator.

The title was supposed to make up for the poverty of the business. Lancaster learned the advantage of the telegraph very slowly. But she did learn, and her receipts are now \$250 per month.

Why is a baby like wheat? Ans.—Because it is first cradled, then thrashed, and finally becomes the flower of the family.

Telegraph Base Ball.

The return game of base ball between the North Bend Club of Cleves, Ohio, and the "Night Owl Nine" of the Western Union Telegraph Office, Cincinnati, took place on the grounds of the famous Buckeye Club the morning of the 24th, resulting in the second victory for the Owls, the score at the end of the ninth inning standing 51 to 38. Subjoined are details:

OWLS.		NORTH BENDS.	
	O. B.		O. B.
Kerr, 1st b.....	1 9	Walmaley, c.....	1 7
Scott, r f.....	2 6	Carlin, p.....	2 5
Spink, s s.....	1 8	Cooper, 1 f.....	2 3
Neal, c.....	3 4	R. Hayes, 2d b.....	3 3
Baker, 2d b.....	5 4	Chidlaw, 3d b.....	3 4
Jones, 3d b.....	3 6	Job. Hayes, c f.....	3 5
Stibbe, c f.....	6 2	Jas. Hayes, r f.....	3 4
Otte, p.....	2 7	A. C. Walmaley, s s.....	1 5
Durrall, 1 f.....	4 5	Lorian, 1st b.....	6 2
	27 51		27 38

Innings.....	1	2	3	4	5	6	7	8	9
Night Owls.....	4	8	9	4	0	1	17	2	6—51
North Bends.....	4	1	6	10	1	2	3	1	10—38

Umpire—Mr. Thompson, Buckeye B. B. C.

Scorers—Messrs. Webb and Brown.

Hindoo Writing.

Writing is a curious art as practiced by the Hindoos. They may be often seen walking along their native streets writing a letter. An iron stile and a palm leaf are the implements. In writing neither chair nor table is needed, the leaf being supported on the middle finger of the left hand and kept steady with the thumb and forefinger. The right hand does not, as with us, move along the surface, but, after finishing a few words, the writer fixes the point of the iron in the last letter, and pushes the leaf from right to left, so that he may finish the line. The characters are rendered legible by besmearing the leaf with ink like fluid. A letter is generally finished on a single leaf, which is then involved in a second, whereupon is the address.

TYNDALL has lately said:—"Although we have, or think we have, tolerably clear ideas of the character of the motion of heat, our ideas are not very clear as to the precise nature of the change which this motion must undergo in order to appear as electricity—in fact, we know as yet nothing about it."

It is generally known that the lines in Great Britain undergo daily examination by the use of rheostats, or other apparatus for electrical measurement, by which the existence of defects or obstructions of the circuit are at once and easily detected and located. This is the result of the persistent skill of such men as Varley, Culley, Clark, Bright and others, who have sought to perfect the system by every possible means, and for which apparatus of a suitable kind has been prepared. Every morning, therefore, the various wires are examined by differential galvanometers, the condition of each noted and compared, and orders given accordingly.

No such careful tests have ever yet been introduced into American lines, and repairers have usually been called for only when some very disturbing cause existed, or a wire had broken. American operators can usually work a wire as long as it holds together, although some are not proof against the irritability which a bad working line occasions. This will all be changed. Already men are at work cutting out every joint and perfecting the conductivity of the wires. The batteries are also undergoing a careful overhauling to secure their maximum service. And now we have a letter from Mr. Varley, advising that several carefully constructed galvanometers, made under his own care, and of great perfection, are ready for shipment to be employed in testing the wires of the Western Union Telegraph Company. These are advance movements which we know would urge themselves into life, and which will increase the capacity of the wires and enhance their reliability.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, NOVEMBER 2, 1868.

Can Dispatches be Refused?

A brute entered the office of the Western Union Telegraph Company, a few days ago, and offered a dispatch addressed to a lady, couched in language so profane as to raise the question of the propriety of its reception. Are we supposed to know or recognize the language of a dispatch? Must we not accept everything offered to us? Are we to be the judges of the morality of messages? Such are the questions which sometimes puzzle receivers in the performance of their duty. In the case referred to, the appeal was made to the chief executive officer, who promptly endorsed upon it as follows: "This message must be refused, no matter what the consequences may be." This was formerly, and we trust now will be the understood rule. No brute should be allowed to use the wires for the conveyance of his vulgarity, and messages of this character, essentially profane or obscene, may with safety be refused.

In the reception of messages having in view the commission of crime, the law rejects the idea of an obligation on the part of telegraph companies to receive whatever is handed to them. Thus the State law of California provides:

"If any agent or operator in any telegraph office shall knowingly send by telegraph any false or forged message, purporting to be from such officer (of the telegraph company), or any other person, or if any other person or persons shall furnish, or conspire to furnish to such agent or operator to be so sent, any such message, knowing the same to be false or forged, with the intent to deceive and injure or defraud any individual or corporation, or the public, such agent, operator or person shall be deemed guilty of a misdemeanor, and shall be punished by fine not exceeding five hundred dollars, or imprisonment not to exceed six months, or both such fine or imprisonment, in the discretion of the court."

Similar provisions exist in most of the States.

This, however, has no reference to messages of the criminal intent of which the receiver is not aware, and does not compel him to inquire into the character of the messages handed to him. But where crime is evident and known to him, the receiver exposes himself to be regarded as a participant in the crime by their reception. On this subject the recent work of Scott & Jarnigan on the law of telegraphs speaks as follows:

"A telegraph company would have the right to decline the transmission of all messages of an illegal or immoral character, or such as were in furtherance of fraud or against public policy, or where the message was for the purpose of aiding or concealing crime, or would in any other way tend to thwart the course of public justice. If this were not so, the agents of the company would, in some cases, become *particeps criminis*; and would, in all such cases, be lending their aid, for a reward, to purposes not sanctioned by law. The same moral and legal obli-

gations rest upon the company as upon individuals in reference to their contracts and dealings with each other; and whatever the law would not compel it to perform, it has the right to refuse."

Of course this right of rejection has to be used carefully and intelligently. Many messages offensive to a refined taste will be offered, which must nevertheless be accepted and sent. The good judgment of receivers, who, as a class, are men of intelligence and discrimination, will instinctively recognize that brutality of language which calls upon their interference and justifies their rejection.

Advertising Gratis.

We have received from a friend in a western city a circular issued by the well known banking house of Henry Clews & Co., of New York, offering for sale "a limited amount of the stock of the Atlantic and Pacific Telegraph Company." The circular states concerning this stock: "The subscription price is forty dollars per share, and the nominal capital of the company is but five millions, while the Western Union has forty millions." But it omits to state, however, what is nevertheless true, that the Atlantic and Pacific Company's capital of five millions has all been contracted in payment for three thousand miles of two wire line, being at the rate of \$1,666.66 in stock for each mile of line. Now, as the Western Union Company has about sixty thousand miles of pole line, averaging nearly two wires, its capital stock on the basis of the Atlantic and Pacific Company should not be forty millions, but over *ninety millions*! or, with its present volume of stock, the market value should be more than double the present quotations. So that if Atlantic and Pacific Company stock is cheap at forty dollars per share, Western Union is cheaper at eighty.

It cannot be that Messrs. Clews & Co. understand the facts concerning the enterprise to which they are lending an honorable name and reputation, for a commission upon possible sales of a stock which, if held as an investment, will never yield a dollar either of interest or principal. We believe the stock advertised to be that which the contractors for building the line have been unable to dispose of by personal solicitation, and that they are now attempting to palm it off upon the credulous with the *quasi* endorsement of an eminent house. We predict, however, that the time will soon come, if it has not already arrived, when it will be found exceedingly difficult to induce the public to invest their savings in the shares of sham corporations, whether oil, mining, or telegraph, the purpose of whose organization is, not to conduct an honest business, but to put money in the pockets of rings of reckless speculators, who have too frequently been able to hide their purposes behind a formidable array of respectable names.

Magnetic Heat.

If a magnet, with poles pointing upwards, be rotated rapidly on a vertical axis below a small copper plate, on which a glass flask is placed, the air contained in the flask will be heated, and its expansion may be made visible. The water in a copper vessel, if similarly placed, will become hot in proportion to the rapidity of the magnetic revolution.

From experiments on the electrolytic powers of the currents of the magneto-electric machine of the Atlantic Company, it seems that when the current sent by the commutator is always in the same direction, the electrolytic power is that of 144 Daniel elements with sulphate of copper; while, when the current is alternated, as in the production of the electric light, the electro motive power is nile.

A CRAZY negro recently broke all the glass cups on the telegraph poles for two miles between the towns of Louisiana and Frankfort, Mo.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

SEPTEMBER, 1868.

Gross receipts,	- - -	\$630,665 36
Current expenses,	- - -	372,197 50

Net profit,	- - -	\$258,467 86
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An increase of \$32,560.57 over the corresponding month of 1867, and a decrease of expenses amounting to \$3,344.00.

The Morse System in Europe—The Hughes Modification.

Notwithstanding that England, through some of her writers, claims to have "given the telegraph to the world," and it is also claimed by her that even America received the invention from England, it is every where else, both on the continent of Europe and in America, acknowledged that *the world is indebted to America* for the modern telegraph.

The system known and established every where as the Morse system, is the *first* realization of a true telegraph. It was lately remarked by one of the German directors of the telegraph in Prussia, that "it was a marvellous fact that with all the attempts at improvement upon the original Morse invention, nothing as yet had been contrived that can be advantageously substituted for it." To use his expression, "the cry comes up from all quarters, send us the Morse."

Speed of transmission (that is, an increase in the quantity of matter that can be transmitted in a given time) is just now occupying the attention of the skillful everywhere. The modifications of the Recording Telegraph, for increasing this speed, are more skillful mechanical constructions of the *original automatic process of Morse*, and very ingenious but necessarily complicated modes of *recording*, by printing the ordinary Roman letter. The most popular and efficient of these latter modes, is the beautiful printing apparatus of Hughes. It has been employed with advantage in various places in Europe.

It appears, however, from a letter we have seen recently forwarded from Paris, that the inherent difficulties, which an experience of some years has shown in the practical working of the Hughes apparatus, are becoming fatal to its extensive use. The writer, a distinguished savant, says, under date of Paris, 14th of September:

"There is nothing new in telegraphy, unless it be that Mr. Hughes is entirely remodeling his apparatus, under the hope of making it better, the result of which is very problematical; he determined upon this because of the ill-working of some instruments made by M. Siemens of Prussia, and by Messrs. Dumoulin and Hardy of Paris, without being aware that those constructed by Messrs. Digney freres, did not present the same inconveniences. Without any doubt, his apparatus presents very grave difficulties, which cannot be surmounted, or, rather, be diminished, but by a great improvement in the construction. But it appears that the changes which he proposes will only increase the difficulty of construction.

"You perceive that the *Morse system* is not likely to be 'dethroned.' As proof of this, wherever there is a *Hughes*, there is also a *Morse* at its side, to relieve it."

In saying the Morse system is *not likely to be dethroned*, the writer, doubtless, has reference to the expression of M. Gavarret, who, in an elaborate article on the Telegraph, had stated that the Morse system had hitherto occupied the telegraphic throne as king, but was likely to be dethroned by these modern improvements.

THE female telegraph operators in England have been alarmed by a report that the government purposed to dismiss them all when it got control of the lines, but the story is contradicted.

Authorship of the Practical Electric Telegraph of Great Britain. By the Rev. Thomas Fothergill Cooke, M. A.

This is a work written by Rev. Thomas Fothergill Cooke, to prove that his brother, Mr. William Fothergill Cooke, and not Professor Wheatstone, was the author of the practical electric telegraph. The claims of Mr. Cooke are set forth with force and bitterness. We would be glad to see every great pioneer of civilization receive his due, but this will not be hastened by passionate statements, and a severity of language which suggests partiality.

Don't Bear on so Hard!

New York, Oct. 16th, 1868.

To the Editor Journal of the Telegraph:

Reading the pie story in the last number of the JOURNAL, reminded me of another telegraphic joke which transpired some years since:

The usual hour for sending reports to Boston and way stations had arrived, and New York had raised all the offices except New Haven. The operator at that office was not yet back from tea. After calling for some time, the clerk in the office, who was somewhat of an operator, resolved to answer him, and let the paper run so it might be copied, when the operator returned. He accordingly told New York to "go ahead." New York had, however, sent but one or two words, when New Haven broke and requested him to "repeat."

New York started again, but had not sent more than half a dozen words before he again broke, saying, "Repeat! Repeat!" By this time the operator at New York had got impatient, and angrily demanded to know what the matter was, to which he replied, "Repeat! Repeat! and don't bear on so hard, you make holes in my paper." Just then the operator returned.

C. F. L.

Bliss, Tillotson & Co., No. 171 South Clark St., Chicago.

It will be noticed that this house, so recently established in the central city of the West, has already been obliged to change its quarters to more extensive premises on the same street, to enable them to attend with suitable convenience to an increasing business. Twenty years ago we could not prevail on the old firm of Clark & Son, Philadelphia, to make half a dozen instruments in advance, so as to be ready for orders, fearful that so many would never be needed. Now, at ever increasing manufactories they are made by the score. We are glad to see these evidences of prosperity on the part of men who have earned their popularity by enterprise, skill and promptitude, and which has rendered the New York house which it represents strong and successful.

We notice that the house of L. G. Tillotson & Co., New York, has in its partnership two active and competent gentlemen—E. S. Greeley and G. B. Gavett, Jr., both of whom are thoroughly up to the times, and give increased vigor to its operations.

Hiram Sibley, Esq., left for Europe Saturday, October 31, designing to spend November in Paris, December in Florence, and the remainder of the winter and spring in Rome.

We shook hands Friday last with Cyrus W. Field, Esq., who has returned from Europe fresh and hearty, and does not look at all as if he designed "retiring to a farm."

ONE of the simplest modes of automatic telegraph writing was proposed by Professor Morse during the lifetime of the late Alfred Vail, which was simply the use of the indented paper of the Morse Register used to elevate a lever as the letters passed beneath it. A description of it appears in one of Mr. Morse's papers, and might easily and inexpensively be brought into use.

Chester Partrick & Co., 38 South Fourth Street, Philadelphia.

There is nothing so surprising or so gratifying to us as the growth of the various establishments for the manufacture of telegraphic machinery and purposes related thereto. In Boston, in Chicago, in New York and in Philadelphia, premises deemed ample a year ago are found too limited, and so enlargement or removal has become a necessity. We had occasion to refer in our last to the removal of Chester, Partrick & Co. from their old premises in Philadelphia to new and eligible quarters. Their advertisement shows the extensive scope which their business has taken, and we have occasion to know that in a direction quite unanticipated by them, in the use and manufacture of nitro glycerine, and in the appliances connected therewith, this young and active firm are building up a strong and influential name. So be it. We commend them to all who read the JOURNAL, as careful, skillful, honorable men, who will execute well everything entrusted to them. See advertisement on page 7.

To the Public.

We would express to our many friends and patrons our heartfelt thanks for their kind support and patronage during the first year of our business existence.

To this, and to their patience with our many shortcomings, we owe a success beyond our most sanguine hopes, and which has so greatly increased our facilities and resources that we are enabled to enter upon a new year, with the certainty of giving increased satisfaction to our present friends, and of largely increasing the circle of our patrons.

We respectfully call the attention of all to our recent advertisement.

CHESTER, PATRICK & CO.,
38 South Fourth Street, Philadelphia.

DAVID BROOKS, Esq.:

DEAR SIR—Your insulators used for one hundred miles along the Schnylkill river, I am pleased to say, give the most perfect results. On the 14th and 15th the weather was calculated to give them a severe test, but we found no perceptible difference in working the line. This was the case not only without additional battery, but with a set of small sized Daniels, that were working for a fortnight previous without renewal.

I hope shortly to be able to give you precise calculations of the capacity of the line electrically.

I am, dear sir, yours truly,

ARTHUR POTTER,

Supt. Tel. S. N. Co.

Philadelphia 17th October, 1868.

REQUESTS have frequently been made for full sets of the JOURNAL. The editions of numbers 2 and 8 having run out, we have been unable to meet them. These, however, will soon be reprinted, and broken sets can be made complete.

SEVERAL disastrous fires of recent occurrence in Troy, N. Y., has been the means of awakening the inhabitants of that city to feel pretty keenly the need of a Fire Alarm Telegraph, and quite a fight is now going on in the Common Council in regard to it, some members of that body still being strangely bent on opposition to this important means of protection from fire.

"PAPA, why don't they give the telegraph wires a dose of gin?"

"Why, my child."

"'Cause the papers say they are out of order, and mamma always takes gin when she is out of order!"

A number of articles, including one respecting the Brooks insulators, respecting which we have received so many testimonials of their excellence, another of which will be found elsewhere, have been crowded out.

A MEXICAN, by name of Francisco Estrada, Jr., claims to have solved the problem of perpetual motion. His machine produces electricity, which causes motion, and the motion in turn generates electricity.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
November 2, 1868.

To all Offices on W. U. Lines—

The following changes have occurred since Oct. 15, the date of the last Tariff Order. Please note them in your Tariff Book:

NEW OFFICES.

Bingham, Me., tariff 15 and 1 more than Skowhegan, Me.
Barnesville, Ga., tariff same as Griffin, Ga.
Bryan, Wyoming Territory, tariff same as Green River, W. T.
Butler, Ga., tariff same as Ft. Valley, Ga.
Camden, Ark., tariff 8.00 from Louisville, 4.00 from Washington.
Carrollton, Mo., tariff 5c. more than Brunswick, Mo.
Cuba, Ill., tariff same as Lewistown, Ill.
Eldorado, Ark., tariff same as Meriden, La.
Farmersville, La., tariff same as Vienna, La.
Glascoc, Ill., tariff same as Canton, Ill.
Kirksville, Mo., tariff 5c. more than Macon, Mo.
Milford, O., tariff same as Loveland, O.
Miami, Mo., tariff same as Brunswick, Mo.
Murray, Orleans Co., N. Y., tariff same as Brockport, N. Y.
New Haven, Ky., tariff 60 from Louisville, 2.25 from Washington.
Oxford, Ala., tariff same as Blue Mountain, Ala.
Sanford, Ind., tariff same as Terre Haute, Ind.
Selma, N. C., tariff same as Raleigh, N. C.
Solon, Me., tariff 15 and 1 more than Skowhegan, Me.
Timmonsville, S. C., tariff same as Florence, S. C.
Washington Sta., Sandusky Co., O., tariff same as Elmore, O.

OFFICES OPENED ON OTHER LINES.

Locust Point, Baltimore, Md., tariff 15 and 1 from Camden Station, Md. Check Camden Station.

OFFICES CLOSED.

Sharon Springs, N. Y., for the season, and South Shaftsbury, Vt.

GENERAL INFORMATION.

Hereafter business for the following named offices on the Catawissa R. R. will be treated as "other line" offices, and checked to Danville, Pa., at the rates here given:

Catawissa, Pa., 35 and 3 from Danville, Pa.

McAuley, Pa.,

Ringtown, Pa.,

Summit, Pa.

45 and 3 " "

The following will also be treated as "other line" offices, but checked to Mauch Chunk, Pa.

Centralla, Pa.,

Delano, Pa.,

Hazleton, Pa.,

Mount Carmel, Pa.,

Penn Haven, Pa.,

Quakake Junc., Pa.,

Weatherly, Pa.,

50 and 4 from Mauch Chunk, Pa.

All offices North and East of Louisville having "special sheet A," will add one dollar to their Louisville rate to obtain tariff to Memphis, Tenn.

To offices in Eastern Division having "Special Sheet A":

Offices in New York State, west of and including Rochester, will collect to Chicago, Ill., 135 and 9; to Milwaukee, 150 and 10. Offices between Rochester and Syracuse, including Syracuse, will collect to Chicago 150 and 10; to Milwaukee 165 and 11. Offices between Syracuse and Albany, including Albany, will collect to Chicago 160 and 11; to Milwaukee, 175 and 12. Offices between Albany and New York City will collect to Chicago 175 and 12; to Milwaukee 190 and 13.

The rates to Chicago will go into effect immediately. Rates to Milwaukee on the 5th November.

Offices in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, having "Special Sheet A," will add to their "special rate" to Albany and New York the following rates: From Albany for Chicago, 160 and 11; for Milwaukee, 175 and 12. From New York for Chicago, 175 and 12; for Milwaukee, 190 and 13, and adopt as their rate to Chicago and Milwaukee, whichever shall prove to be the lower. To go into effect November 5th.

Messages for South Hadley and South Hadley Falls, Mass., will be delivered from Holyoke, Mass. Charges for the first 1.75, for the last 25. Check Holyoke.

Gasport Depot, N.Y., in JOURNAL of October 15th, should read Gasport Depot; Charles City, Minn., should read Charles City, Iowa; and Ononwa, Iowa, tariff same as West Liberty instead of Liberty, Iowa. Tariff to La Plata, Mo., in JOURNAL of October 1st, should be same as Macon, Mo.

WILLIAM ORTON,
President.

MARRIED.

On the 14th of October, by the Rev. A. J. Frost, at the First Baptist Church, Syracuse, Ed. H. Thresher, of the Western Union Company's Rochester office, to Miss A. Florence Ingersoll, of the former place.

The Declining Year.

The year begins to tremble with decay,
Like an old man who leans upon a staff,
And in the graveyard reads the epitaph
Of all his offspring who have passed away;
But yet soft breezes with his thin locks play,
Scattering his sadness with a jocund laugh,
While the great sun yet warms in his behalf,
And with his darts keeps Winter still at bay.
Yea, soothed and flattered in full many ways,
Though all the fields be bare, and woodlands sere,
Half-hidden from his sight by thickening haze,
Serenely smiles the slow-declining Year,
Like one who has in goodness spent his days,
And waits his coming end without a fear.

W. L. S.

The Law of Telegraphs, By William L. Scott and Milton P. Jarnagin, Memphis, Tenn.

Messrs. BARKER, VOORHIS & Co., *Law Booksellers*, 66 Nassau street, N. Y., have sent us this important work, treating on a subject which has already excited much careful examination, and which must elicit still more, before the status of law in regard to this peculiar field for its application is determined. As a digest of existing telegraph law and judicial decisions alone, the work is a desirable and timely addition to the libraries of the legal profession and telegraph companies. The elaboration of the law of the telegraph by the talented gentlemen who have prepared this volume, and the opinions expressed therein will, of necessity, challenge review and elicit criticism, which, in turn, will aid in the discovery of the true basis on which telegraph companies must stand before the public. At present we decline to say more than advert to the volume before us as highly useful and timely. As a work of typographic excellence it is superior to any similar volume in our possession, and bears the imprint of John Wilson & Son, Cambridge, Mass.

GOULD & LINCOLN, of Boston, have sent us the Annual of Scientific Discovery for 1888. This valuable compend has been published for the last twenty years, and edited with so much taste and discrimination as to render it popular and indispensable. It is the history of scientific development in so easy compass as to make it a hand-book of all which, for general purposes, it is important to record. We have read it with great pleasure, and it has given us a wider knowledge of the busy age in which we live, and the busy brains around us. We would be glad to see it in the hands of all our intelligent operators. The present volume is edited by Samuel Kneeland, A. M., M. D., Secretary of the Massachusetts Institute of Technology, and is carefully and felicitously arranged.

If marriages are a sign of prosperity, the country is in good condition, and the frequency of cards on our desk, knotted together with the sweetest of ribbons, and with initials intertwined into the loveliest of monograms, proves how many happy people there are in these rich autumnal days. We acknowledge receipt of the elegant cards of Mr. and Mrs. Ten Eyck H. Fonda, of Fonda, N. Y., and of Mr. and Mrs. Benj. Dexter, whose marriage appeared in our last, and to both of whom we extend our kindest congratulations.

The noble Faraday said: "There was a time when I thought I knew something about the matter; but the longer I live, and the more carefully I study the subject, the more convinced I am of my total ignorance of the nature of electricity." There is something painful in these words.

ALEXANDRIA, Va., Oct. 26, 1888.

To the Editor Journal of the Telegraph.

To determine on what day of the week my receipts are the largest, I have recently made a calculation of the past year. The result is, that in seven months I did the most business on Monday. During the remaining five months, Wednesday, Thursday and Saturday were the heaviest.

If others will make such a calculation, the question might be definitely settled.

P. C. & L.

CHARLES WILLIAMS, JR.,

109 Court Street,

BOSTON, MASS.,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

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Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 83% per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

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Particular attention given to the

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(Adjoining the Post Office.)

UTICA, N. Y.

Manufacturer of

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INVENTOR OF THE

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Every Article Warranted of the

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The Oldest Establishment in the United States.

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ASSISTANTS.**District Superintendents.**

		Residence.
District 1	Jesse Hoyt,	New Glasgow, N. B.
"	2—Robert T. Clinch,	St. John, N. B.
"	3—James S. Bedlow,	Portland, Me.
"	4—George W. Gates,	White River Junction, Vt.
"	5—Charles F. Wood,	Boston, Mass.
"	6—George B. Prescott,	Albany, N. Y.
"	7—S. B. Gifford,	Syracuse, N. Y.
"	8—D. H. Bates,	Philadelphia, Penn.
Metropolitan District	J. C. Hinchman,	New York City.
B. & O. Railway District	A. G. Davis,	Baltimore Md.
Erie Railway District	W. J. Holmes,	New York.

SOUTHERN DIVISION.John Van Horne, *General Superintendent.*

Residence, Louisville, Ky.

ASSISTANTS.**Superintendents of Districts.**

		Residence.
District 1	J. R. Dowell,	Richmond, Va.
"	2—J. W. Kates,	Lynchburg, Va.
"	3—J. A. Brenner,	Augusta, Ga.
"	4—C. G. Meriwether,	Mobile, Ala.
"	5—James Compton,	Jackson, Miss.
"	6—James Coleman,	Memphis, Tenn.
"	7—Thomas Johnson,	Corinth, Miss.
"	8—Geo. W. Trabue,	Nashville, Tenn.
"	9—L. C. Baker,	Little Rock, Ark.
"	10—G. M. Baker,	Shreveport, La.
"	11—D. P. Shepherd,	Houston, Texas.
"	12—D. Flanery,	New Orleans, La.

MACHINE SHOPS.George M. Phelps, *Superintendent, Williamsburg, N. Y.*George W. Shawk, *Superintendent, Cleveland, O.*Robert Herding, *Superintendent, Ottawa, Ill.*W. H. Johnson, *Superintendent, Louisville, Ky.*

A Magician's Residence.

Electricity is a wizard's power. With it, and a little mechanical skill, a man may turn his house into a magician's castle. The late ingenious Mr. Appold—of centrifugal pump notoriety—indeed, did this without it. His doors opened as you approached them, and shut behind you; his stable gates did the same; upon touching a spring the window shutters closed and the gas was turned on; his apartments maintained themselves at a uniform temperature, and at a proper hygrometric state, by regulating thermometers and atmospheric damping apparatus; in short, his house was full of surprising devices, created and worked out by his wonderful inventive and executive skill. Had he pressed the subtle fluid into his service there is no saying into what a palace of enchantment his dwelling would have been transformed. But what he did not do has been done by the famous Robert Houdin, who has made electricity do the work of a retinue of servants and a watchman to boot. The ex-conjuror lives at a country seat called the Priory, near to his native town of Blois, and there it is that these wonderful applications have been effected. A visitor presenting himself at the portal finds the name of "Robert Houdin" upon a door-plate, above which is a little knocker; operating upon the latter a great bell sounds within the house. In a few moments the lock is thrown back, and the name on the plate changes, like a pantomime trick, to "Entrez." The visitor obeys, and the door automatically closes behind him. If more than one person enters, the invisible and inanimate "con-cierge" makes known the fact by tinkling a small bell, which keeps up its tintinnabulum so long as the door is held open. The carriage-gates, some distance off, announce themselves open or shut in the hall, where an inscription exhibits the words, "The gates are open," or "The gates are shut," as the case may be. The letter-box on the gate tells us in the house how many letters have been put into it, and, by an argument with the postman, which are letters and which book-parcels or newspapers; and if the postman is wanted at the house to carry correspondence to the village, he is apprised of the fact by a bell, of the ringing of which he knows the meaning. The horse, in a stable more than forty yards from the house, is fed at regular intervals by electrical intervention. At stated times a clock sends a current, which opens the orifice of a shoot or hopper, and allows the due proportion of provender to fall into the manger. This same clock is charged with the transmission of time to two large external dials, and to several smaller ones about the domicile, all of which go together in sympathy, so that Father Time has here a company of subalterns that march step by step, with irrefragable order. Then it rings bells at the proper times for meals and other regular household duties, calls up the servants by alarms in the morning, and at night puts a galvanic current in connection with a wire that communicates with all the doors and windows, so that if any of these are attempted by burglars an alarm is instantly given. Lastly, the green-house telegraphs its temperature to the conjuror's study. If the gardener allows the thermometer to rise above or fall below certain limits, his master is apprised of the irregularity, and he is called to account next morning. The poor man knows when he has been at fault, but does not know who or what tells the tale, and he thinks he has a sorcerer to serve; and so, in the only sense in which we can now-a-days regard the word, he has.

A new Russian invention is a letter-box, so contrived that when a letter is deposited, it gives the depositor a ticket in exchange, showing the date when the letter was put in the box. We are not informed whether the government is expected to assume any responsibility not already assumed in regard to the safe delivery of letters. If not, what is the invention worth?

AMERICAN COMPOUND TELEGRAPH WIRE.

**SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.**

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE.

Manufactured by the

**AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.**

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., *Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.*

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realize the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

For further information, call on or address

**L. G. TILLOTSON & CO., Sole Agents,
No. 11 Dey Street, New York.**

**BLISS, TILLOTSON & CO., Agents,
Chicago, Ill.**

OFFICE OF THE

BISHOP GUTTA PERCHA COMPANY,

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SAMUEL C. BISHOP, General Agent.

INSULATED POLE LINE CORDAGE

AND

OUTSIDE OFFICE CONNECTING WIRES.

We have completed some valuable Experiments, and have now the pleasure to offer to Telegraph Companies, and others interested,

THE BEST

AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 20, 1868.

General Agent.

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EXTRA MUCILAGE
THICK, CLEAR AND ADHESIVE
Who has not used
STICKWELL'S MUCILAGE?**

That man must be an old FOGGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

**IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND
FLAT BOTTLES, WITH CAP AND BRUSH.**

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES.

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TELEGRAPHIC & ELECTRICAL ENGINEERS,

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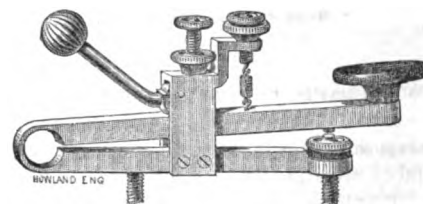
PHILADELPHIA.

Manufacturers and Merchants of every variety of

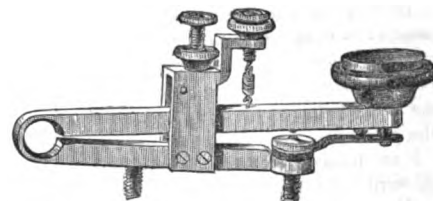
**TELEGRAPHIC, ELECTRIC AND PHILOSOPHICAL AP-
PARATUS, BATTERIES, WIRE, ACIDS, INSU-
LATORS, MEDICAL INSTRUMENTS,
AND SUPPLIES.**

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph, or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closers.



- 2.—Patent Self-closing anti-trunion Key.
- 3.—Kerite or (horn covered) copper or compound wire or cables.
- 4.—Covered compound out door line wire.
- 5.—Blasting apparatus, cartridges, batteries, &c., &c.
- 6.—Calcium lighting apparatus.
- 7.—Medical and test batteries, direct and induced currents.
- 8.—Apparatus for electrical measurement.
- 9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.
- 10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

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104 CENTRE STREET, N. Y.,

TELEGRAPH ENGINEERS,

**And Manufacturers of
INSTRUMENTS, BATTERIES,**

AND EVERY DESCRIPTION OF TELEGRAPH SUPPLIES.

Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

L. G. TILLOTSON & CO.,
 11 DEY STREET, NEW YORK,
 MANUFACTURERS OF
 TELEGRAPH INSTRUMENTS
 AND
 MATERIALS OF EVERY DESCRIPTION.

We invite all Telegraphers to a close inspection of our Work.

WE ARE PREPARED TO CONTRACT FOR THE ENTIRE
 CONSTRUCTION OR EQUIPMENT OF TELEGRAPH
 LINES OF ANY EXTENT DESIRED.

OUR WORK WILL BE DONE PROMPTLY.

And it is particularly requested that any goods sold and recommended by us, not proving satisfactory, SHALL BE RETURNED.

We have on hand an assortment of other makers' Instruments besides our own, and are prepared to supply them at their own prices—

BRADLEY'S,
CLARK'S
HALL'S
WILLIAMS'

Or any other, excepting such as we know to be of inferior quality.

OGDEN'S IMPROVED CARBONS
 WITH THE
 IMMERSSED PLATINUM CONNECTION,

Make, beyond question, the most perfect Battery yet produced. We have abundant testimony of their GREAT SUPERIORITY OVER ANY OTHER.

We particularly invite attention to our whole arrangement of the
 CARBON BATTERY,

Proving, as it does, that as much strength may be obtained from this Battery as the Grove, with far less expense.

D. R. BRADLEY,
 NO. 7 EXCHANGE PLACE, JERSEY CITY, N. J.,

Keeps constantly on hand and for sale his

IMPROVED TELEGRAPH INSTRUMENTS.

Having adopted the use of

OREIDE METAL,

which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed.

His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them.

Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-300th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine.....	\$19 50
Small Box Relays.....	16 00
Same in Rosewood.....	17 00
Medium Box Relays.....	17 00
Same in Rosewood.....	18 00
Large Box Relays.....	18 00
Main Sounders same as the above, with heavy armature lever, without local connections.....	75 cents less
Pocket Relays, with all the adjustments of the above and good Lever Keys.....	22 00
Excellent Registers.....	40 00
Pony Sounders.....	6 75
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All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old spools taken at the price of new wire by the pound. Goods sent to all parts of the continent with bill C. O. D. Or, to save expense of returning funds by express, remittance may be made in advance by certified check payable in New York, or Post-office orders, in which case he will make no charge for package.

He has ample facilities for furnishing all other kinds of Telegraph Supplies at the lowest manufacturers prices.

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ALWAYS ON HAND.

INSTRUMENTS REPAIRED AT SHORT NOTICE.

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 General Agent

WALTER O. LEWIS, Esq.,
 Electrician to the Company.

L. G. TILLOTSON & Co.,
 11 DEY STREET, NEW YORK,
 MANUFACTURERS OF
 GLASS INSULATORS, ALL PATTERNS,
 Zincs, Porous Cups, Platinum, Acids, Quicksilver, Tumblers, Coppers, &c. All of the most approved Pattern and Best Quality.

REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

Printed Message Heads and Envelopes

On hand and furnished to order.

WIRE, GALVANIZED AND PLAIN,
 AT THE
 LOWEST MANUFACTURERS' PRICES.

COPPER AND BRASS WIRE

Of any number required.

OFFICE WIRE,

GUTTA PERCHA or COTTON COVERED,
 AND
 MAGNET WIRE.

REGISTERS,
 RELAY MAGNETS, SOUNDERS, KEYS,

CIRCUIT-CLOSERS,
 CUT-OUTS,
 SWITCH-BOARDS,
 BINDING-SCREWS,

PAPER-REELS,
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 &c., &c., &c., &c.,

OF EVERY DESCRIPTION.

CABLES

Of any desired Size and Pattern, American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

L. G. TILLOTSON & Co.
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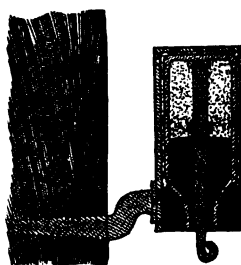
THE BROOKS'

PATENT PARAFFINE INSULATOR WORKS.

No. 22 SOUTH TWENTY-FIRST STREET,
 PHILADELPHIA.

All varieties of INSULATORS manufactured at these Works are warranted to excel the usual style of Glass and Rubber more than one hundred fold. In view of the error and delay in transmission, waste and consumption of battery material, the results of defective insulation, its fragile nature and expense of renewal, nothing is more manifest than its economy.

To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.



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 JOHN POLHEMUS, Printer and Stationer, 102 Nassau St., N. Y.

JOURNAL OF THE TELEGRAPH.

NO. 25.

NEW YORK, NOVEMBER 16, 1868.

VOL. I.

THE DANISH TELEGRAPHS.

A telegraphic dispatch sent from Copenhagen last month concludes thus: "The laying of the Anglo-Danish marine cable is commenced. We hope that the electric communication between Denmark and England will be established in a few days."

We believe this to be an opportune movement to unite the telegraphic organization in the Danish Kingdom.

This country now contains 4,025 kilometres, 2,515 miles of wire, and 89 telegraphic stations open to the public. The Morse apparatus is the only one employed. Of these 89 stations, 53 belong to the government, 21 to private telegraph companies, and 15 to railroads, and they are at this moment considering the propriety of giving into the hands of the government the lines and offices belonging to the companies.

The tariff is fixed at 90 centimes for a local telegram of 20 words between any points in the kingdom. In 1867 there were transmitted 308,150 telegrams, of which 174,560 were local and 133,590 foreign. All the stations send written dispatches in all languages, even in cypher, the only conditions being legible writing in an alphabet transmissible by the Morse apparatus.

Money orders to the amount of 50 rix dollars, or 187f. 50c., can be paid at all post offices by means of the telegraph. The sum being deposited at the original office, an official telegram is sent to the place designated, ordering payment.

For this service the sender has only to pay the tariff on the official telegram.

Messages can be sent from points where there are no telegraphic stations, by sending them by post or by any other mode of transportation to the nearest telegraph station. These telegrams can be paid by a postage stamp affixed to a designated part of the form. These forms are the same as the printed envelopes, and can be procured at all post and telegraph offices. At the top of these forms is printed an extract from the rules for the transmission of dispatches. The stamps are detached from the forms and sent to the Department of Finances at the same time that the other reports are forwarded. It is proposed to extend these privileges to the private and railroad telegraph stations.

Meteorological observations are sent and bulletined each day at the principal posts of the country.

The telegraphic communication between Jutland and Copenhagen is sustained by three cables containing altogether ten conductors each, connected with special air lines. A new cable containing seven conductors will be laid in the Grand Belt next year. Direct communication with Stockholm, Gothenbourg and other places in Sweden is assured by means of a strong cable with four conductors across the Sound. With Christiana and other cities of Norway, communication is held through Sweden, and also by means of a cable which goes through Arendal, crossing the Skagerack. These two cables are

in communication with the special air lines constructed in the three countries for the exclusive object of transmitting international telegrams.

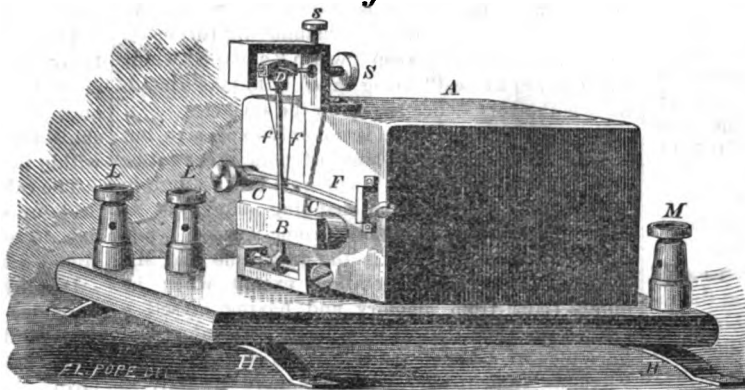
From 1863 to 1867 the telegraphic intercourse between the Scandinavian countries has increased each year 25 per cent.

The Nonpareil Self-adjusting Relay.

CHARLES DURANT, INVENTOR, NEW YORK.

This is an invention which, at first sight, seems ill-adapted to its design, but, like many people we know, improves by acquaintance. Several magnets prepared by Mr. Durant, the workmanship on all of which is of a superior kind, have been in use by experienced operators, all of whom think highly of their capacity as self-adjusters, and have been gratified with the facility with which they accommodate themselves to their altering circumstances, an accom-

Fig 1



plishment which it is very hard for most people to learn.

The illustrations are so clear and minute that much description is unnecessary. A is a box inclosing helices of the usual size. B is the armature, so placed that its lower edge touches the corresponding edge of the core of the magnet C. The upper edge of the armature is clear, thus causing the lower edge to act as a fulcrum. D is the head of the armature lever having in it a square socket in which rests a movable bar, easily but accurately fitting the socket and moving freely therein. On either end of this movable bar are platinum points similar to those of an ordinary magnet. F is a slight, straight spring saddling the movable bar, and regulated by the action of an adjusting lever placed across the face of the magnet box, by the depression of which the action of the spring is increased, the lever being attached to the spring by a connecting piece of fine wire or silk, f f. H H are springs on which the

magnet rests, and are designed to prevent the jar of the instrument table affecting the action of the magnet. L L are the usual local connections. M M are the main circuit connections. S is an adjusting screw to determine the play of the movable bar in the head of the armature lever, to which s acts as a binding screw.

It will be seen that the peculiarities of this magnet are three:

1. The axle below the armature is made so delicate as to serve the purpose of a spring, yielding as the magnet draws over the armature to its surface.

2. The armature rests on the core of the magnet at its lower edge, receiving motion only by being drawn over at its upper edge, which is free.

3. The movable bar at the head of the lever of the armature.

The head is adjusted by the screw S to a position when the armature may be said to be at rest, and the usual play is allowed which is given to relays in ordinary. The movable bar will so remain until a stronger current draws the armature to a more vertical position or nearer the cores, when the bar slips correspondingly, and is at once adjusted to the altered condition of the magnetism, the space allowed for play remaining as before.

The spring F is adjusted to prevent too great sensitiveness to slight currents generated in the earth, or coming from other wires, as also to prevent too great ease of motion, by which sufficient firmness of stroke would be prevented.

Objections will occur to many minds as they did to us in looking at this magnet, particularly the seeming rigidity of motion by the fixed condition of the lower edge of the armature in connection with the lower axle, and the absence of it in the self-adjusting bar. We can only say that the working of the magnet is very satisfactory and has been used for days without adjustment. The workmanship on these magnets is most excellent, the parts made with great accuracy, and made to a fixed size and form, so that the parts of one machine can be used on any other. Mr. Durant is now engaged in adapting a magnet to the rapid movements of the printing instrument, which he hopes to render increasingly responsive. The certificates of Messrs. Brown and Downer ought to be regarded as ample guarantee of the merits of this welcome invention. We refer all interested to Mr. Durant's advertisement on another page.

Mediterranean Cable.

A letter dated Alexandria, October 14, from the Hon. Charles Hale, our worthy Consul General in Alexandria, Egypt, advises Prof. Morse of the completion of the Mediterranean cable. He says:

"The newspapers no doubt have acquainted you with the fact that the new cable has been successfully laid in the Mediterranean which very much improves our telegraphic communication with Europe and America. It is necessary to use two words in dispatches coming that way, besides the rest of the address, to wit: 'VIA MALTA.'"

CHARLES HALE.

Correspondence.

The Agency of Electricity in Storms.

To the Editor Journal of the Telegraph:

SIR—The article on Meteorology in the JOURNAL of the 15th instant propagates such a remarkable theory of the cause of storms and earth movements, as at once to subject its author to criticism, which, indeed, I suppose he is quite ready to meet.

What he is pleased to call a "few axioms" are so un-axiomatic as to cause wonder at such a designation. The first of them, that "electricity is an *imponderable body*," is not only not an axiom, but it is not, at least so far as we can judge in such matters, any sort of truth whatever. Another second assertion, that "when excited or created, it separates into two distinct bodies or states, called negative and positive electricity," is as far from the generally accepted ideas as the first. Electricity is not a *body* or a *substance*, or any kind of *matter* whatever, but is an "affection of matter, or mode of force;" imponderable necessarily for having no mass, it cannot gravitate towards larger masses of matter. This being true, the third assertion, that "during their separation (of the negative and positive bodies or states) they have a powerful affinity for each other, and the attraction between their *bodies* is very strong," is, of course, groundless. The assertion that "all nature is divided into conductors and non-conductors," while false in itself, is relatively true, as the expressions are commonly used, but that when a "conductor" is placed between two receptacles, having in each a quantity of electricity, the "negative and positive electricity will instantly unite with a shock greater or less in proportion to the volume and conducting power of the medium of re-union," in other words, and Mr. Donnelly, as a civil engineer, should be more explicit, as the product of the mass (volume) and the square of the velocity, is a little bit too much to be taken as a whole. The absence of matter, or mass, or volume, or any ponderable quality, effectually prohibits, one would think, the possibility of collision. And then we learn that "no electricity can be produced without the presence of water," and that "water is always present at the re-union," i. e., at the "shock." "Water," too, "is a conductor of electricity, except in a state below 18°, when it becomes electric," as may be seen in any manual of philosophy in any "seminary" in the land. Air, not being a conductor at any temperature, suddenly becomes one, when it gets a little water, and increases its conductivity as it approaches saturation, which occurs "when it holds about two per cent., and it cannot hold any more," though it does, and some meteorologists hold that the temperature of the air, advancing in an arithmetical series, its capacity for moisture is accelerated in a geometrical series, and what is damaging to Mr. Donnelly's series is, that they have proved it too. To be exact: at 86° Fah. the air will hold a fortieth part, or 2½ per cent., of its weight of aqueous vapor, and at 118° Fah. 5 per cent., and so on. That "the lower stratum of the atmosphere is always the driest, and it increases in humidity as we ascend," will be news indeed to the inhabitants of the damp and fever-stricken prairies of the West, and cause some little astonishment to those who, like the father of the illustrious Norval, feed their herds on the Grampian Hills; and even I, who, having lived down near the sea level in Philadelphia, somehow find it dryer up here, on the highest table land in Pennsylvania, 1,500 feet in the air. And to the very last of the "axioms," that "a vapor cloud that will remain suspended in the atmosphere cannot be formed by artificial means," I am compelled to say that while I cannot see what possible connection this has with the subject, I am yet convinced that Mr. Donnelly is mistaken.

These are all the "axioms," commencing with a materialistic theory that has been dead so long as to be quite new in its rejuvenation. We are given to understand that the collision of the particles of something which can have no particles is attended with a "shock," which is proportional to the volume of that which can have no volume, as we are expressly assured the something is imponderable; and then the marvelous absurdity "of the separate bodies of electricity, remaining attached close on either side of it (the non-conductor), although the fluid is unable to pass through!"

I had intended to say nothing about the "key to the secret cabinet of meteorology," yet I cannot help noticing some of the "fine writing" of the article, and that is when writing of the "circuit wires" of the great Leyden jar arrangement he makes—he says "but some feature, as mountains, are nearly always in connection, and their conductors go on accumulating heat from year to year until the last particle fires the train. Fusion commences, with fusion motion, when, instantly, the whole latent power of heat is called into activity, and fuses every substance that comes within its reach!"

To my mind such a statement is simply absurd.

Let us look at this "theory" of Mr. Donnelly's. In the first place, to get rid of the "stupid theories" of geologists, he abolishes a fluid "earth, and sets up a fluid electricity, which is somehow created out of nothing" in each revolution of the earth. Having arranged the humidity of the atmosphere to suit his theory, he cruelly casts from the clouds a large quantity ("volume") of the "fluid," which, curiously enough, makes no obligation until it is bottled up, as it were, in the bowels of the earth, when, like its prototype Vulcan, it sets to hammering furiously, "nursing its wrath to keep it warm," and the "whole latent power of heat" being called in to take a hand, there is the very deuce to pay on the surface.

For this wonderful fluid is not only expansive, but when heated where, from want of room, it cannot be as big as it would like, it "will hold heat enough to dissipate into a gas without changing state," just as some of our operator friends become "gassy" when they "dissipate." This is the only time that Mr. Donnelly attempts a quotation, except when he quotes Dana from memory, and having myself a great respect for that distinguished mineralogist, I hope his (Mr. Donnelly's) memory is as poor as his "axioms," and it serves all the more strongly to show how completely he has mistaken the nature of electricity, and its actions in meteorological phenomena.

If I could discover the least particle of truth in any of his assertions, I should feel inclined to ask Mr. Donnelly's pardon for having treated him so cavalierly, but the very best I can bring myself to in the present circumstances, is to advise him most respectfully to procure Noad's "Students' Text Book," or the same physicist's "Manual of Electricity," and if, after a little reading, he does not abandon his theory, "axioms" and all, your most obedient servant is no

CIVIL ENGINEER.

OCTOBER 27, 1863.

Electrical Freaks.

A tinsmith in Reno, California, during a recent thunder storm noticed that a lad in his employ seemed to be afraid of his tools. Upon questioning the boy, he complained that something strange was the matter with them. The tinsmith, upon attempting to take up the large scissors which the youngster had dropped, received a shock that nearly prostrated him. Immediately after, little balls of fire began hopping about over bits of iron, and making finally a united assault upon the coal furnace, whereupon the "boss" and his apprentice wisely and speedily vacated the premises until the subsidence of the storm.

The French Cable.

We are permitted to publish the following:

W. ORSON, Esq.,

President of the W. U. Tel. Co.

MY DEAR SIR—The French cable is progressing rapidly.

The Great Eastern is in the Medway receiving the three tanks to hold the cable.

The centre or main tank will have to be increased in diameter nearly 15 feet to enable the ship to carry the cable, and even then it will be necessary to employ another vessel to lay the shore ends and shallow water portions.

The copper conductor weighs 400 lbs. to the knot—the present Atlantic cables weigh only 300 lbs.

The iron wire, or rather soft steel wire, known as homogeneous metal, used for the exterior sheath, is galvanized and surrounded with five Manilla yarns prior to being spun into cable.

Very great precautions are being taken to guard against brittle wire, and at the same time to secure the necessary strength.

The conducting power of the copper, and the insulating power of the gutta percha, are considerably greater than in the present Atlantic cables, and the cable is in every way of excellent quality.

The shore ends will be as massive as any yet constructed, and analogous to those of the 1865 cable, in which an invention of mine (now patented) is used to secure flexibility, so that the anchors shall not break it, and to avoid the consequent stripping when an anchor undercuts the cable and comes to a broken wire, which it will often strip out for one or two hundred yards. The exterior wires consist each of a strand of three wires No. 4 gauge.

This form of cable I used first in 1862 across the Lowesloft Roads, and although this is one of the most ship-frequented spots in the world, it has never once failed, and is so flexible and yet strong that ships' anchors never injure the insulated conductor within it.

The cable recently laid in the Mediterranean was paid out without a hitch of any kind, and I hope to have to report next August that a similar result has attended the laying of the new Atlantic.

It is my opinion that if the present companies were to reduce their charges to say five dollars for the address and half a dollar for every other word, they would get a much larger income than by the present tariff.

Hoping to have the pleasure of seeing you next year, and with lively recollections of the hospitable welcome I experienced last year,

I am, my dear sir,

Very truly yours,

CROMWELL F. VARLEY.

WE announced, some time ago, that a fleet had sailed from Malta, engaged in laying a cable from that island to Alexandria, in Egypt. A French exchange informs us that the work has been successfully performed. The enterprise was undertaken by the Telegraph Construction and Maintenance Company, for the Anglo-Mediterranean Telegraph Company; and its accomplishment opens a new line direct to India, from the great commercial centres of Europe, *via* Italy and the Isthmus of Suez.

ABOUT the year 1842, the observations of an English electrician disclosed the fact that when strong currents are passed continually in the same direction, the best copper conductors lose their tenacity, little by little, and become so rotten that the pressure of the thumb and finger suffices to break them. Observation with the microscope shows a complete change in the molecular state of the metal, at the point of fracture. It is thought that this change in the molecular state can be greatly retarded, if not altogether prevented, by the frequent reversal of the currents.

Amputation of the Leg by a Flash of Lightning.

The *Lancet* is responsible for the following: A boy of twelve, belonging to Kosk (Western Russia), who used to walk with a crutch, on account of ankylosis of the right knee, was on horseback in the fields, when he was overtaken by a violent storm. After a severe clap of thunder, the horse ran away, and the boy, completely stunned, fell to the ground. When he returned to his senses and tried to rise, he found that his right leg was gone. His uncle, who had ridden by his side, and his own horse, had disappeared. The poor boy, at first somewhat collapsed, fell asleep. His companion, however, at last returned, after having secured the horse, and on examining his nephew he observed that the right leg was entirely wanting. The patient's shirt and clothes were in shreds, and burned along the seams, and on the body were many scars. The boy was conveyed to the village in a cart, suffering severely in the stump, and much alarmed at the hemorrhage, which, however, soon stopped. A few days after Dr. Rogowitch found a regular wound as usually made by the amputating knife, surrounded with granulations, and presenting in the centre a few gangrenous spots. The division had been effected by lightning, through the superior extremity of the tibia, the patella and femur being intact. The healing of this wound took place very rapidly, and by the use of ordinary means. The leg was found on the grass, several days after the accident, just where the boy had been thrown from his horse. It was quite dried up, and emitted no smell, the tibia being quite black, and stripped half down the leg.

Insulating Electric Telegraph.

Samuel C. Bishop, of New York, has obtained a patent for a new insulating compound for telegraph wires and other electric conductors, which is very much cheaper than india-rubber or gutta-percha, or the compounds of those materials previously used, and is said to be very effective and durable.

OUR French name-sake, *Le Journal des Telegraphes*, for October, devotes several pages to explaining and praising a new "meteorological clock," made by M. Secchi. From the description, it seems to be a complete meteorological observatory. A balance barometer and a metallic thermometer trace enlarged curves of variation of the atmospheric pressure and of the temperature; a pluviometer measures the rain-fall for twenty-four hours. Automatic organs, veritable telegraphs put in action by electric currents, show the direction and velocity of the wind, the hour and time of continuance of the rain-fall, and trace the two curves indicated by the psychrometer, which measures the tension of the aqueous vapor in the atmosphere.

The action of the clock causes three movements. It displaces horizontally the pencil which scores the quantity of rain which has fallen. It moves the knob of the lever which marks the line proportional in length to the velocity of the wind; and, finally, it regulates the apparatus which indicates the hygrometrical state of the atmosphere. The electric currents are supplied by a Daniel's pile, of fifteen couples, mounted with sand. The constancy of the clock is remarkable—as it will perform all its functions for a full year, without other attention than the addition, each month, of a little water and sulphate of copper.

The apparatus seems to be destined to render great services to science—the ingenious arrangements of the inventor causing the phenomena to trace their own curves of variation.

Upon M. Secchi's table of registration, there are found noted, side by side, the elements necessary to keep account of the state of the atmosphere, and to appreciate the extent of the perturbations which have happened at any given moment.

Personal.

J. T. Hanford, of Cincinnati, has accepted a position in St. Paul, Minn.

Frank Howe, of Ducessan, Pa., has been appointed to a position in Connersville, Ind.

E. T. Gilliland, of Cincinnati, is on a visit to Michigan. Mr. Dave is working as a "sub" in his place.

Ellis Wilson, one of the old liners, has resigned his situation in Cincinnati to accept a more lucrative position in Nashville, Tenn.

WE omitted in our last to notice the appointment of Thomas Dolan to the night managership of the central office of the Western Union Telegraph Company, New York. He has earned this honor by marked steadiness of conduct and executive ability. We think Mr. Dolan became an operator under our own superintendency, and we know that we have never trusted in one more implicitly. A true man will always come out right. The management of so important a trust could not be in better hands. Success to him.

Electricity and Light in Defensive Warfare.

We learn from a foreign journal that a course of experiments has recently been made at Antwerp, in Belgium, by a corps of engineer officers, with a view of strengthening the defenses of the passes of the river Scheldt, upon the bank of which the city is situated, by means of torpedoes, arranged in three lines, the explosion of which being regulated by the camera obscura. When this instrument is fixed at a certain angle, the image of a ship passing directly over any one of the series of torpedoes is reflected upon a mirror placed within the camera. An electric current, generated by a galvanic battery, or by a magneto-electric machine, is then made to explode the torpedoes, which it does instantly. The mines are each numbered, and have corresponding marks in the chamber.

The same journal states that the city of Venice was defended in the same manner, during the late Italian war. All the trials which have hitherto been made have succeeded most admirably, and the arrangements are very soon to be replaced by others constructed on a much larger scale. The report does not state the name of the inventor, nor the material used in charging the torpedoes. We should naturally surmise, however, that the latter was nitro-glycerine, as that substance is easily exploded under water by means of electricity, and possesses a terrific power in a very small space.

We shall expect soon to see the cities of New York, Boston, and other American maritime cities, defended in the same way, and perhaps with important improvements. Our engineers and chemists are not generally far behind those of other countries in such matters, and it will be strange if they neglect to avail themselves of this for a long time.

Pargod.

PITTSBURG, Nov. 7, 1868.

To the Editor Journal of the Telegraph:

An operator, signing himself "Pittsburg Operators," following the illustrious example of the three tailors of London, who signed themselves, "We, the People of England," endeavors to create the impression abroad that a disaffection which exists only in his own brain, is shared by the operators in this office.

No better proof of his error should be required than the fact that his discharge was felt to be a relief to every operator in the office; and, in justice to the operators of "G" office, it is only fair to say, that, however hard their work may be, they perform it faithfully, and that they have honorably resisted the efforts of this one man to sow discord among them.

RELIEF.

Notice to Offices of the Western Union Telegraph Company.

As the official tariff sheets are printed in the JOURNAL only, all offices are required to keep the same on file for purposes of reference. When a new office is opened and the JOURNAL is received, the Manager will pay to the Postmaster the postage as a regular subscriber, and charge in his monthly account. In case of missing numbers application will be made to the District Superintendent.

How to Stop Earthquakes.

The authorities of Jaszberney, a Hungarian town, have just had the following notice published to the sound of the drum:

"Seeing that oaths and blasphemies are the real causes of earthquakes, every one, no matter who, is forbidden to swear or use bad language under penalty of receiving 25 stripes with rod and paying a fine of 25 florins.

New Galvanic Exciting Liquid.

M. Delaurier has communicated to the Academy of Science a note upon a new exciting liquid for galvanic batteries. He states that, "in order to obtain very powerful batteries disengaging no deleterious gas, and of very cheap maintenance, I have proved the problem of transforming azotic acid into sulphate of ammonia, under the influence of sulphuric acid and hydrogen." This is done by the proto-sulphate of iron. The proportions in these liquids are twenty parts in weight of proto-sulphate of iron dissolved, sheltered from contact with the air, in thirty-six parts of water, to which is added, with stirring, seven parts of diluted (equal parts) sulphuric acid, then, in the same manner, one part of diluted (equal parts) azotic acid. M. Delaurier states that the liquid produced is the most energetic and most economical that he knows for an exciting liquid for iron zinc, without any disengagement of hydrogen or binoxide of azote.

In the use of this liquid with nitric acid, the action goes on without any exterior emanation of nitrous gas, and without the emission of hydrogen in the interior.

THE poles recently erected for a telegraph line between Snakin, in the Red Sea, and Cassaba, in Egypt, have been so eaten up by ants, that iron poles have to be substituted before the line can be opened for use.

THE English papers notice the extraordinary rapidity of telegraphic intercourse between Cuba and Europe.

The cable to be laid in the Black Sea as a part of the Indo-European line will be covered with a sheathing of copper, under the direction of M. Siemens, and will have three conductors.

PROF. TYNDALL denies the story headed "Vandalism," which accuses Mrs. Faraday of giving into the hands of a porter the valuable apparatus of her distinguished husband. These were distributed worthily, and the most valuable to parties named by Faraday himself.

SOME important changes are going on in the large battery room of the central office of the Western Union Telegraph Company, New York, under the care of M. V. B. Buell, respecting which we are promised a full report. The number of cells has been reduced one half, and yet the lines have been worked with increased ease and efficiency. The times seem full of promise and progress.

THE accession of books to the British Museum Library averages 20,000 volumes per annum, or about 50 to 60 volumes per day.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, NOVEMBER 16, 1868.

To Subscribers.

As most of our subscription list commenced with the publication of the paper, our subscribers will be kind enough to remit promptly one dollar for the coming year. The price to clubs will be as before.

End of Volume 1.

With the present number our first volume ends. We trust that the new one will be opened with no breach of the large circle of readers who have cheered and borne with us during the year. We have to thank them all for their patience, and many of them for their aid. The editorial chair is not always cushioned, even if the sphere of its work be narrow, and in that undefined dread with which a novice commits himself to the criticism of thousands of unseen eyes, we have needed and been gratified with kindness beyond our merit.

Our second volume will, we trust, show the benefit of the past year's education, and be increasingly useful and welcome. We desire to stimulate and introduce every element which may render labor in the wondrous and widening field of electrical communication cheerful and honorable. We design to do our best to unite the President and the messenger boy with every interconnecting link in a hearty and kind and energetic co-operation. We shall utter whatever thought shall seem best designed to promote harmony in the common toil, and gather knowledge from all possible sources for our mutual pleasure, education, and advancement. We conceive this to be a worthy vocation and an honorable sphere, one in which we have been left untrammelled hitherto, and so design to be, now and evermore.

On the opening page of the new year our readers will find an admirable likeness of Professor Morse, whose young face, even at 77, sometimes glows into our own as the memories of other days light up both in merry radiance. And other faces will greet you, gentle reader, if you continue, as we trust you will, your good cheer and company.

The Panama Line.

No progress has been made with the cable line between Cuba and Panama, except organization and a partial examination of the route. Events, however, are culminating, which will demand its prosecution. The isthmus of Panama separates America from a vast commerce, and it must be pierced. This was one of Napoleon's great projects. He saw there the gateway to the western world. It must become so. The avenues of intercourse by land and sea must all

be opened. The belt of fire is kindling the hearts of nations to each other, and giving an idea of proximity never so great as now.

These projects, both the Darien Canal and the Cable, have great significance in reference to the future of the United States. Darien will one day become the terminal point of the Republic. Mr. Seward has spent a week among our distinguished merchants and men of enterprise in a quiet discussion of the magnitude of the interest this nation has in connecting the waters of the two oceans, so that ships from China and our own Pacific coast can come direct to our Atlantic harbors. He evidently deems the time to have come to push this grand work to fruition. One of the first things needed will be the cable, just as Napoleon finds it essential to connect the French imperial offices with Suez, where a similar work is in progress to connect Europe with the eastern world.

Not only so, the other day we received a visit from Mr. I. Studdy Leigh, an intelligent representative of the Telegraph Maintenance Company, of England, who had just procured the offer of half the capital necessary to lay cables from Panama southward, to connect with the South American lines. The other half will be taken in England. The Cuba and Panama cable must be laid to connect South America with the world. So, gentlemen, get your arrangements completed speedily. A year is a long time to wait now-a-days on any thing. Let 1869 see your work *un fait accompli*.

Phelps' Printing Telegraph Instrument.

We have rarely been more agreeably surprised than in a private exhibition of this beautiful and effective triumph of mechanism just completed by George M. Phelps, the skilled superintendent of the Williamsburg works of the Western Union Telegraph Company. In simplicity of mechanism, in perfection of motion, in economy of power, in rapidity and certainty of execution, in a general conception given the observer of ease of action as when fluent lips utter musical sounds, this instrument surpasses anything we have yet seen. A single cup of battery, costing 20 cents per day to maintain it, is all the motive power it requires, and this gives steady action to machinery which so far has been performed by manual labor.

In this machine the type wheel is detained for the stroke, rendering it clear and complete, and the fingers can play among the letters, backwards and forwards, up and down the alphabet, with an ease and freedom little less than marvelous. It utterly knocks into shade all existing printers, and must be regarded as a vast addition to the means of electrical communication.

We notice that our European electricians are very much exercised over and interested in the story we mentioned recently of Mr. Mower's so-called "water telegraph," and experiments by which he says he transmitted messages across Lake Ontario, from Toronto to Oswego, without wires.

The scientifics over the ocean are anxiously awaiting Mr. Mower's arrival, to establish telegraphic communication between Oporto, in Portugal, and Montauk Point, on Long Island, and estimates that, as his apparatus for such an enterprise will cost \$10,000, and a submarine cable costs five or six millions, Mr. Mower will have a monopoly of the business, by sending messages at rates which will very soon ruin George Law and his French competitors, as well as Cyrus Field and the Britishers.

We have no doubt Mr. Mower would be very willing to sell out his rights to either of his competitors for \$10,000, before the disclosure of his "secret" reassures their stockholders as to the prospect of the bankruptcy.

Remember to mail one dollar for the new volume.

Obituary.

Our lives are rivers, gliding free
To that unfathomed, boundless sea,
The silent grave.

It is our melancholy duty to announce the death of the accomplished wife of General T. T. Eckert, General Superintendent, Eastern Division, Western Union Telegraph Company. This sad event occurred on Wednesday morning, November 4, after a long and painful illness, which was borne with the most exemplary patience and Christian resignation. Her death was calm and cloudless, and for which all her life had been a sacred preparation.

Mrs. Eckert was a lady of unusual excellence, and of remarkable strength and purity of character. Her appearance was one of exceeding comeliness, and there was united in her a rare gentleness of manners with a sunny placidity of disposition which made her presence always attractive and desirable. Her own home was a place of perennial sunshine and joy. She has left a wide circle of friends to mourn her departure.

To him, whose home and heart are so darkened by this deep affliction, as well as to the bright and loving children who are now deprived of the guidance and care of a most faithful and devoted Christian mother, we offer our warmest sympathy and condolence. Although lost to them here, their whole lives can hardly fail to be purified by her sacred memory.

The funeral services were attended at St. Paul's Church, New York, Sunday, November 8, by a large number of the friends of the family, and of the officers and employees of the Telegraph Company.

Insurance.

The annual meeting of the Telegraph Mutual Life Insurance Association was held on Monday, the 2d inst. A statement of its condition and prospects was made by the treasurer. He reported that 350 certificates had been issued. Upwards of seventy new members had joined since the deaths of Hall and Christie. The response to the double assessment made in consequence of these deaths was prompt and general.

The former committee were selected for the ensuing year, with the exception that Mr. B. F. Ely, on the nomination of Mr. Downer, was elected secretary. Mr. Ely, however, having declined to act, the executive committee have invited Mr. Downer, who was elected assistant secretary, to continue his services as formerly, which he has kindly agreed to do. Applications will therefore be made as formerly to D. R. Downer, Secretary.

We have received a letter from the manager of a telegraph office asking certain questions respecting the effect of escapes at different points, upon sending and receiving offices, according to locality. The questions propounded at first seemed easy enough to answer, and had we stated simply our own experience, reply could readily have been given. A little reflection, however, has caused us to determine to publish an elaborate reply on data furnished from the most skilful sources, and which we will give in the first or second number of the new volume, properly illustrated. We design, during the coming year, to furnish as ample information on all such subjects as the literature or experience of electric science can provide, and will endeavor to make the JOURNAL much more useful than it has been. In this we will have the aid of experienced friends, who have promised to devote to us a part of their hours of leisure, and of which our readers will have the full benefit.

It is said that a current of electricity, produced by a powerful electro-magnetic machine, and directed upon a solution of brown sugar, whitens it quite as effectively as any of the agencies usually employed for that purpose.

For Tariff Circular see page 6.

Peru.

The Peruvian Congress has passed a bill for advancing the National Telegraph Company a loan of £100,000 in the reserved bonds of 1865, which the Senate has approved.

Samuel C. Bishop and Tillotson & Co.

Messrs. Tillotson & Co., New York, and Bliss, Tillotson & Co., Chicago, have been appointed agents of Samuel C. Bishop, of New York, for the supply of his well known gutta percha goods. We have a piece of cable before us manufactured by Mr. Bishop, which will bear comparison with any of foreign manufacture. These cables the houses of Tillotson & Co. will provide.

At Racine, Wis., Belle City Hall was made a vast telegraph office for the reception of the election returns, and gave great gratification to the public. For this they were indebted to Superintendent E. O. Wait, whose public spirited discernment led him to this graceful and grateful public act. Stimulated by Mr. Wait's generosity, the ladies of Racine opened rooms below where they provided the crowd with oysters and other suitable refreshments.

A FEW days ago we enjoyed the pleasure of a call from M. Michel, an engineer in the service of the French Imperial Telegraph, who has been here on a short furlough to "do up" the United States, and enjoy a respite from business. He returned to la belle France, October 17th, on the Ville de Paris, and on his return expects to be immediately engaged in the erection of new lines across the Alps, and the laying of a 25 wire cable through the Mount Cenis tunnel. M. Michel is a young, sprightly, intelligent Parisian, from whom we expect to hear occasionally, making us familiar with the European processes, and the extension of European lines.

We learn from him that, by law, no messages are allowed to be taken by sound. All messages sent by the Morse alphabet are received upon a Morse registering apparatus, in which an inked platinum wheel with sharp rim takes the place of the ordinary styles. The rate of transmission is about 50 letters per minute, much slower than with us, and the strip on which the message is recorded is filed away for reference. The registers are very cheap, costing not more than 15 to 20 francs, while American registers cost 250 francs in gold.

GALESBURG, ILL., August 5, 1893.

To the Editor Journal of the Telegraph:

DEAR SIR—I enclose, by request of W. McKee, our operator at Neponset, an advertisement he wishes inserted in your paper.

His Signal Box is really a valuable thing for any railroad company who are handling their trains by telegraph, and railroad companies who do not do so, at this late day, are sadly behind the age.

F. H. TUBBS,
Supt. R. R. Tel. Dept.

TO ALL R. R. COMPANIES AND TO ALL SUPERINTENDENTS OF R. R. TELEGRAPH LINES.

We desire to call your attention to our new
PATENT SIGNAL BOX

for flagging trains by day or night for Telegraph orders. A RELIABLE arrangement for this purpose has long been needed, and we claim to have found it. Our Signal Boxes are cheap, durable and reliable.

The signals (flag by day and lamp by night) are conspicuously placed at each telegraph office in full view of all trains and the operator, who can display and conceal them without leaving his instruments, and without even "breaking" in on the train-order he is receiving.

Being constantly in view, there is no possibility of their being blown down without the operator's knowledge. The Chicago, Burlington and Quincy R. R. Co. are using our Signal Box at all Telegraph Offices, and we are permitted to refer to them. We have recently disposed of the right to use them on several Roads, and now offer them to all Railroad Companies at a low rate.

McKEE & LEE,
Telegraph Office,
Neponset, ILL.

OFFICE OF PHOENIX IRON COMPANY,
410 Walnut Street,
PHILADELPHIA, November 5th, 1893.

DAVID BROOKS, Esq.:

DEAR SIR—We have been using your new Insulators upon a Telegraph Line erected for our own use, between this office and our works on the Schuylkill, a distance of twenty-nine miles, and take great pleasure in saying that during the past three months that the line has been in operation they have given us most perfect satisfaction in every respect. Very respectfully yours,
B. B. AERTSON, Secretary.

CHESTER, PARTRICK & CO.,

TELEGRAPHIC & ELECTRICAL ENGINEERS,
CONTRACTORS, &C.,

38 SOUTH FIFTH STREET,

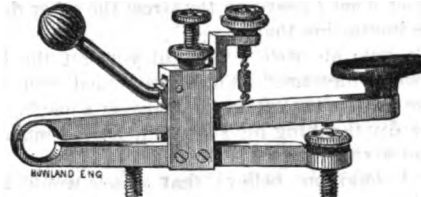
PHILADELPHIA.

Manufacturers and Merchants of every variety of

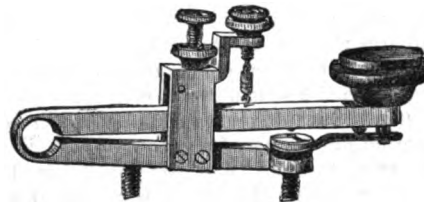
TELEGRAPHIC, ELECTRIC AND PHILOSOPHICAL APPARATUS, BATTERIES, WIRE, ACIDS, INSULATORS, MEDICAL INSTRUMENTS, AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph, or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closer.



2.—Patent Self-closing anti-trunion Key.

3.—Kerite or (horn covered) copper or compound wire or cables.

4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

MARRIED.

In Providence, on the 28th ultimo, by the Rev. J. G. Vose, Mr. Alfred H. Betts, late of the Western Union office in that city, to Miss Kate M. Phillips, also of Providence.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19 AND JUNE 30, 1893.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

BRADLEY'S PATENT NAKED WIRE HELICES,

the best in use, are used in this instrument, except when otherwise ordered. The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

The ordinary resistance of this Relay is equal to about Thirty Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

The following Testimonials, out of a number of similar tenor, are presented as a guarantee of the reliability and perfection of the working of these Relays:

NEW YORK, June 23, 1893.

MR. J. C. HINCHMAN,

Supt. Met. District, N. Y.

I have observed the working of Durant's Self-adjusting Relay, which has been on trial at this office during the past week, and feel warranted in saying it is a Self-adjuster, and as such, will work steadily on wires which, with an ordinary Relay, can only be worked with difficulty.

Very respectfully,

A. S. BROWN,
Manager.

NEW YORK, June 24, 1893.

MR. A. S. BROWN,

Manager W. U. Tel. Office, N. Y.

On the 18th of this month Superintendent Hinchman directed me to try Durant's Relay on our circuits, and report upon its merits. Since the above date it has been in operation here continually.

I have tried it upon many of our wires, and find it works equally well on all of them.

There has been but one rainy day during the meantime, and on that day it worked very satisfactory over escape and changeable currents.

On the 18th inst., Nos. 33 and 34 south were lying on the ground, between Elisabeth and Somerville, N. J. We could just get Philadelphia by very high adjustment with ordinary Relay, while Durant's Relay recorded Philadelphia's writing as well as upon a clear wire. From the various tests I have submitted it to, I have no doubt that it is a Self-adjuster, and as such will work where any ordinary Relay can be adjusted to work.

Very respectfully yours, &c.,

A. S. DOWNER,
First Chief Operator, W. U. Tel. Co.,
145 Broadway, N. Y.

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Nov. 16, 1893.

Address all orders to

CHARLES DURANT,
Office and Factory 65 South St.,
New York City.

PRESENTATION.

The Retirement of Superintendent Sweet from the Western Union Telegraph Company.

Some twenty years ago, Mr. E. D. L. Sweet, then a young man of twenty-four, commenced the business of telegraphing while the science was comparatively in its infancy. The details of the profession he had chosen he seemed to acquire by intuition, and, by his devotion to his business, his industry and strict integrity, as well as marked administrative ability, he rose rapidly, and soon obtained a high position, and has, since that time, been prominently identified with the rapidly growing enterprise of telegraphing. To but few men in the country does the business, with the vast proportions it has now attained, owe more than to Mr. Sweet. At the time of the consolidation of the Illinois and Mississippi and the Western Union Telegraph companies, he held the position of general superintendent of the former, and was then appointed to the superintendency of the Thirteenth district of the new company. While his success was so marked in this respect, perhaps no man connected with the company ever attained so general a personal popularity, particularly among the employees under his immediate direction, as the late superintendent of the Thirteenth district. An illustration of the pleasant relations between him and those holding subordinate positions under him is furnished by Mr. Dickey in his presentation speech, in the statement that from the five hundred employees under him only one resignation had occurred during the year. It can, therefore, easily be imagined that his resignation, which was sent in to take effect on the 1st of July last, was received with deep regret. His decision was final, however, and on the day mentioned he retired to assume the financial agency of the Young Men's Christian association, and to engage in private enterprises.

Soon after his retirement a committee was appointed to solicit subscriptions from the employees of the Thirteenth district, for the purpose of presenting him with a suitable testimonial of the esteem felt for him by all. The task proved an easy one, all being solicitous of contributing, and the necessary amount was soon raised. The birthday anniversary of Mr. Sweet was chosen as a most appropriate occasion for the presentation. It has long been the habit of Mr. Sweet to celebrate these anniversaries by a reunion of his relatives and personal friends, and, by letting Mrs. Sweet into the secret, the matter was easily arranged so as to give the recipient of the testimonial a complete surprise. The articles to be presented were surreptitiously conveyed into the house and placed upon a table in a boudoir at the back of the parlor, and concealed from view by a curtain.

At the appointed time the guests assembled to the number of nearly one hundred ladies and gentlemen, all personal friends and attaches of the telegraph company, when Mr. Sweet and his lady were brought facing the boudoir, and the curtain was removed, revealing a complete service of solid silver plate, making a glittering display. Mr. J. J. Dickey, in behalf of the donors, then stepped forward and in a most appropriate speech, in which allusion was made to the long connection and the pleasant relations of the recipient with the company, asked his acceptance of the testimonial. Though completely taken by surprise, Mr. Sweet made a most felicitous reply, reviewing briefly the history of his connection with the business of telegraphy.

The service consists of fifty-five pieces, of elaborate workmanship, and of most beautiful design, and was purchased of Messrs. Gilcs, Brother & Co., at their establishment, No. 142 Lake street, the whole being valued at \$1,000. The large salver bears the following inscription: "Presented to E. D. L. Sweet, by the employees of the 13th Dist. W. U. T.

Co., as a testimonial of their esteem, on his retirement from the service, July 1, 1868." Mrs. Sweet was also presented with two beautiful silver vases, and an elegant silver toilet set of Bohemian glass, upon a solid silver stand.

After the conclusion of the interesting ceremonies the guests were invited out to a most bountiful collation, which was followed by social amenities, lasting until a late hour. It was a most happy occasion, and passed off to the entire satisfaction of all.

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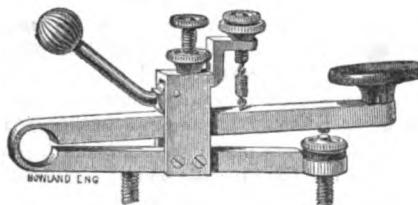
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LATORS, MEDICAL INSTRUMENTS,

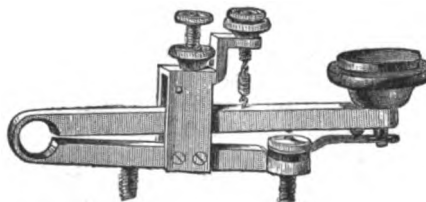
AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph, or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closers.



2.—Patent Self-closing anti-trunion Key.

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4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

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NONPAREIL RELAY.

PATENTED MAY 19 AND JUNE 30, 1866.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

BRADLEY'S PATENT NAKED WIRE HELICES,

the best in use, are used in this instrument, except when otherwise ordered. The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

The ordinary resistance of this Relay is equal to about Thirty Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

The following Testimonials, out of a number of similar tenor, are presented as a guarantee of the reliability and perfection of the working of these Relays:

NEW YORK, June 23, 1866.

MR. J. C. HINCHMAN.

Supt. Met. District, N. Y.

I have observed the working of Durant's Self-adjusting Relay, which has been on trial at this office during the past week, and feel warranted in saying it is a Self-adjuster, and as such, will work steadily on wires which, with an ordinary Relay, can only be worked with difficulty.

Very respectfully,

A. S. BROWN,
Manager.

NEW YORK, June 24, 1866.

MR. A. S. BROWN,

Manager W. U. Tel. Office, N. Y.

On the 16th of this month Superintendent Hinchman directed me to try Durant's Relay on our circuits, and report upon its merits. Since the above date it has been in operation here continually. I have tried it upon many of our wires, and find it works equally well on all of them.

There has been but one rainy day during the meantime, and on that day it worked very satisfactory over escape and changeable currents.

On the 18th inst., Nos. 33 and 34 south were lying on the ground between Elizabeth and Somerville, N. J. We could just get Philadelphia by very high adjustment with ordinary Relay, while Durant's Relay recorded Philadelphia's writing as well as upon a clear wire. From the various tests I have submitted it to, I have no doubt that it is a Self-adjuster, and as such will work where any ordinary Relay can be adjusted to work.

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For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Nov. 16, 1866.

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Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

AMERICAN COMPOUND TELEGRAPH WIRE.SUPERIOR CONDUCTIVITY,
LIGHTNESS AND DURABILITY.

A MOST IMPORTANT INVENTION.

We would call the attention of Officers of Telegraph Companies, Telegraph Builders and Contractors, and the Public, to the new

PATENT COMPOUND TELEGRAPH LINE WIRE

Manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY,
OF NEW YORK.

This Wire has already been put up on sections of several Telegraph Lines, and its merits fully tested, and the results show that it combines all the good qualities which are claimed for it, viz., *Economy, Superior Conductivity, and Increased Strength, with Decreased Weight of Metal.*

In its composition are used three metals, either of which is a good conductor, Steel, Copper and Tin; and the superiority of Copper as a conductor over other metals is well known, and but for its ductility rendering its permanent suspension in a pure state intact impracticable, it would have always been used exclusively as a Conductor on Telegraph Lines. By combining it with Steel the desired strength and permanence is attained, and the necessary weight of the line wires reduced two-thirds, thus obviating the necessity for using a large number of poles to the mile, and by reducing the points of contact, lessening the chances for trouble and escape of the electric fluid.

All other Line Wires must inevitably be superseded by this, and such Telegraph Companies as now adopt it will the sooner realise the advantages to be derived from its use over those whose lines are of the old rotten and rusty iron wire pattern.

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Parties using are invited to examine them at our Office.

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IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

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OUR WORK WILL BE DONE PROMPTLY.

And it is particularly requested that any goods sold and recommended by us, not proving satisfactory, SHALL BE RETURNED.

We have on hand an assortment of other makers' Instruments besides our own, and are prepared to supply them at their own prices—

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HALL'S,

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Or any other, excepting such as we know to be of inferior quality.

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WITH THE

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Make, beyond question, the most perfect Battery yet produced. We have abundant testimony of their GREAT SUPERIORITY OVER ANY OTHER.

We particularly invite attention to our whole arrangement of the

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Proving, as it does, that as much strength may be obtained from this Battery as the Grove, with far less expense.

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THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-300th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine.....	\$19 50
Small Box Relays.....	16 00
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REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

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Of any number required.

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Of any desired Size and Pattern, American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

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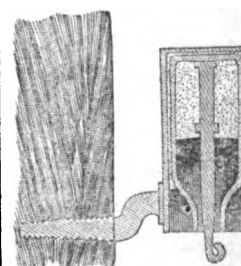
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PATENT PARAFFINE INSULATOR WORKS.

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All varieties of INSULATORS manufactured at these Works are warranted to excel the usual style of Glass and Rubber more than one hundred fold. In view of the error and delay in transmission, waste and consumption of battery material, the results of defective insulation, its fragile

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To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.

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JOURNAL OF THE TELEGRAPH.

NO. 3.

NEW YORK, JANUARY 1, 1869.

VOL. II.

THE MORSE BANQUET.

Honors to the Inventor of the Magnetic Telegraph.

The grand complimentary dinner given to Professor Morse was in every sense a magnificent ovation, as it was a well-deserved tribute to that distinguished scientist. Some of the most eminent persons in the country were present to do him honor; the banquet was of the rarest and most exquisitely varied character; the speeches and general proceedings marked with supreme good sense and good feeling; and the entire entertainment one which will long live in the remembrance of those who assisted in it.

The banqueting-room was very beautifully decorated. A narrow drapery of crimson silk ran round under the cornice, beneath which were suspended the arms of those nations which have been most conspicuously ready to avail themselves of the benefit of telegraphy. At the back of the chairman's seat was a splendid medallion, bearing the arms of the United States, surmounted by the eagle; beside this were the arms of England and France, all united with the centre emblazoned in a grand trophy of flags.

The tables were splendidly adorned with curious pieces of confectionery of emblematical designs. In front of the chair was a large gilded statue of Atlas supporting the globe, around which were fixed telegraph poles, which, by light filaments of gold, were connected with the trophy above. Further down, on the central table, was a statuette of Franklin with the kite; and there were also symbolical pieces representing painting (in allusion to Professor Morse's former pursuits), a temple of merit, and a "Trophée aux inventeurs," which was extremely handsome. The carte bore a well-executed portrait of Professor Morse.

The Hon. Salmon P. Chase, Chief-Justice of the United States, presided on the occasion, having on his right the guest of the evening, Professor Morse, LL.D., and on his left Edward Thornton, Esq., H. B. M. Minister to the United States.

Among the guests were President Woolsey, Professor Goldwin Smith, Rev. Dr. Adams, Ex-Governor Buckingham, William E. Dodge, Amos Kendall, David Dudley Field, Hugh Allan (of Montreal), E. M. Archibald, Sidney E. Morse, James Brooks, President Barnard, William M. Evarts, Major-General Irwin McDowell, Edwards Pierpont, Rev. Alexander Vinton, D. D., Governor Curtin, Wm. Cullen Bryant, A. B. Durand, Rev. Dr. Farley, Professor White, Wm. B. Reed, J. H. Wade, B. R. McAlpine, Gen. Anson Stager, Ezra Cornell, Gen. Lefferts, Cyrus W. Field, Wm. Orton, Peter Cooper, L. P. Morton, Wm. F. Blodgett, C. Van Santvoord, Clarence A. Seward, G. D. Phelps, Hiram Walbridge, Wilson G. Hunt, A. T. Stewart, Marshall O. Roberts, Moses H. Grinnell, Howard Potter, Clarkson N. Potter, H. H. Van Dyke, George Opdyke, Chas. Butler, Moses Taylor, A. A. Low, Abram Wakeman, J. J. Cisco, Samuel J. Tilden, Samuel B. Ruggles, Hamilton Fish, Erastus Brooks, C. L. Morse, R. Morse, C. Lanier, C. E. Detmold, E. L. Godkin, M. K. Jesup, Judge Kirtland, General Viele, S. L. M. Barlow, C. A. Rapallo, J. F. Kensett, Eastman Johnson, C. P. Cranch, Judge Erskine, &c. The total number of guests was about two hundred.

The invocation was uttered by Dr. Adams, as follows:

Almighty God, we adore Thee as the Maker of the heavens and the earth, and "whatever passeth through the paths of the seas." As Thou hast "made of one blood all nations of men for to dwell on all the face of the earth," we thank Thee for every discovery and art by which the community of human interests is aided and promoted; for the "swift ships" on the great and wide sea; for "chariots with flaming torches, which run like the lightnings;" and for the lightnings themselves which, at Thy bidding, come unto man and say, "Here we are." "Them that honor Thee, Thou wilt honor." Thanking Thee for the occasion on which we are gathered, we ask Thee to bless it for the promotion of all which is good, and the brighter anticipations of that day when, as "the lightning cometh out of the east and shineth even unto the west," the Son of Man shall come in the glory of that kingdom "which is righteousness and love and peace;" all of which we ask in the name of Jesus Christ, our Lord and Redeemer. Amen.

After justice had been done to the dinner, which fully equalled the promise implied in the adornment of the hall and tables, the Rev. Dr. Vinton returned thanks in a short prayer.

At this moment Mrs. and Miss Morse, Mrs. Dix, Mrs. Huntington and Mrs. and Miss Thornton and other ladies entered. The applause with which they were greeted perhaps may have been considered by them as some small compensation for the exclusion of their sex from the tables.

THE PRESIDENT, Chief-Justice Chase, said: And now, gentlemen, will you allow me what would be called in another place a word of "personal explanation." There is certainly nothing in my official position or in my official duties which would naturally suggest an invitation to me to preside upon this occasion; but the gentlemen who had charge of the arrangements remembered that in the earlier days of the telegraphic enterprise I was its sincere friend, and later had some personal connection with it. They, therefore, honored me with an invitation to be present and preside to-night.

The telegraph long since ceased to have need of friends and my personal connection with it terminated years ago. But my old interest in its progress has not abated. I remember the past as they do, and I would not be thought backward, whenever and wherever honors are to be paid to the father of American Telegraphy. [Cheers.] I accepted their invitation, therefore, and am here. [Applause.] And now if you receive this excuse as sufficient, and I take it you do, I will call on Mr. Cyrus W. Field for any letters he may have to read to us.

Mr. Field responded:

MR. CHAIRMAN AND GENTLEMEN—I well know how impatient you are to hear the distinguished gentlemen that are to address you this evening, and I will not detain you by reading the letters that we have received from the President of the United States; from Gen. Grant [applause]; from Speaker Colfax; from Admiral Farragut, and from many others of our most worthy citizens. But I will, as this is a banquet given to a distinguished electrician, read you two telegrams that we have received. The first is from the Governor of Massachusetts, the State in which Prof. Morse was born:

BOSTON, Mass., Dec. 29, 1868.

CYRUS W. FIELD and others, Committee for the Morse Banquet, Delmonico's:

I regret my inability to accept your invitation. Massachusetts honors her two sons—Franklin and Morse. [Loud applause.] The one conducted the lightning safely from the sky. The other conducts it beneath the ocean, from continent to continent. [Applause.] The one tamed the lightning; the other makes it minister to human wants and human progress.

ALEXANDER H. BULLOCK, Governor. [Applause.]

This morning I sent a telegram to London, giving information that we were to meet this evening to honor our fellow-citizen, Prof. Morse. The following reply was received at 50 minutes past noon to-day.

LONDON, 4 o'clock P. M., Dec. 29, 1868.

CYRUS W. FIELD, New York:

The members of the Joint Committee of the Anglo-American and Atlantic Telegraph Companies hear with pleasure of the banquet to be given this evening to Prof. Morse, and desire to greet that distinguished telegraphist, and wish him all the compliments of the season.

Sir Richard Glass is out of town.

Consols, 92½@92¾.

[Applause.]

J. C. DEANE, Secretary.

This telegram was sent from London at 4 o'clock this afternoon, and was delivered into the hands of your Committee at 12.50. [Applause and Laughter.]

THE PRESIDENT—You will please to prepare, gentlemen, for the first regular toast. It is in six words, which are never pronounced by patriotic Americans without honor, nor by intelligent men in any part of the civilized world without respect:

"The President of the United States."

[Cheers.] Music—Hall Columbia.

THE PRESIDENT—Americans can only repay in gratitude the numerous proofs of consideration, respect and of honor which, by various sovereigns and peoples of the Old World, have been bestowed upon the eminent citizen who is our guest to-night; but there is one sovereign and one people to whom our especial thanks are due. I mean the Queen, the great and good Queen of Great Britain [cheers—the company rising]. I mean the great and magnanimous English people. [Renewed applause and great enthusiasm.] Their men of science and their capitalists united with ours in furnishing what may be very well called the ways and means for laying the transatlantic cable, and British ships co-operated with American ships in the preparatory measures for the great enterprise. [Applause.] May they never meet in less friendly encounters. [Great cheers.] I will ask my friend upon my left, the British Minister, to respond to the next regular toast. [Three cheers for Mr. Thornton.]

"The Queen of the United Kingdom of Great Britain and Ireland, and all Sovereigns and Peoples who have testified their appreciation of the telegraphic inventions and enterprises of America."

Edward Thornton, Esq., C. B., British Minister to the United States, responded:

MR. THORNTON'S SPEECH.

MR. THORNTON said: MR. PRESIDENT AND GENTLEMEN—I thank you sincerely and most cordially for the kind manner in which the health of my beloved sovereign and of other sovereigns and peoples, who appreciate the telegraphic enterprises of the United States, has been proposed and responded to by the distinguished company here present. I hope I may be allowed to avail myself of this opportunity to express my great gratification at the sentiments of esteem and regard which I have observed are almost universally entertained for Her Majesty Queen Victoria [applause] by the press and people throughout the length and breadth of this great land. I am confident that there is no one in England who is more anxious than the Queen for the maintenance and improvement of the harmony and good understanding which ought to exist between the two nations—[applause]—and which are of such vital importance to both of them, and none who would rejoice so much that all honor should be done to so great a benefactor of the human race as the distinguished professor, to show our high appreciation of whose character we have assembled in this place.

I am unwilling, however, to fall into what seems to me the error of talking too much about peace. A good deal has been said upon the subject both in this country and in Europe, more perhaps than is either absolutely necessary or useful. [Applause.] Peace is not always produced by talking about it. Statesmen ought, I should imagine, to endeavor to discover what is most likely to engage men's interests, and to convince them that a state of peace is necessary to their well-being, and to their moral and material comfort. What can be more likely to effect this than a constant and complete intercourse between all nations and individuals in the world? [Applause.]

But statesmen are not always scientific men, and it is to science that we are indebted for the means of communication. Steam was the first olive branch offered to us by science. The voyage which my father made to this country in 1790 in 75 days is now easily accomplished in nine or ten. [Applause.] Then came a still more effective olive branch—this wonderful electric telegraph, which enables any man who happens to be within reach of a wire to communicate instantaneously with his fellow men all over the world. [Applause.]

Should I have the good fortune to live to the age of the venerable Professor I still hope to see some such improvements as will enable us to carry on a *vis-a-vis* conversation by means of the cable. [Laughter.] We shall then have merchants on this side of the water discussing their affairs with those of the other at so much a minute. We shall hear, perchance, of some love-stricken youth of London or Paris whispering soft nothings along the cable to one of those bewitching syrens of New York at so much an hour [laughter], she tempting him all the while to throw himself into the gulf which separates them.

[Laughter.] We shall then have statesmen, aye, and in those days of progress even stateswomen [laughter and applause] discussing international questions at so much a conference [laughter], and we poor diplomats shall run a very good chance of being exploded altogether. [Laughter.] But I must not take up more of your time [cries of "Go on"], which will be better employed by those friends and co-laborers of your distinguished guest, who are able and anxious, probably, to speak [laughter] to the high qualities which adorn him. I cannot, however, sit down without expressing my great satisfaction at being able, through the kind invitation I have received, to contribute my mite of that admiration and esteem for Prof. Morse which must be felt by all for so great a benefactor of his fellow creatures and of posterity. [Loud cheers].

THE PRESIDENT—The next regular toast is

"The Army and Navy of the United States;" [Music—Red, White and Blue. Three cheers for the army and navy.] United, thank God, never to be separated. We regret exceedingly the compelled absence of Admiral Farragut [cheers for Farragut], whom we expected to meet here this evening; but Major-Gen. McDowell will gratify the company by responding to the sentiment.

REMARKS OF GENERAL M'DOWELL.

MR. PRESIDENT AND GENTLEMEN: I am as deeply sensible of the honor of being called on to respond in behalf of the army and navy on this interesting occasion, as I am fully conscious of my inability to do either justice to the subject or to the eminently distinguished American in whose honor we are here present to-night. The army and navy have their lot and part in the matter of recognizing the good he has, through them, ever done mankind; for little as at first it may appear that war has to do with what was no doubt meant by the great discoverer, as especially and directly, for the purposes of peaceful life, yet I think I do not hazard too much in saying, that while it was, perhaps, neither his purpose, nor, perhaps, his desire, to add to the engine of war, he has certainly done so, in a most signal manner. Since the invention of gunpowder, and the development of all the many consequences to the human race which have flown from it, there are perhaps no three men who have contributed so much to the appliances of war as Fulton, Stephenson and Morse. [Cheers].

As the great end of modern civilized war is to reach a state of peace in the soonest possible time, any invention which facilitates or hastens military operations is a step in advance of the olden time, when war was the normal state of the human race. And of the modern additions to the means at the command of the admiral afloat and the general on land, the greatest, unquestionably, is the application of steam and electricity. The improvements in artillery and in arms of precision have altered the relations of attack and defense, and modified the conditions on which military operations are to be conducted. But manifold, interesting, and important as they are, they are not equal to the power now given of moving a whole army from one side of the continent to another in few days, and of sending for that army in a few seconds.

It is a fundamental condition of all human progress that man should have peace, and he who gives us the means of sooner bridging over the chasms of war, and making still shorter those, now happily, brief contests, which we do not seem to be able as yet to dispense with, is, in the highest sense, a benefactor to his kind. Therefore it is that they on whom specially devolve the charge of these contests are particularly called upon to pay and make their acknowledgments to one who has done so much to abridge their horrors. [Cheers.]

The next regular toast was:

"Our Guest—Prof. S. B. Morse—The man of Science, who explored the laws of Nature, wrested Electricity from her embrace, and made it a Missionary in the cause of human progress."

Before reading it Chief-Justice Chase spoke as follows:

REMARKS OF CHIEF-JUSTICE CHASE.

GENTLEMEN: You will now allow me to invite your attention to the next regular toast. God has given understanding to man, to be employed for His glory in promoting the happiness of His creatures. And in nothing that belongs to earth can the human understanding be more worthily employed than in the researches of Science and in the works of Invention.

Science and Invention may be called, perhaps not unfitly, the creators and the servants of civilization. Sometimes Invention, by a sort of intuition of principles, has grasped results and seemed to anticipate Science. More usually Science, by the patient investigation of truth, and the discovery of principles, has prepared the way for the triumph of Invention.

All Invention is realized Science. And this is especially true of the Telegraph.

I will not fatigue your attention with ancient and modern devices for communicating intelligence at a distance; but it seems proper to notice, here, how many men of science, and of what various nationalities, have contributed to that wonderful art and instrument, by which the world is now bound in electric chains.

Many shining names will at once occur to any one at all familiar with the history of the telegraph. Among them I can pause to mention only those of Volta, the Italian, to whose discoveries the battery is due; Oersted, the Dane, who first discovered the magnetic properties of the electric current; Ampere and Arago, the Frenchmen, who prosecuted still further and most successfully similar researches; then

Sturgeon, the Englishman, who may be said to have made the first electro magnet; next, and not least illustrious among these illustrious men, our countryman, Henry, who first showed the practicability of producing electro-magnetic effects by means of the galvanic current, at distances indefinitely great; and finally, Steinheil, the German, who, after the invention of the telegraph in all its material parts was complete, taught, in 1837, the use of the ground as a part of the circuit. These are some of those searchers for truth whose names will be long held in grateful memory, and not among the least of their titles to gratitude and remembrance will be the discoveries which contributed to the possibility of the modern telegraph.

But these discoveries only made the telegraph possible. They offered the brilliant opportunity: there was needed a man to bring into being the new art and the new interest to which they pointed. And it is the providential distinction and splendid honor of the eminent American who is our guest to-night that, happily prepared by previous acquirements and pursuits, he was quick to seize the opportunity and give to the world the first recording telegraph. Fortunate man! thus to link his name forever with the greatest wonder and the greatest benefit of the age! [Great applause.]

But his work was not done when in 1833 he conceived the idea and devised the plan of the first telegraph. Long years of patient labor and constant perseverance were needed to bring the telegraph into use. Its first messages were not transmitted until 1844. Even then, and indeed before that year, with something like prophetic inspiration, he grasped the future, and predicted that telegraphic connection between Europe and America, which it was reserved for another distinguished American, kindred in spirit and kindred in renown, and illustrious to accomplish. Here I must pause—not, however, without uniting all your aspirations in the fervent wish that our honored guest may live long and happily to enjoy the applause, the gratitude and the reverence of mankind which he has so honorably won. [Great applause.]

RESPONSE OF PROF. MORSE.

GENTLEMEN:

In rising to respond to the sentiment you have been pleased to put forth, I scarcely know in what terms to thank you, and I feel somewhat at a loss to determine in what manner adequately to answer your expectations in anything I may utter.

Various and conflicting memories crowd upon me at this moment—memories which this demonstration has quickened into life. What train of thought, what incidents of the past, in the brief moments allotted to me, can I select from this mass of recollections which may contribute either to your profit or your pleasure?

By this demonstration you have put me into the delicate position of telegraphic standard bearer, not merely for my own country but for the world, and yet this position, unsupported by certain well-acknowledged facts, might seem to savor of presumption. May I not, however, save myself from a charge of presumption, and you from a charge of national prejudice, if I fall back on the reiterated verdict of other nations?

Leaving out of view the personal honors awarded by so many of the Sovereigns of the Old World in conferring upon me the crosses of various orders of knighthood, and national scientific medals, let me refer to the Congress of the European Nations convened in Paris in 1858, at the suggestion of the Emperor of the French, the special object of which was to devise some "collective act of the nations," "testifying the sentiment of public gratitude" to me for my invention. Ten of the principal nations accepted the call, and by their ambassadors formed this congress. The result of their debates was a unanimous vote of four hundred thousand francs to be presented to me (using the language of their accomplished president, the late Count Walewski) "as an honorary gratuity and as a reward altogether personal for my useful labors"—"a collective token of the public gratitude justly excited by my invention."

In 1865 an International Convention was assembled in Paris, representing twenty nations, comprising nearly all if not all the nations of Europe. As one of the results of their deliberations, this convention decreed in its third article: "The apparatus Morse is provisionally adopted for the service of all the international lines."

Still more recently—in the spring of the present year—another International Telegraph Convention was assembled in Vienna, which has confirmed the previous decree and added another apparatus, an American modification of the telegraph, announcing that the Morse and the Hughes apparatus are adopted for the international lines.

These simple historical facts, I think, are sufficient to rescue both you and myself from any charge of presumption in claiming for the United States the position of having given to the world the modern telegraph.

In the minds of some, however, perhaps the question may be agitated: Whence and when did the telegraph, now universally adopted throughout the world, originate? Is it an invention originating here, or was it a foreign invention, first imported from abroad, receiving improvements on this side of the water, and then returned to the eastern continent? These questions, I think, can be satisfactorily solved. Let me premise that the instrumentalities for the purpose of inter-communication at a distance, which have been used from time immemorial, are naturally divided into *Semaphoric* and *Telegraphic*—the former, as its name indicates, conveying a signal, evanescent in its nature; the latter, as its name also indicates, permanently recording a sign. Although both these systems have been confounded under the general name of *Telegraph*, none are strictly telegraphic but those which propose and accomplish a permanent record. In considering the question of the paternity of modern telegraphy, therefore, this essential distinction should be borne in mind; and in claiming for my country the paternity of the telegraph, I, at the same time, disclaim the origination of any semaphoric system, except as the natural concomitant or result of the telegraph.

A proper observance of this distinction between the *semaphore* and the *telegraph* would long since have removed many of the causes of apparently conflicting claims to priority. For example: the English system, elaborated in 1836, and established in Great Britain in 1837, through the energy and skill of the ingenious Mr. Cooke, subsequently aided by Prof. Wheatstone, is a *semaphore*. Whatever its merits, however, as a *semaphore*, it is a fact universally acknowledged, as we have shown, by all the nations of the Eastern, as well as the Western Continent, that it has given place to the telegraph.

The telegraph has everywhere supplanted it, and this not only in the Continental nations, but extensively in the United Kingdom itself, and in all the British Colonies.

Whence then and when did the telegraph come into existence? I need not go into detail further than to recapitulate two or three essential dates, familiar indeed to all who have read any authentic history of the invention.

In 1832, on board an American ship in her voyage from Havre to New York, the *First Telegraph* was conceived, and its essential peculiarities brought forth and elaborated.

In 1835, according to the concurrent testimony of many witnesses, it lisped its first accents and automatically recorded them in this city a few blocks only distant from the spot from which I now address you. It was a feeble child indeed, ungainly in its dress, stammering in its speech; but it had then all the distinctive features and characteristics of its present manhood.

I need not trouble you with the maladies of its unfledged infancy, mainly the results of its parent's struggles against poverty, and the influence of the substantial incredulity of those who could have rescued it from its obscurity. It found a friend—an efficient friend—in Mr. Alfred Vail, of New Jersey, who, with his father and brother, furnished the

means to give the child a decent dress, preparatory to its visit to the seat of Government.

These few facts suffice here to indicate the time and place of the birth of the Telegraph.

In 1832 it was planned on board the ship. In 1835 its first operation was shown in the New York City University. In the winter of 1837 and 1838 it was presented before Congress. Whether the Telegraph had or had not in its composition anything in common with the so-called Telegraphs in Europe (but which were simply *electro-magnetic Semaphores*, and not *electro-magnetic Telegraphs*), it is evident from the dates that the American Telegraph could scarcely have derived anything from them, since these did not practically exist till some years subsequent to the conception and planning of the telegraph on board the ship; nor did the first English *electro-magnetic* semaphore exist until after the first practical operation of the American *electro-magnetic* telegraph in this city.

In claiming for the United States the birth place of the telegraph, do I claim too much? Am I unjust to the distinguished savans of the Old, and some also in the New World, whose patient labors and brilliant discoveries prepared the way for its advent? No one more sincerely appreciates than myself the scientific researches of Oersted, of Schweigger, of Ampere, of Arago, of Sturgeon, of Ohm, of Faraday, of Dana, and a host of distinguished workers in the mines of science, from out of every country—without whose labors, and the materials for combination which they furnished, the telegraph of the day would still have been unborn.

These labors and researches were equally necessary in making effective the *electro-magnetic semaphore*, which followed almost immediately after the brilliant magneto-electric discovery of the renowned Danish philosopher, Oersted.

To a distinguished savan of our own country it is also claimed belongs the discovery of a principle in galvanism which made practicable the *electro-magnetic semaphore*, and the *electro-magnetic telegraph* as well. However this may be, there are few in the country to whom science is more indebted for valuable labors and researches than Professor Henry, the eminent Secretary of the Smithsonian Institute.

Nations, from time immemorial, have claimed honor to themselves for giving to the world, through some of their subjects, valuable discoveries and inventions; and spirited, earnest, and even angry contentions have arisen to establish their respective claims to the invention or discovery in the person of some individual whom they put forth as the originator, and upon whom they concentrate their regard.

In this individualizing of inventions and discoveries there lurks a species of injustice not easy to avoid. It is rarely, if ever, that any invention is so independent of all others that a single individual can justly appropriate to himself the entire credit of all its parts.

It is only when the nature of invention is properly understood that the justice of the ascription of honor to the individual inventor is perceived. Invention is emphatically *combination*, an assembling or putting together things known, whether discoveries or other inventions, to produce a new effect, to create a *new art*.

But whither am I straying? Excuse me, gentlemen, I did not mean to go into the metaphysics of invention, especially before so many whom I see before me (our distinguished presiding officer among the rest) so much more able intelligently to discuss them.

I would briefly touch upon another subject growing out of the great and wide-spread extension of the telegraph.

I trust it will not be considered irrelevant to this occasion if I allude to the movement just now making in

Congress to attach the Telegraph to the Post Office Department.

I neither advocate nor oppose any particular measure to that end which Congress has thought proper to bring forward. I would simply allude to some historic facts, which it may be useful to remember in endeavoring to reach a just judgment in the matter.

It may have passed out of the memory of most of the present generation, that the idea of attaching the Telegraph to the Post Office Department was suggested in the very earliest stages of the invention. It was first broached in my correspondence with the Treasury Department more than thirty years ago—in 1837—but under very different circumstances from the present. I proposed in my letter of 27th September, 1837, to the Secretary the attachment of the Telegraph to the Post Office Department. The Secretary, the late Judge Woodbury, seconded the proposal in his letter of December 6, 1837, to the Speaker of the House. The proposition was repeated in my letter of February 15, 1838, to the Chairman of the House Committee of Commerce. It was again proposed by Hon. C. G. Ferris from the same committee, December 30, 1842, and a remark from his Report is worthy of quotation: "So inviting," he says, "are the prospects of profit to individual enterprise, that it is a matter of serious consideration whether the government should not on this account alone seize the present opportunity of securing to itself the regulation of a system which, if monopolized by a private company, might be used to the serious injury of the Post Office Department" (and please note his remark which follows), "*which could not be prevented without such an interference with the rights of the inventor and of the stockholders as could not be sustained by justice or by public opinion.*" The far-seeing mind of Mr. Ferris comprehended the future of the telegraph and in prophetic vision of just such a state of things as now exists (and this at a period in the History of the Telegraph before its practical test had been accomplished), he urged the Government to possess itself of the invention, when none of the difficulties could occur, which he foresaw must arise from interference with vested rights.

Why were these wise counsels of the Committee disregarded in that day? A brief narrative of certain events in the early history of the invention, when it was a suppliant for aid in the halls of Congress, will give the answer to this question. I must not detain you with too much detail, but the contrast of *then* and *now* cannot fail at least to amuse you.

The session of 1837 and 1838 passed away with no other action on the subject of the telegraph than a unanimously favorable report from the House Committee of Commerce. An interval of four (4) years occurred before the attention of Congress could be again roused to consider the matter. Senator Benton in the abridged debates, gives in brief, the kind of reception the bill for aid to test the telegraph met with in the House from certain members. As the narrative is very short, allow me to quote it:

"HOUSE OF REPRESENTATIVES,

"Feb. 21, 1843.

"*Electro and Animal Magnetism.*

"On motion of Mr. Kennedy, of Maryland, the Committee took up the bill to authorize a series of experiments to be made in order to test the merits of Morse's *Electro Magnetic Telegraph*. The bill appropriates \$30,000, to be expended under the direction of the Postmaster General.

"Mr. Cave Johnson wished to have a word to say upon this bill. As the present Congress had done much to encourage science, he did not wish to see the science of *Mesmerism* neglected and overlooked. He therefore proposed that one-half the appropriation be given to Mr. Fisk" (a gentleman at that time lectur-

ing in Washington on *Mesmerism*), "to enable him to carry on experiments as well as Prof. Morse.

"Mr. Houston thought that *Millerism* should also be included in the benefits of the appropriation.

Mr. Stanly said he should have no objection to the appropriation for *Mesmeric* experiments, provided the gentleman from Tennessee (Mr. Johnson) was the subject. [A laugh.]

"Mr. Cave Johnson said he should have no objections, provided the gentleman from North Carolina (Mr. Stanly) was the operator. [Great laughter.]

"Several gentlemen called for the reading of the amendment, and it was read by the Clerk as follows:

"*Provided, that one-half of the said sum shall be appropriated for trying mesmeric experiments under the direction of the Secretary of the Treasury.*

"Mr. Mason (of Ohio) rose to a question of order. He maintained that the amendment was not *bona fide*, and that such amendments were calculated to injure the character of the House. He appealed to the Chair to rule the amendment out of order.

"The Chairman said it was not for him to judge of the motives of members in offering amendments, and he could not, therefore, undertake to pronounce the amendment not *bona fide*. Objections might be raised to it on the ground that it was not sufficiently analogous in character to the bill under consideration; but in the opinion of the Chair it would require a scientific analysis to determine how far the magnetism of mesmerism was analogous to that to be employed in Telegraphs [laughter], he, therefore, ruled the amendment in order. On taking the vote the amendment was rejected—ayes 22, noes not counted. The bill was then laid aside to be reported."

The temper of the House is easily inferred from this narrative. To those who thus ridiculed the Telegraph, it was a chimera, a visionary dream like mesmerism, rather to be a matter of merriment than seriously entertained. Men of character, men of erudition, men who in ordinary affairs had foresight, were wholly unable to forecast the future of the Telegraph. I was told at the time by many personal friends in the House that the bill finally passed, more out of deference to my personal standing than from any just appreciation of the importance of the invention, a compliment which, however gratifying to personal pride, was fully offset by the low estimate it implied of the result of my labors. Other motions disparaging to the invention were made, such as propositions to appropriate part of the sum to a telegraph to the moon. The majority of Congress did not concur in this attempt to defeat the measure by ridicule, and the bill was passed—by the close vote, however, of 89 to 83. A change of 3 votes would have consigned the invention to oblivion. That this was not its fate is mainly due to the perseverance and foresight of the distinguished member from Maryland, Hon. J. P. Kennedy, and Hon. C. G. Ferris, of New York, and Hon. Col. Ayer of New Jersey, and Mason of Ohio. The struggles of the Telegraph before Congress were not ended with the passage of the Bill, to test its capacity between two distant cities. Another year witnessed the triumphant success of the test of its practicability.

The invention vindicated its character as a substantial reality. It was no longer a chimera, a visionary scheme to abstract money from the public coffers. Its inventor was no more subjected to the suspicion of lunacy, nor ridiculed in the Halls of Congress.

My earliest desires and intentions were that the Government should possess the control of such a power as I could not but foresee was inherent in the Telegraph.

Vast as its pecuniary value loomed up in the minds of some, in the contemplation of its future, I was neither dazzled with visions of untold wealth, nor

tempted to make an extortionate demand upon the Government for its possession.

Not merely had all my own property been expended on the invention, but large sums had been advanced by my associates, and these were items that entered into the calculations in my offer of sale. I had already intimated at various times my readiness to surrender the invention to the control of the Government. I engaged expressly "to enter into no arrangements to dispose of my rights as the inventor and patentee to any individuals or company of individuals *previous* to offering it to the Government for such a just and reasonable compensation as might be mutually agreed upon."

In conformity with this promise on my part, I offered the whole invention to the Government for the sum of (\$100,000) *one hundred thousand dollars*.

Strange as it may now seem, no response was made to this offer—no notice was taken of it except to request from the Postmaster-General a Report on the general subject of the Telegraph. The Hon. Cave Johnson, who had distinguished himself in ridiculing and opposing the Telegraph before Congress, held the office of Postmaster-General in 1845, and the experimental line between Washington and Baltimore, which belonged to the Government, was put under his control. Finding no disposition on the part of the Government to make any arrangement for controlling the whole invention, one half the time granted by the patent having expired, I was forced to look to other sources for the means of reimbursing myself for the expenditures incurred.

I obtained the services of the Hon. Amos Kendall, (at this allusion to Mr. Kendall there was a hearty cheer given throughout the room, which was continued until Mr. Kendall arose and acknowledged the compliment) through whose skill and experience as a former Postmaster-General, joint stock companies were formed to extend the lines eastward from Baltimore to New York, and westward from New York to Buffalo. Not willing to shut the door to negotiation with the Government for the possession of the invention, I caused a clause to be inserted in every contract, making provision to surrender the contract in favor of the Government on certain liberal conditions, provided arrangements for its purchase were concluded within a limited time—the 4th of March, 1847. The time expired, and nothing was done. The proposition was virtually killed by the Postmaster-General, who, in his report, although speaking of the invention as "an agent vastly superior to any other ever devised by the genius of man," yet adds, "The operation of the Telegraph between this city (Washington) and Baltimore, has not satisfied me that, *under any rate of postage that can be adopted, its revenues can be made to equal its expenditures.*" [Laughter.]

Such an opinion from this responsible and official source could not but operate disastrously upon Congress in regard to any proposition for the purchase of the invention. The influence of that opinion was felt beyond the walls of Congress. The Companies which had been formed for constructing the Telegraph from Baltimore to New York and from New York to Buffalo, in the belief that the *revenues* would at least equal the *expenditures*, were for the moment paralyzed, and but for the indomitable energy and faith of some of those men who early embarked their pecuniary means in the enterprise, the Telegraph might even now be looked upon as too expensive to be practical. If the sacrifices, the labors, the faith and pecuniary means of those who have borne the heat and burden of the day have demonstrated through thirty years of trial the pecuniary value of the Telegraph to be, not \$100,000, but many millions of dollars, should they not have the

credit and the profit due to their confidences and labors in the novel invention? If, therefore, in this age of telegraphic development the Government, has at length appreciated the policy of possessing the Telegraph, and attaching it (as I originally proposed) to the Post Office Department, I will not doubt that a proper sense of justice will so far influence the proceedings of Congress on the subject, that neither the present owners of the Telegraph nor the public shall have just cause of complaint.

I have many thoughts that crowd upon me for utterance suggested by friendly faces at this board. I cannot but recognize here assembled all the living organizers of the New York, Newfoundland and London Telegraph Company—the forerunner and the harbinger of the Atlantic Telegraph—an enterprise, the consummation of which has justly conferred such honor on one of them present this evening, and to whom the two continents are so largely indebted, whose labors have been so gracefully and magnanimously acknowledged by the nations whom especially he has benefited. Titles and honors, well deserved, have been the meed of his eminent British associates; titles and honors, which, had he been a Briton born, would have been equally bestowed on him, yet the name of FIELD will need no prefix nor suffix to keep it in honorable remembrance in both hemispheres. [Applause.]

In casting my eyes around I am also most agreeably greeted by faces that carry me back in memory to the days of my art struggles in this city, the early days of the National Academy of Design.

Brothers (for you are yet brothers), if I left your ranks, you well know it cost me many a pang. I did not leave you until I saw you well established and entering on that career of prosperity due to your own just appreciation of the important duties belonging to your profession. You have an Institution which now holds and (if true to yourselves) will continue to hold a high position in the estimation of this appreciative community.

If I have stepped aside from Art to tread what seems another path, there is good precedent for it in the lives of Artists. Science and Art are not opposed. *Leonardo da Vinci* could find congenial relaxation in scientific researches and invention, and our own *Fulton* was a painter, whose scientific studies resulted in steam navigation. It may not be generally known that the important invention of the *percussion cap* is due to the scientific recreations of the English painter *Shaw*.

But I must not further detain you from more instructive speech. One word only, in closing.

I have claimed for America the origination of the Modern Telegraph System of the world. Impartial History I think will support that claim.

Do not misunderstand me as disparaging, or disregarding the labors and ingenious modifications of others in various countries, employed in the same field of invention. Gladly did time permit would I descant upon their great and varied merits.

Yet in tracing the birth and pedigree of the modern Telegraph, "American" is not the highest term of the series that connects the past with the present; there is at least one higher term, the highest of all, which cannot and must not be ignored.

If not a sparrow falls to the ground without a definite purpose in the plans of infinite wisdom, can the creation of an instrumentality, so vitally affecting the interests of the whole human race, have an origin less humble than the Father of every good and perfect gift? I am sure I have the sympathy of such an assembly as is here gathered, if in all humility and in the sincerity of a grateful heart, I use the words of inspiration in ascribing honor and

praise to him to whom first of all and most of all it is pre-eminently due. "Not unto us, not unto us, but to God be all the glory."

Not what hath man, but "What hath God wrought?"

Mr. Morse's address was listened to with deep attention and was greeted at the close with great and continued applause.

When the long-continued applause, which followed the conclusion of Professor Morse's response, had subsided, the President said:

Gentlemen, you will please give your attention to the next toast—

"The Nations United by a Common Literature."

We have with us to-night an eminent Englishman whose name is honorably identified with literature, and to whom our country is not a little indebted on various accounts. He can tell us best of what most nearly concerns the common benefit of mankind.

I beg to call on Professor Goldwin Smith.

SPEECH OF PROF. GOLDWIN SMITH.

Prof. Smith said: I rise, Mr. Chief-Justice, in obedience to your call, to respond to this great and pregnant sentiment, though I am most unworthy of the task, and most unworthy especially as regards that part of it which relates to the telegraph and to science, for I, unfortunately, can only afford to science the tribute of ignorant wonder and gratitude. [Applause.] In passing over the stormy Atlantic, I, like other unscientific persons, have thought with wonder of the skill and daring which fathomed those fathomless recesses, and mastered those unmasted waves. [Applause.] Like other unscientific persons, on landing in this country, three thousand miles away from England, I have felt deep gratitude to the science which still linked me to my English home. [Applause.] I hope and believe that it is no mere after-dinner sentiment, but a real and happy fact, that these increased facilities of communication do unite nations together, and tend to make good feeling predominate over those passions which might lead to war. [Cheers.]

I hope the same may be said of our common literature. We will not put the case too high. It is not to be supposed that when common humanity and common Christianity fail to keep in check the passions of men mere literary interests will succeed; but still it is reasonable to think that our common literary interests are among those complex forces which are gradually subduing the bad passions of nations; and which will in the end surely extinguish public as they have long ago extinguished private war. There have been, there still are, diplomatic questions between the two nations—questions which every right-minded Englishman hopes will, by the efforts of our Governments and of their representatives, be so solved that on the one side no stain may rest on the honor of England, and on the other every thorn may be plucked out of the heart of the American people. [Cheers.] But even while these questions are pending, the works of Motley, of Longfellow, and of Bryant [applause] lie on all English tables, and forbid any Englishman, any cultivated Englishman, at least, to harbor unkind thoughts of the American people; and in the same way, I suppose, the friendly American invaders of England, whom we see on our shores, can hardly entertain unkind feelings for the old country when they stand upon the grave of Shakespeare. [Applause.] I certainly have abundant reason gratefully to acknowledge that the republic of letters is a real thing, and that Americans as well as Englishmen own themselves its liegemen.

When I formed the intention of returning to America to prosecute the historical studies which in a very brief previous visit I had commenced, I was met not only with every sort of kindness and encouragement as a literary man, but with the offer which, in a slightly modified form, I gratefully accepted, of a connection with your new Cornell University. [Applause.] In that connection I have an object of deep interest, and, so far as my power extends, of usefulness. [Applause.] It would be presumption in me, upon so slight an acquaintance with the Cornell University, and with only an honorary connection, to attempt to speak of the character and prospects of the institution. This, however, I know, that there are hearts and brains engaged in it which will not easily let any enterprise fail. [Applause.] I am sure that an undertaking in which my friends, Mr. Cornell and President White are enlisted [applause], will not easily fall to the ground [applause]; and I feel sure that the students whom we have there are of good material; that whether outwardly polished or not, they have in them the root of the matter; that they are such students as a real friend of education likes best to address and to teach. [Applause.] They spring, many of them, I believe, from the farmer class, a class sound in morals and vigorous, and in this country uniting moral soundness and vigor with intelligence and aptness for learning. I trust that the institution will prosper. I trust that among other things it will rival the beneficence of the science which we are honoring to-night, by teaching the best methods of agricultural production—for after all, great and wonderful as telegraphs and steamships may be, agriculture is the foundation of our wealth.

I trust that in accordance with the wishes of its founders, the practical sciences will there be well taught, and that among the youth on whose intelligent faces it is my pleasure to look as a Professor—and behind which I doubt not

there are strong and aspiring hearts—there will be some who will hereafter emulate the fame of the illustrious guest of this evening, and receive, like him, the due meed of gratitude and reverence of a nation and of mankind. [Applause.] Sometime ago, when I visited this country, then the scene of great and terrible events, which drew the hearts of my political friends in England very near to yours [applause], I was received with a kindness which was so little deserved by me personally, that I do not exaggerate when I say that it was even really painful to me. I have no wealth to requite that kindness, else would I gratefully bestow it. The best I have I will give. I will earnestly endeavor, so far as in me lies, to secure the success of the work with which I am connected [applause], and I hope that I may prove my gratitude by assisting an institution which I believe is in a fair way to become a blessing to this State and to the American nation. [Cheers.]

The President announced the next toast :

"The management of the telegraph—a great trust in the service of truth and as a bond of society—let it ever be so cherished and maintained"—and called upon the Hon. William M. Evarts to respond, jocosely remarking that the Attorney-General would illustrate the subject by a few sparks from "a hole in the sky."

SPEECH OF MR. EVARTS.

MR. PRESIDENT AND GENTLEMEN: It is with unmixed pleasure and delight that I accept the kind invitation of your Committee to bear my part in this public congratulation, in this general and hearty homage of our countrymen to the genius, the felicity, and the fame of your distinguished guest, I am sure he will permit me to feel, though I have no right here to express, that I claim some right of affection, to feel a near and even a personal interest in his illustrious distinction and in the great benefit he has conferred on the world, because I may be permitted to think, in pursuance of the sentiments with which he so nobly closed his address to you, that the devout sense of duty to God and the generous sentiments of affection to man, which guided the counsels of his home and mine, had something to do with his devotion to the good of his kind. And were I disposed even to forget, as how should I, this little personal interest, I never turn my eyes to the wall in my parlor that I do not attribute to your accomplished pencil the only preservation of the features of my father and your friend. [Applause.] The founders of States, and the pilots that guide their destiny through every danger, the great teachers of morality, the warriors that by land and sea save and protect what is thus founded, the authors and the artists that beautify and enlighten the civilization thus preserved, the great lights of jurisprudence that maintain justice for the general and common right over all, and the inventors that carry this whole movement forward and add ever new and greater powers and faculties to man, and make his reason effectively dominant over nature—these are the muster roll of the heroes of our race, these the men whose memories we will not suffer to die. [Applause.]

It seems really as if the course of Providence with man was that he should only feel a need or have a desire awakened, in order that he might reach out and take the good gift that is ready for his reception. For of nature, as of grace, this seems to be the law, that he that asks shall receive, and to him that knocks it shall be opened. Man begins, it would seem, by repining at his own weakness, and envying the superior powers of the brutes. He longs for the wings of the eagle, that he may cleave the air; for the respiration of the fish, that he may swim the seas. He wonders at the strength of the leviathan, and the swiftness and endurance of the horse, that can help him over space where human feet stumble; at the roar of the lion, and his mighty paw that makes him formidable in fight. And then imagination outlives these natural examples, and affirms the powers and faculties of demigods and heroes; and man sighs again that he is denied this greatness. The bow of Apollo that from the summit of Mount Ida can transfix the foe upon the plains of Troy; the winged heel of Mercury that can carry messages in brief time over large space; the prowess of Proteus that can triumph over fire-breathing dragons; the strength of Hercules; the hundred eyes of Argus that can inspect on all sides what is going on in the world; and the hundred arms of Briarion that can have a finger in every pie—these racked our envy and our aspiration, but then comes this crowned procession of inventors, that teach us that a good God, in giving man reason, has given him all these powers, scattered in the natural creation or imagined by himself; and that, in his practical inventive reason, he includes and transcends them all. [Applause.] Who now dreams of comparing the actual powers of man, in their every-day exercise, with all that nature has displayed besides, all that imagination has contrived?

But, sir, it must be said of your invention, crowning thus far, but not, we hope, ending the long line of benefits, that it adds more distinctly, more nobly, more truly to the intellectual power of man than any other form of invention. [Applause.] Everywhere throughout this vast country, connecting all associated nations too in the circle, we see and know at once what is going on, we send our means and faculties of acquiring knowledge, and filling ourselves by ransacking all the events of the world. We send forward our will, and make it known and felt and executed at the farthest limit of civilization. And whether we take your general invention, or that signal instance of its service, which another eminent countryman of ours now here present has shown to the world,

which he has produced through his commercial activity and his strenuous intelligence to force this wonder upon us all, that the wide ocean which still divides no longer separates the continents. [Applause.]

But, Mr. Chairman, every new faculty, every enlarged power, every wider opportunity brings to man new and firmer and greater duties. What I have spoken of has added to the powers of man, but has not added to his individual or to his social faculties and needs. Neither you nor Mr. Field can cross the Atlantic with your intelligence, of yourselves. All that the steam engine, all that the arts of war, all that the triumphs of invention have accomplished, has not added to the relations of the individual man, but has simply multiplied, strengthened, expanded, ennobled, secured high-minded civilization. Let civilization cease; let laws, affections, morals, lose their sway, and all these new powers of man drop lifeless and useless, their memory only a disgrace to his lack of morality. And this great trust is in the service of truth, and is a bond of society, and cursed be he who perverts it to power or to vice. May we not say to such men, in all reverence, as was said in a fatal instance of punishment: "Thou has not lied to man, but to God." Hence the management demands, and the social instincts that preserve all their vital interests require, that truth should preside at every magnet, and that no malice, no cupidity, should dare to invade the inviolable sanctity, the impregnable immunity of the telegraph. [Applause.] If civilized society, by such homage as this, shows that it knows who the friends of civilization are, let it, by its burning tones against these marauders, show what its sense of the enemies of civilization and of society are.

Now, who shall manage the material and commercial interests of the telegraph, but the people in society for whom it was framed, and letting Government, in its general administration of law, control and guide that, as it does all the other private interests of the people? [Applause.]

And now, Mr. President, I am sure that our distinguished guest, in so beneficent and wide spread benefit as he has conferred, has never found anything yet returning from it to plague the inventor. [Laughter.] I am sure so intelligent and experienced an observer of human affairs will not count as a plague those lawsuits through which he was carried. [Laughter.] Why should it not be understood that there is no greater honor in a free country than can befall a man than to be a party to a lawsuit. [Laughter.] The learned chairman will inform you that jurisprudence and judicature take no notice of controversies or of principles, unless they are presented by actual cases. The practicing lawyer will tell you that there never can be a case without clients on one side or the other. And really every one who in important litigation assists the glad life of jurisprudence disposing itself over the people to their joy and happiness, should regard himself with the same self-complacency and satisfaction, as if he were chosen to Congress or invited to a dinner like this. [Laughter and applause.]

The seventh toast was:

"The Telegraphic Wire, the nerve of international life, transmitting the knowledge of events, removing causes of misunderstanding, and promoting peace and harmony throughout the world."

The President said that he would ask a merchant of New York, whose name was the synonym of probity, patriotism, sense and success to respond to this toast, and called on Mr. A. A. Low.

RESPONSE OF A. A. LOW, ESQ.

MR. PRESIDENT—I perceive that in the arrangements of the evening you have assigned the longest toast to the shortest man. [Laughter.] I can imagine that it would have contributed very much to the comfort and enjoyment of this large assemblage, if some other one than myself had been designated to respond to this toast. Even now, as I look around upon this array of eminent men—members of the clergy, the bench and the bar, and others high in station, I should feel prompted to seek out a friend to speak in my behalf, did not I recollect how many a good text has been lost in the expansive proportions of a long discourse, and how many a brilliant sentiment has been dimmed by the superior luster of the finished speech, or weighed down by the exuberance of a fertile fancy.

From perils such as these the toast you have committed to my charge is safe in my keeping; and, if it fall of happy illustration through any imperfection of my speech, it shall remain to this audience, unobscured by many words, in all its native truth and strength.

Considering the nature of the toast, it would have been natural to have called upon some one more familiar than myself with the administration of public affairs, who could have told us what influence the "short, sharp, and decisive" click of Prof. Morse's batteries has exerted in tuning down the voluminous correspondence that has been pouring forth these seven or eight years past from the Department of State to the confusion of I know not how many British Ministers; who could have told us what prospect there is that all our differences with the "Mother country" (as we are prone to say) will soon be settled; in a word, when the losses by the Alabama and Florida will be paid, and whether in greenbacks or gold (a question that will be pretty sure to arise if our Government gets possession of the money); or whether all these claims are to be liquidated by a series of dinners given to the American Minister in England, by the Lairds of the land; for, if these are to be adjusted in the latter

mode, we would like to enter into our Minister's joy. But, perhaps, it was conjectured, and rightly, too, that if information were sought on any or all of these points from diplomatist or statesman, we should have been met with the ready answer that it is wholly incompatible with the public interest to divulge State affairs. Let us then abide in the patient hope that through the good offices of the British Minister, whose presence is so welcome with us this evening, and through other instrumentalities, all will yet be right. [Applause.]

But, sir, whatever facilities the telegraph affords to speedy communication, I am willing to believe that it does not remove, in any important degree, the difficulties that attend the adjustment of delicate questions between great and powerful nations.

I am led to this conclusion when reasoning from analogy, for I do assure you that this invention of Professor Morse has brought very great perplexity to the merchants of the Old World, and to the oldest merchants of the New World, and it matters little whether a man is of Dutch, New England or even Scotch descent, whether he gets up early or late, whether he lives up town or in Brooklyn—where he is "handy to his place of business"—letters and invoices are rendered stale and unprofitable, and the calculations of the most sagacious are baffled by this new method for the dissemination of useful knowledge.

I had thought of drawing a contrast between the past and the present in illustration of this point, but my friend Mr. Dodge, who is shortly to speak for the merchants of this city, will touch upon this theme, and I may be allowed to say that, although Mr. Dodge lectures on New York as it was "fifty years ago," he is one of the youngest men among us, and the most ready to adapt himself to the new ways. [Laughter and cheers.]

Mr. Chairman, it sometimes happens that we do not fully appreciate our choicest gifts and greatest blessings till we are deprived of them or threatened with their loss. What stockholder in the Atlantic Telegraph does not shudder every Spring when those gigantic icebergs come rolling down from their freezing home in the North, and, turning their cold shoulders to modern invention, cut in twain the nerve of our international system—paralyzing it throughout its entire length, and crushing the hopes of our friend Field at the same time. It is providentially ordained that these massive icebergs, foes to the mariner and inventor alike, shall, in their progress to the South, be dissolved in the warm waters of the gulf stream, even as the cold abstractions of the rationalistic mind, emanating from the frigid zone of human thought, melt away as they come in contact with the atmosphere of warmth that dwells in the hearts of the true disciples of Christ, or disappear, serving only to neutralize the tendencies to bigotry, superstition and oppression that spring up in the pathway of religious life.

But it is time that I approach the sentiment that underlies the toast, and at the very outset I am met with a grave doubt of the truth of the sentiment itself, for who does not recollect how, at the outbreak of our civil war, when Senators and Representatives rushed from their seats in Congress, the Prince of Evil touched the wires, and the fire of treason blazed up throughout the South, spreading from State to State, converting our "wayward sisters" into wayward demons, and filling the land with the spirit of evil? and all this was done as quickly as our friend Stewart, applying the same electric touch to his thousand burners, throws a blaze of light upon the fair fabrics he has gathered from all parts of the world, while his own benignant face wears the smile, as it were, of perpetual youth that is reflected back from the delighted faces of his fair customers.

Mr. Chairman, I will cite but one illustration in proof of the toast; it is familiar to all. I refer to the earlier days of the war of the rebellion, when Mason and Slidell were seized on board the Trent. None can forget the frenzy of passion into which the people of Great Britain were thrown by the tidings of this event; how regiment after regiment was sent off to Canada, how ships of war were prepared for sea, and "John Bull" was making ready to let go all "the dogs of war!" Now had the telegraphic wire been laid at that time, all the passion and all the expense of this unfriendly demonstration had been spared; for I was reading only a few days ago that our lamented President, that just and good man, resolved on the day he heard of the seizure, that the commissioners should be surrendered.

Leaving the present and past, let us now forecast the future, and anticipate the dawn of the coming day, when our great Captain, raised to the highest office in the gift of a grateful people, first by acclamation and then by the popular vote, shall sit enthroned in his chair of State—no, not enthroned, but, clad in the simple habiliments of justice and of truth, and touching the keys of communication with the remotest parts of our own land and with all lands, shall flash forth those magic words that lately thrilled the American heart with joy, along every line—not that line which stretches from the Wilderness to Richmond, and from Richmond to Petersburg, so lately red with blood shed in fraternal strife, but along every line, under every ocean and every sea and every separating river, to every court in Christendom, and to the remotest peoples of the world, "Let us have peace!" and there shall come back in letters of golden light, "Do as you would be done by" and all causes of misunderstanding shall speedily vanish away! [Applause.]

The eighth toast was:

"The Press and the Telegraph, co-operating in the diffusion of intelligence; the Telegraph to bring it from afar, the Press to spread it abroad." Upon announcing this the President said, I will venture to call upon a gentleman whose name is known

wherever the English language is spoken, who has rendered great public service in a long and most honorable connection with American Journalism, but whom we like best by his best name, the beloved American Poet, to respond to this sentiment. Will Mr. Bryant allow us to hear from him?

SPEECH OF THE HON. WM. CULLEN BRYANT.

I speak, Mr. President, in behalf of the press. To the press the electric telegraph is an invention of immense value. Charles Lamb, in one of his papers, remarks that a piece of news, which when it left Botany Bay was true to the letter, often becomes a lie before it reaches England. It is the advantage of the telegraph that it gives you the news before circumstances have had time to alter. The press is enabled to lay it fresh and fresh before the reader. It comes to him like a steak hot from the gridiron, instead of being cooled and rendered flavorless by a slow journey from a distant kitchen. A battle is fought 3,000 miles away, and we have the particulars while they are taking the wounded to the hospital. A great orator rises in the British Parliament, and we read his words almost before the cheers of his friends have ceased. An earthquake shakes San Francisco, and we have the news before the people who have rushed into the street have returned to their houses. I am afraid that the columns of the daily newspapers would now seem flat, dull, and stale to the reader were it not for the communications of the telegraph.

But while the telegraph does this for the press, the press in some sort returns the obligations. Were it not for the press, the telegram, being repeated from mouth to mouth, would, from the moment of its arrival, begin to lose something of its authenticity. Every rumor propagated orally at last becomes false. Mr. President, you are familiar with the personification of Rumor by the poets of antiquity—at first of dwarfish size, and rapidly enlarging in bulk till her feet sweep the earth and her head is among the clouds. The press puts Rumor into a straight jacket, swaddles her from head to foot, and so restrains her growth. It transcribes the messages of the telegraph in their very words, and thus prevents them from being magnified or mutilated into lies. It protects the reputation of the telegraph for veracity. You know, Mr. President, what a printer's devil is. It is the messenger who brings to the printer his copy—that is to say, matter which is to be put into type. Some petulant, impatient author, I suppose, who was negligent in furnishing the required copy, must have given him that name: although he is so useful that he is better entitled to be called the printer's angel, the original word for angel and messenger being the same. Our illustrious guest, Mr. President, has taken portions of the great electric mass, which in its most concentrated form becomes the thunderbolt, he has drawn it into slender threads, and every one of these becomes in his hands an obedient messenger—a printer's devil carrying with the speed of a sunbeam volumes of copy to the type-setter.

In the Treatise on Bathos, Pope quotes, as a sample of absurdity not to be surpassed, a passage from some play, I think one of Nat. Lee's, expressing the modest wish of a lover:

"Ye gods, annihilate both space and time,
And make two lovers happy."

But see what changes a century brings forth. What was then an absurdity, what was arrant nonsense, is now the statement of a naked fact. Our guest has annihilated both space and time in the transmission of intelligence. The breadth of the Atlantic, with all its waves, is as nothing, and in sending a message from Europe to this continent, the time, as computed by the clock, is some six hours less than nothing.

There is one view of this great invention of the electric telegraph which impresses me with awe. Beside us at this board, along with the illustrious man whom we are met to honor, and whose name will go down to the latest generations of civilized man, sits the gentleman to whose clear-sighted perseverance and to whose energy—an energy which knew no discouragement, no weariness, no pause—we owe it that the telegraphic cable has been laid which connects the Old World with the New through the Atlantic ocean. My imagination goes down to the chambers of the middle sea, to those vast depths where reposes the mystic wire on beds of coral, among forests of tangle, or on the bottom of the dim blue gulfs strewn with the bones of whales and sharks, skeletons of drowned men, and ribs and masts of foundered barks, laden with wedges of gold never to be coined, and pipes of the choicest vintages of earth never to be tasted. Through these watery solitudes, among the fountains of the great deep, the abode of perpetual silence, never visited by living human presence and beyond the sight of human eye, there are gliding to and fro, by night and by day, in light and in darkness, in calm and in tempest, currents of human thought borne by the electric pulse which obeys the bidding of man. That slender wire thrills with the hopes and fears of nations; it vibrates to every emotion that can be awakened by any event affecting the welfare of the human race. A volume of contemporary history passes every hour of the day from one continent to the other. An operator on the Continent of Europe gently touches the keys of an instrument in his quiet room, a message is shot with the swiftness of light through the abysses of the sea, and before his hands is lifted from the machine the story of revolts and revolutions, of monarchs dethroned and new dynasties set up in their place, of battles and conquests and treaties of peace, of great statesmen fallen in death, lights of the world gone out and

new luminaries glimmering on the horizon, is written down in another quiet room on the other side of the globe.

Mr. President, I see in the circumstances which I have enumerated a new proof of the superiority of mind to matter, of the independent existence of that part of our nature which we call the spirit, when it can thus subdue, enslave, and educate the subtlest, the most active, and in certain of its manifestations the most intractable and terrible of the elements, making it in our hands the vehicle of thought—and compelling it to speak every language of the civilized world. I infer the capacity of the spirit for a separate state of being, its indestructible essence and its noble destiny, and I thank the great discoverer whom we have assembled to honor for this confirmation of my faith.

The ninth toast was—

"The telegraph in the United States."

The President said he knew no one who could more fitly respond to it than the gentleman who presides so well and so worthily over the American telegraph system, and called upon Mr. Orton. [Applause.]

SPEECH OF WILLIAM ORTON, ESQ.

Mr. Chairman, I am not insensible to the honor conferred, not only upon the American telegraph system, but on myself, in being requested to respond to this sentiment. But I trust, sir, you will bear in mind these material facts concerning the telegraph:—it speaks only to a private ear, addresses nothing to the public, responds to no complaint except in satisfaction to the complainant, and has nothing to allege even in its own defense.

Its past history in America has just been recounted to us by our honored guest—its distinguished founder—the founder not only of the American system, but of that now in almost universal use throughout the world.

At the present time the American telegraph may be considered as on trial, but so far as this occasion is connected therewith, it feels honored that the trial is in the presence of one of its earliest friends, the Chief-Justice of the United States, and that among its advocates is the distinguished Attorney-General of the United States. The issue to be tried, is whether the telegraph, the product of American genius, shall be permitted to achieve the highest results of American enterprise, under private control, or be driven from the field if it refuse to surrender, to give place to such a system as will result from attaching it to a department of the Government, and leaving its management dependent upon the changing conditions of political favor.

There is now pending before the House of Representatives a bill introduced two years ago, which is generally understood to provide for the transfer of the telegraph to a Department of the Government. It occurs to me, sir, at this moment, that there is an almost universal misapprehension concerning the facts in this case.

The question is not whether the existing telegraph lines shall be taken possession of by the Government, and administered hereafter as a department of its service, but whether the Government, which refused at the outset to acquire control of this great invention, shall now enter the field of private enterprise as a competitor against existing interests; and I propose, in the minute or two which I shall devote to this subject in response to the sentiment which has been announced, simply to make the nature of this proposition clear.

The telegraph in the United States to-day is represented by more than 60,000 miles of line, and by more than 120,000 miles of wire. It exceeds by far in extent the telegraph system of any other Government on the globe, and approximates the combined systems of continental Europe.

It will transmit during the current year 18,000,000 messages, which, according to the reports of 1866, the last year for which we have complete returns, will be nearly equal to the whole number transmitted that year over all the lines in Europe.

Between the cities of New York and Washington there are now in operation three lines, controlled by separate corporate organizations, competing with each other vigorously, and a new competitor is now constructing a fourth line over a part of this route.

The scheme proposed by the pending bill, to which I have referred, is substantially for the Government to build another line between these points, and commence the operation of a separate and competitive system of its own, but with less aggregate facilities in wires than we are frequently required to give a single newspaper for the transmission of its Congressional reports.

Within a year and a half the British Government decide

to open negotiations with private parties controlling the telegraph in that kingdom, with a view to connect the telegraph with the postal service, and the Committee appointed under act of Parliament has completed its negotiations. The result of these negotiations is substantially that the lines of the private corporations in operation in Great Britain shall be acquired upon payment of 20 times the profits of the year 1868. That is to say, they discount on the basis of the business of the present year, the profits for 20 years to come, and pay them over to the owners of this property. I submit, in marked contrast to this British scheme, the proposition pending before the American Congress, which, by a practical repudiation of the results of private enterprise, proposes no payment for what that enterprise has accomplished, recognises as of no value the invention which was offered to it at the outset for the pittance of \$100,000, but, with the treasury of the United States at its back, proposes that the Government shall embark as a competitor against its own citizens in a race for the destruction of their property. [Applause.] It is to me a matter of great gratification, that with one or two exceptions, concerning which a sufficient explanation could be given, if it were necessary, the press of the United States has either been silent or has pronounced its verdict of opposition to this scheme. [Applause.]

There is between the telegraph and the press an intimate relation, and that relation is nowhere so intimate as in the United States. There cannot be an absolutely free press without a free telegraph, and there can nowhere be so free a press as under our own Government. The arrangement under which the press is served by the telegraph in the United States is unique and peculiar. There are local and general combinations of the press, each separately and both combined operating under the co-operative system in connection with the telegraph, by which the news from all parts of the country is gathered to common centers, from which it is distributed again to the papers of the several localities. Under this arrangement, the Company with which I am connected, and which controls about 90 per cent. of the wires of the United States, and transacts more than 95 per cent. of the business, will deliver during the current year, to the press of the United States, more than 350,000,000 words of press matter [applause], which, divided by 24—the unit of messages on the Continent of Europe—will about equal the messages transmitted by all the lines of Europe, including Great Britain, during the same time: their compensation for that service being in the neighborhood of fourteen millions of dollars, and ours for this specific service to the press being about eight hundred thousand dollars. [Applause.] I submit whether such a service demands governmental interference [applause], and especially whether the telegraph should be placed under the control of a department of our government which at present acknowledges a deficiency of more than \$6,000,000, and which the Postmaster-General anticipates may be increased within a few years to \$10,000,000.

The single company with which I am connected is now paying more than \$300,000 per annum to the revenues of the country in taxes—national, State and municipal; and I submit whether, on grounds of economy alone, it is worth while to risk the loss of this sum by destroying the business which yields it—and adding its management to a Department which confesses inability to conduct its own affairs, except at an enormous current loss which it assures us will steadily increase.

We are told there is no doubt concerning the ability of the British Government to operate the telegraph at lower rates of tariff than have hitherto prevailed in that country. I am not prepared to controvert this. A Government which has shown its capacity for economic management by making profits out of the penny postage system, may, perhaps, be able to operate the telegraph successfully; but the ability of our Government to do this has no such demonstration. On the contrary, while the British Government derives an immense revenue from spirits at the rate of about two dollars and a half per gallon in gold, I believe there is no one so bold as to assert, that here, the attempt to enforce a much lower rate has, thus far, been more than partially successful.

In view of the facts presented, I submit that common justice and ordinary business prudence, dictate that our Government shall not interfere with American telegraphs, either as a competitor or as a monopolist, but that they be permitted to enjoy in the future the full benefit of that enterprise and sagacity which are the peculiar characteristics of our citizens, and which will in due time provide liberally for every just demand in every department of human affairs.

The tenth toast was—

"The Extension of the Telegraph. It has no limit short of the whole habitable globe."

The President observed that Mr. David Dudley Field, by his labors and codification, had brought all cultivators of Jurisprudence in his debt, while achieving for himself a distinguished reputation among the foremost of American lawyers by his previous labors, and requested him to respond to the toast.

RESPONSE OF DAVID DUDLEY FIELD.

MR. CHAIRMAN AND GENTLEMEN—In the early days of the electric telegraph, a proposition was made that it should be called the Morsograph. I cannot but think that would have been a distinctive and appropriate designation, recalling in all future time as the thing should be mentioned, the history of its origin. But the name of the inventor is no secret, and the world will ratify the judgment we pronounce to-night that, as benefactor and discoverer, his name will be immortal.

If we were to measure the future of the telegraph by what has been already accomplished, we should predict for it an indefinite extension. Less than twenty-five years ago the first line was constructed in the United States. Though it extended only from Washington to Baltimore, it was begun in doubt and completed with difficulty. Thence it stretched itself out first to Philadelphia and New York, then to other principal cities, and afterwards along the great thoroughfares. On the other side of the sea it advanced, as it advanced here, from city to city, and from one market to another. At first laid with hesitation underneath the rivers, it was next carried under narrow seas, and at last plunged into the ocean, and passed from continent to continent. Compare its feeble beginning with its achievement of to-day. Think of the uncertainty with which after weary months upon dusty Maryland roads the last link of that first line was closed, and then think of the exultation with which the great ships in mid ocean lifted up the slender wire from the bottom of the sea, two miles down, when the problem was forever solved, not only that an ocean telegraph was possible, but that it could not be so lost that it might not be found.

Standing in the presence of the great inventor, I am constrained to congratulate him upon the fullness of his triumph, as he remembers the early effort, and contrasts it with the marvels of this night in this hall. That little instrument, no larger than the clock upon the chamber mantel, and making as little noise, is yet speaking to both America and Europe; and what it says will be printed before the dawn, and laid at morning under the eyes of millions of readers! Did I say before the dawn? It will meet the dawn as it advances over the Caspian into Eastern Europe. In the opposite quarter, we know that the message which has just left us for the West will outstrip the day. Even while I have been speaking, it has crossed the Mississippi, passed the workman laying the farthest rail of the Pacific road, bounded over the Sierra Nevada, into the plains of California, as the last ray of to-day's sun is fading from the shore, and the twilight is falling upon the Pacific sea. [Applause.]

It is, however, not alone its history which justifies us in predicting for the telegraph indefinite extension. Its essential character must, sooner or later, carry it to every part of the habitable globe. Of all the agencies yet vouchsafed to man, it is the most accessible and the most potent. While the machinery itself is cheap and simple, the element from which it is fed is abundant and all pervading. It is in the heavens above, in the earth beneath, and in the water under the earth. You take a little cup and pass into it a slender wire, when lo! there comes to it a spark from air and water, from the cloud and the solid earth, which the highest mountains cannot stop nor the deepest seas drown, as it dashes on its fiery way, indifferent whether its errand be to the next village or to the Antipodes. No other tongue can speak to the farthest and the nearest at the same time. No other hand can write a message which may be delivered within the same hour at Quebec and at Moscow. No other voice can reach at once the farmer of Illinois and the merchant of Amsterdam; the German on the Danube and the Arab under his palm.

To the use of such an instrument there can be no limit but the desire of man to converse with man. If from this populous and opulent capital you would speak with any inhabitant of either hemisphere, you have here an agent which may be brought to do your bidding. If any, however distant, desire to speak with you, they have these

means at their command. How great will be the effect of all this upon the civilization of the human race, I do not pretend to foresee. But this I foresee, as all men may, that the necessities of governments, the thirst for knowledge, and the restless activity of commerce, will yet make the telegraph girdle the earth and bind it in a network of electric wire. The Atlantic, the most dangerous and difficult of all the seas, has been crossed. In the Pacific you may pass easily from island to island, till you reach the shores of Eastern Asia. There an American company will take it up and extend it from side to side of the Central Flowery Land. And an English company is about to cross the straits which divide Australia from the elder continent. Indeed, I think that I declare not only what is possible, but what will come to pass within the next decade, when I predict that there will be a telegraph office wherever there is now a post office, and that messages by the telegraph will pass almost as frequently as messages by the mail.

Then the different nations and races of men will stand, as it were, in the presence of each other. They will know one another better. They will act and react upon each other. They may be moved by common sympathies and swayed by common interests. Thus the electric spark is the true Promethean fire which is to kindle human hearts. Men then will learn that they are brethren, and that it is not less their interest than their duty to cultivate good will and peace throughout the earth.

The President announced, as the next toast—

"The Merchants of New York, whose wealth and public spirit have carried the fame of American enterprise around the world."

And called on the Hon. William E. Dodge to respond in behalf of the merchants, stating that he called upon a gentleman who was himself a distinguished merchant, and whose character stands in flat contradiction with his name.

RESPONSE OF W. E. DODGE, ESQ.

MR. PRESIDENT—The lateness of the hour forbids my doing more than, through you, to thank the committee for the kind manner in which they have referred to the merchants of New York, and to what they have been able to do for the honor of the country while prosecuting their commercial interests all over the world.

If the army and navy, diplomacy, science, literature and the press can claim special interest in the telegraph, surely the merchant must have as deep an interest; but I am not prepared to say that it has proved to be an unmixed blessing to them. My friend Low, when he made reference to this, and kindly left it for me to expand, touched a chord which vibrated in the heart of every merchant present. The merchants of New York referred to in the resolution embrace those of the past as well as the present; but, sir, there has been a wonderful change. The merchants forty years ago, with all their high commercial integrity, industry and ability, were very different from those of to-day, and you, sir, our honored guest, under God, have wrought this change.

Before the telegraph and steamers were introduced, the merchants engaged in foreign commerce, as they decided upon their voyages and adventures, were only guided by the probabilities of the distant markets, and were obliged to calculate on a rate of profit which would cover all the risks. But many of our largest houses, while busily engaged in fitting out their ships and consignments, or in receiving their returns, had in the intervals time for reflection and rest, though often anxious to learn the result of shipments and adventures which it took months to complete. In those days they had packets for London or Liverpool twice a month, by means of which they corresponded with all parts of the world.

Those engaged in the home trade had their active seasons, for in the spring and in the fall their country customers made their semi-annual visits to the city; but there was time and opportunity to converse with them, and pay to them all due attentions. And in the summer and winter there was time to rest, and to look over accounts and make plans for the future. Comparatively they had an easy time.

But now all this is changed, and there are doubts whether the telegraph has been so good a friend to the merchant as many have supposed. Now, sir, reports of the principal markets of the world are published every day, and our customers are continually posted by

telegram. All the merchant can expect is a very small profit or commission. Instead of making a few large shipments in a year, he must keep up constant action, multiplying his business over and over again, using the telegraph to save time and capital. He has to keep up constant intercourse with distant correspondents, knows in a few weeks the result of shipments, which, a few years ago, would not have been known for months, orders the proceeds invested in commodities, the value of which is well understood, and which are again sold before their arrival. He is thus kept in continual excitement, without time for quiet and rest. Now, with fast steamers arriving and departing almost daily, taking time for the details of transactions completed days before by telegraph, the making of invoices and writing of letters becomes stale and uninteresting; but it must be done, and the merchant goes home, perhaps, after a day of hard work and excitement, to a late dinner, trying amid the family circle to forget business, when he is interrupted by a telegram from London, brought to the house because the store is closed, directing, perhaps, the purchase in San Francisco of 20,000 barrels of flour, to be shipped at once, and advising of £30,000 at his credit with Baring Brothers & Co., and the poor man must dispatch his dinner as hurriedly as possible in order to send off his message to California. Now I submit, Mr. President, whether such an experience would be an aid to the proper digestion of his dinner.

The merchant in the home trade is no better off. He has no rest. The customers in all the principal towns and villages of the country have daily knowledge of the state of the New York markets, and, instead of visiting the city in the spring and fall as formerly, they transact their business by letters and telegrams, thus keeping up a constant activity and compelling the New York merchant to multiply and increase his transactions as his only chance to prosecute his business successfully. A few years ago a merchant doing business in St. Louis would order 100 boxes of tin shipped via New Orleans. His letter by mail-coach would reach New York in 10 days, the shipment would be made in a packet, sailing, say in a week, with a passage of perhaps 15 days, then a week for unloading, and the re-shipment would be made on a steamer for St. Louis; and in about six weeks from the date of his order he might have expected to receive the tin. Now he orders by telegraph, the dispatch is re-sent to New Orleans where a supply is kept, the tin is shipped on the same day, and, in a week from the date of his order, he has it in his store in St. Louis.

Mr. President, for this new order of things there is no substitute. The business man of the present day must be continually on the jump, the slow express train will not answer his purpose, and the poor merchant has no other way in which to work to secure a living for his family. He must use the telegraph. [Laughter and applause.]

And all this results from the invention of our venerable friend. [Cheers.]

When Mr. Dodge had concluded, the President remarked that he had never known before how much the New York merchants were to be pitied, and that the picture of their suffering and hardships which had been drawn by one of the most eminent and successful among them was a great comfort to poor folks. He then called upon Hugh Allan, Esq., President of the Montreal Telegraph Company to respond to the twelfth toast.

SPEECH OF HUGH ALLAN, ESQ.

I beg leave, on the part of the Dominion of Canada, to acknowledge our great obligations to the distinguished man, in whose honor we are this day met, for his wonderful discoveries in telegraphy.

We claim the merit of an early appreciation of their importance, inasmuch as the Montreal Telegraph Company was established as long ago as in 1846. In the following year the first line in Canada, from Montreal to Toronto, was opened, and its progress from that time till the present, has been steady and continuous. It has now about 9,000 miles of wire strung on its poles, besides several cables under rivers and canals, and the number of messages sent over its lines this year will exceed 750,000. It has 482 offices in the Dominion for public business, which is one for every 7000 inhabitants. Its tariff is the lowest on the continent of America, notwithstanding which it has always yielded fair dividends. What would our country, with its comparatively few and thinly scattered inhabitants, its long winters, its frosts and its snows, have been without this great discovery?

Just in proportion to the advantages it has conferred on us are our obligations to Professor Morse, and as a pleasing proof of the universality of this sentiment, I ask your

permission to read to you some telegrams which have reached me since I sat down at this table by means of the instrument working in the corner of the

MONTREAL, 8 P. M., 29th December.

Honor to the man to whose genius this Dominion is indebted for sharing with his own country the advantages of an unequalled system of telegraphs. [Cheers.]

QUEBEC, 7.30 P. M., 29th December.

The ancient capital of Canada desires to accord to Professor Morse its gratitude for the benefits his genius has conferred on mankind.

OTTAWA, 7.30 P. M., 29th December.

This northern city, now the seat of the Government of the Dominion, joins in the universal praise to Professor Morse for his most valuable telegraphic discoveries.

TORONTO, 7 P. M., 29th December.

Western Canada adds her testimony to the obligations the world is under to Professor Morse for all he has done.

SACKVILLE, Nova Scotia, 7 P. M., 29th December.

The Blue Noses are not behind in their tribute of thanks to Professor Morse. May he see many happy returns of this festive season.

SARNIA, C. W., 7 P. M., 29th December.

East, West, North and South desire to join in toasting health and happiness to Professor Morse. [Great Applause.]

I cannot close these remarks without paying a tribute of respect and admiration to another of your eminent citizens now present, whose exertions in the spread of telegraphy have been unequalled. Being connected with the Atlantic Telegraph Company as an honorary Director, I can bear testimony that the accomplishment of that enterprise is in a great degree owing to the energy, activity and perseverance of Mr. Cyrus W. Field. I was present at the meeting of the Directors in London when the Great Eastern returned after the loss of the cable in 1865.

The prevailing feeling was despondency until Mr. Field entered the room. His first words were: "Gentlemen, we are now assured of success in our enterprise. We have proved that we can pick up the ends of the broken cable, and the rest is only matter of detail." His cheerful words, and the energy with which he stated his views, infused new life into every one present, and the result was a determination to persevere till success was attained. Mr. Field has, therefore, well merited all the honor we can pay to him, and I have pleasure in bearing testimony to his great services. [Great applause.]

The thirteenth toast was—

"The Telegraph in the East."

THE PRESIDENT said—We are gratified to have among us to-night a distinguished citizen of Pennsylvania, who, having served his country with marked ability as Governor of that Commonwealth during the recent civil war, is now devoting his energies to pushing telegraphic communication beyond the sunrise, and called upon Governor Curtin, who spoke as follows:

GOVERNOR CURTIN'S SPEECH.

GENTLEMEN: It would have been no easy task a few years ago to respond to the sentiment proposing the extension of the telegraph to the East. In this enlightened presence it would have required more than the ardor of the enthusiast to declare that the trained lightning would yet carry its swift message from the new to the old world, from America to Europe. A few would have listened, fewer still would have believed, and the rare men of progress who would have responded with their energy and means to attempt the herculean task, would have been marked as infatuated dreamers.

Less than twenty years since the daring genius that proposed the extension of the telegraph to the East, divided from us by but two thousand miles of sea, was charitably regarded as bewildered by his devotion to a great idea. Hesitating governments gave grudging and reluctant aid, and repeated failures but strengthened the conviction that the achievement was impossible; but the greatest modern triumphs of civilization are due to the undaunted men of inspired genius and unflinching faith, who staked fortune and reputation upon success. This blessed land of ours, the fountain of Christian progress, gave to the world the heroes of this matchless triumph of scientific and civilizing advancement.

The names of Morse and Field will brighten the pages of our history as among our noblest benefactors, who have won victories "more renowned than war;" the first, who tamed the terrible lightning of the heavens, and made it the gentle missionary in the great work of enlightened prosperity and peace; and the last, who set the brightest jewel of success in the crown of science. [Applause.] The telegraph was extended to the East, and continents record each other's passing history from day to day.

With that great triumph, the march of American progress was regarded as having perfected its greatest task, and in our rejoicing then no one dreamed that the present generation, or even the present century, would understand the broad significance of the sentiment which is proposed, as the world understands it to-night. The East is no longer Europe, either in

geographical or mercantile acceptance. It means the cradle of the human race. It means advancement from the new-born republic of the Western world onward to the ancient empires of Asia.

Romance pales before the beneficent and substantial progress of the age in which it pleased Providence to cast our lot. The wildest dreams of science and philosophy have been more than realized, and each decade marks the mighty strides the last had hoped for only in coming ages. I can remember well when the question of connecting the Ohio and the Delaware rivers agitated the people of my native State. Prejudice and ignorance resisted stubbornly, but free schools and internal improvements came hand-in-hand to give us greatness. Brave men fell under popular reprobation, because they expended a few millions to give back incalculable wealth, and the priceless boon of universal education.

Our turnpikes were the first slow, hesitating steps in progress, the tottering, timid footprints of infancy. The State stretched out its bounty and commerce was quickened. They have passed away, and the account of capital invested stands unbalanced in the treasury; but who can estimate the dividends? With trembling and fear a college here and there was established, and soon came the common schools to hasten progress alike in the improvement of rich and poor. Then came our great canal and our primitive railroad; but, imperfect as they were, unwisely as they were managed, and fruitless as they appeared on the balance sheet of the Commonwealth, they were a great artery of commercial and national life—a vast stream of progress that was steadily advancing our people and making them nobler and richer from year to year. They, too, have almost faded away before the march of the iron horse, whose rude music is heard over nearly four thousand miles of railroad in the State, but they added millions to the wealth of Pennsylvania. The Empire State, too, had its like struggles with the ever stubborn, persistent enemies of advancement, but her beneficence reared the noblest monuments of progress, and spread prosperity in profusion throughout her people. New England has created her countless wealth. Her liberal laws have given the richest fruits in intelligence, in science, in philosophy, and in all that ennobles the human race; and all these are but the expanding inspirations of the old world as the course of empire follows the setting sun.

From its fabled fountains in Asia the stream of progress started westward. It struggled for centuries for growth and expansion, it reared State after State in Europe, and braved the innumerable convulsions it determined and onward march provoked. Columbus at last pleaded its cause, but long in vain. He was repelled from court to court, and while the people of the North, in Holland and England, struggled for civil and religious liberty against the power of ignorance and oppression, the great navigator was commissioned by the most intolerant despotism of Europe to open the Western World to the richest triumphs of our civilization.

Europe learned new lessons and advanced. Ignorance and its handmaid, despotism, made fearful war against the progress of liberal ideas, but westward and still westward the tide of civilization was marching, liberalizing and expanding as it marched, until in the new-born republic freedom was opened to men; and this steadily expanding current of civilization still follows the setting sun. It crossed the Alleghanies, then the father of waters, then planted its banner on the golden shores of the Pacific, and finally made the valleys of the Rocky Mountains blossom with beauty and plenty. [Applause.]

Nor was its influence confined to our continent. The Old World and the New were alike inspired, and the fountains grew better as the stream advanced and purified. Liberalism has had healthy and rapid growth there. Thus westward from the cradle of the east the tide of progress has marched, growing as it advanced, and rearing its lasting monuments of greatness as it hastens to return its priceless treasures to its Eastern home. [Applause.]

As the people advance in intelligence their governments advance in every attribute of greatness. Europe is now traversed by railroads, and England, foremost in liberal progress in the Old World [applause], has given four hundred and forty millions of dollars to enlarge her East India possessions—not by war, but by telegraphs and railroads. In a few years, through the far-sighted statesmen of European nations, there will be a continuous line of rail from Dover to the Bosphorus; thence down the Euphrates, across Persia to India, and from thence it must eventually reach China and Japan. The tide of progress, ever growing as it reaches westward, now records the wonderful history of our own beneficent Government constructing a great railroad across the Rocky and Sierra Mountains to the Pacific, when the nation was in the agony of conflict with the most gigantic rebellion of recorded time. [Renewed applause.] The next anniversary of the Independence of the Republic may be celebrated in the heart of the mountains by people from the Atlantic and the Pacific, among fruitful fields and happy homes, where twenty years ago was the American desert. The telegraph, too, not only spans the continent, but reaches to the British possessions in the North, and to the foreign governments in the South. Before another five years shall have elapsed I trust that three great trunk lines of railroads will cross the plains and mountains to the Pacific, and reward the beneficence of our Government by countless wealth, by growing empires, by general prosperity and peace; and with the completed railroads to the western shore of the continent, the old

Eastern nations will turn from the setting to the rising sun to welcome and gather the fruits of their children.

As the railroad and telegraph—those living, progressive monuments of enlightened advancement—stretch out around the world, encircling Christian and heathen in their embrace, the great interests of man will be cemented in chords of unity. Facilities for cheap travel, for quick exchanges, for the wide-spread diffusion of intelligence and liberal ideas, must make nations homogeneous, and make peace the first interest of all. The song of the iron horse on land, and the silent currents of business over the cable in the sea, will be ever-growing bonds of concord, enlarging trade, diversifying industry, ennobling patriotism, and gradually gathering the whole world in the folds of our enlightened progress.

The telegraph must now reach the East, and be the forerunner of the great harvest of civilization. From San Francisco to the Asiatic coast the submarine cable will soon bear messages of progress and infuse the love of advancement into the commercial cities of China and Japan. It is a theme worthy of our triumphant civilization. It is an enterprise that will bear with it the noblest fruit of literature, science, art, government, and religion. Starting from the darkness of Asia, and after traversing and illuminating the world in its march, it now returns with its trophies to four hundred millions of the human race who are still strangers to its blessings. It will break the crust of superstition; it will rapidly dispel ignorance; it will quicken and enlarge commerce; it will make railroads and fleets to increase their wealth, and will be the great missionary to evangelize them from heathen darkness.

"The extension of the telegraph to the East" will be the crowning triumph of the civilization we so fondly and justly claim, and soon the commerce of the Oriental cities will turn from the East to the East, land on our Pacific shores, and sweep across our continent to our great cities, and to the marts of Europe, and then the lightning messenger will encircle the whole world, to bear the glad tidings of prosperity and peace to all mankind. [Continued applause for some minutes.]

The fourteenth toast was—

"The beauties of the fine arts are based on the foundations of science."

THE PRESIDENT called on Mr. Daniel Huntington who now occupies the chair of President of the Academy of Fine Arts, which was first filled by the honored guest of the evening, to respond.

MR. HUNTINGTON'S REMARKS.

The sentiment of this toast few will doubt. At this late hour I will not consume the time in enlarging on its truth. It will be generally admitted that structure and proportion lie at the root of all perfect expression of character, generally in all visible objects, but pre-eminently in the human figure, the most difficult and the highest subject of the artist's study.

An exact perception of gradation and relation in light and shade, only can enable the artist to portray cunningly the flow of light and the relief of forms; and even the more subtle and evanescent charms of color depend on the laws of light, the relations and quantities of the colored rays; so that even these fleeting beauties are obedient to laws as absolute as those which guide the stars in their courses. In the present instance, however,—I mean that of our illustrious guest,—it might seem that the noble fruit of scientific discovery had sprung from the tree of art, for he chose art for his first mistress; there he won his earliest laurels, carrying off the prizes in foreign exhibitions, winning the praise of the highest judges in sculpture as well as painting, and founding in our city an Academy of Design, whose affairs and studies he guided as President for many years. Mr. Durand, who succeeded him, will testify to the ardor of his devotion to art and the force and richness of his pencil. Perhaps, after all, the Committee or the printers have made a mistake, and intended the toast should read, "Scientific Invention, the natural fruit of the Fine Arts." Morse, the painter, invented the electric telegraph; Fulton, the painter, discovered steam navigation; Daguerre, an artist, gave us the photographic process.

In fact, however, every studio is more or less a laboratory. The painter is a chemist, delving into the secrets of pigments, varnishes, mixtures of tints, and mysterious preparations of grounds and overlaying of colors; occult art by which the inward light is made to gleam from the canvass and the warm flesh to glow and palpitate.

The studio of my beloved master, in whose honor we have met to-night, was indeed a laboratory. Vigorous, life-like portraits, poetic and historic groups, occasionally grew upon his easel; but there were many hours—yes, days—when, absorbed in study among galvanic batteries and mysterious lines of wire, he seemed to us like an alchemist of the middle ages in search of the philosopher's stone. I can never forget the occasion when he called his pupils together to witness one of the first, if not the first, successful experiment with the electric telegraph. It was in the winter of 1835-6. I can see now that rude instrument, constructed with an old stretching frame, a wooden clock, a home-made battery, and the wire stretched many times around the walls of the studio. With eager interest we gathered about it, as our master explained its operation, while with a click, click, the pencil, by a succession of dots and lines, recorded the message in cypher. The

idea was born. The words circled that upper chamber as they do now the globe. [Applause.]

But we had little faith. To us it seemed a dream of enthusiasm. We grieved to see the sketch upon the canvass untouched. We longed to see him again calling into life events in our country's history, but it was not to be. God's purposes were being accomplished, and now the world is witness to his triumph. [Applause.]

Yet the love of art still lives in some inner corner of his heart, and I know he can never enter the studio of a painter and see the artist silently bringing from the canvass forms of life and beauty, but he feels a tender twinge as one who catches a glimpse of the beautiful girl he loved in his youth whom another has snatched away.

Finally, my dear master and father in art, allow me in this moment of your triumph in the field of discovery, to greet you in the name of your brother artists with "all hail." As an artist you might have spent life worthily in turning God's blessed daylight into sweet hues of rainbow colors and into breathing forms for the delight and consolation of men, but it has been His will that you should train the lightnings, the sharp arrows of His anger, into the swift yet gentle messengers of Peace and Love. [Applause.]

When Mr. Huntington had concluded his remarks, and after the announcement that on account of the absence of Col. Hoe, caused by indisposition, the fourteenth toast would not be responded to—the ladies who had graced the banquet by their presence began to retire, and before the fifteenth toast had been announced had nearly all left the room.

The President, however, announced the sixteenth and last toast,

"The Ladies,"

and said, this is the most inspiring theme of all; but the theme itself seems to be vanishing from us—indeed (after a pause), "has already vanished. (After another pause and a glance around the room), and the gentleman who was to have responded seems also to have vanished with his theme. I may assume, therefore, that the duties of the evening are performed, and its enjoyments are at an end."

Accordingly, soon after 12 o'clock, midnight, the assemblage dispersed.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address— JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JANUARY 1, 1869.

A Happy New Year.



Crowded up as we find ourselves among the mass of matter connected with the great Banquet just given to Professor Morse, we feared that we would have been compelled to omit our ordinary New Year's congratulations, and issue the JOURNAL without a single kind word to our numerous friends and readers. We cannot afford to do this.

When Superintendents make the JOURNAL a gift to those who serve them; when they, like those in the good city of Portland, acknowledge with the instinctive promptitude of faithful men the acceptability of the gift; when letters of personal kindness come to us from those we never saw; when old friends send us turkeys for our Christmas table, and invoke blessings on our New Year, we would be less than manly did we not claim our accustomed page in which to utter our heartiest benediction on

them all. May blessings fall fast on all of you, and as many as the snow-flakes which are tracing their white lines past our window as we write.

THE MORSE BANQUET.

We regard it as a happy beginning to the new year to be able to give the full proceedings of the great banquet given to Professor Morse by his friends and countrymen at Delmonico's, on the night of the 29th ult. It was an act of justice and of honor long delayed, and yet came when every thing had conspired to render it illustrious and complete. The splendor of the banquet; the dignity given to it by the presence of the Chief-Justice of the United States as its presiding head; the array of noble men who graced its central table, and indeed all its tables; the eloquence and warmth of all the addresses delivered; the presence of the tiny instrument which has united the world, and made its inventor famous; the venerable form of the pleased Professor accepting the great ovation in an address of great artistic finish and beauty in which, while asserting his own claims with modest manliness, he gave just credit to cotemporaneous inventors; the completed recognition by the nations of Europe of the merits of Professor Morse's claims which preceded this great demonstration of his countrymen; all rendered the occasion grand, beautiful, appropriate, complete. We were glad to see that his children were present to witness the crowning honor to a father whose name must be henceforth immortal.

There was one man sat at the central board, on whom many eyes rested, and who enjoyed the scene with a keener relish than his placid features denoted. It was the man who came to New York 24 years ago, and could not find within it one merchant who would invest one dollar in the enterprise which he had undertaken to introduce. Bravely conquering public apathy, bravely defending the assailed rights of the inventor through many a long and tedious suit, and at last triumphantly securing to Professor Morse that success without which mere renown would have been a worthless plume, Hon. Amos Kendall sat among his distinguished companions proud of all of which the banquet was the sequence and the crown. In some coming banquet, when the workers of the Telegraph will meet together, Mr. Kendall must give to us the unwritten history of the trials and triumphs of the Telegraph, supplemented by the stories of others who have performed much of its toil, and shared in its rewards.

We must apologise to all correspondents, advertisers, subscribers, and everybody, for the utter omission of all matter save the proceedings of the Banquet to Professor Morse. We deem these eminently worthy of record, and have bestowed much labor in getting every speech correct, and generally after the revision of those who uttered them. We do not think that we would have done justice to current history, or to him whom we all honor, had we omitted this duty. Our next number will be embellished with a neat likeness of Mr. Wade, as promised in our last.

We are compelled to omit until our next number the acknowledgement of Insurance Assessments received.

For Tariff Circular see page 34.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

NOVEMBER, 1868.

Gross Receipts.....	\$607,728 05
Current Expenses.....	383,024 46
Net Profit.....	\$224,703 59

Important Changes.

Jesse Hoyt, Esq., for nearly twenty years past identified with the management of the telegraphs in the Province of Nova Scotia, having become deeply engaged in the extensive mining operations of the Acadia Coal Company, of which he is superintendent, has lately resigned his position in telegraph service, to take effect on the first of January, 1869, in order to more fully devote his superior business abilities to the interests of the coal company. He is still a director and member of the Executive Committee of the Nova Scotia Telegraph Company.

In saying adieu to Supt. Hoyt, in his official capacity, we trust we shall not lose sight of him altogether, and that the interest he has ever manifested in the progress of the telegraph will not permit him to forget us nor the business. We hope his recollection of his connection with the "Western Union" will be as pleasant to him as to us. He has risen "from the ranks" by his own exertion and ability, and both deserves and receives great credit from the public and from the telegraph company.

The territory heretofore forming Supt. Hoyt's district, including all the lines and offices of the Western Union Telegraph Company in Nova Scotia, has been assigned to the charge of Supt. Robert T. Clinch, of St. John, N. B. Mr. Clinch will be assisted in Nova Scotia by Mr. Alexander E. Hoyt, who has long held the position of assistant superintendent under his brother's direction. That portion of Mr. Clinch's former district lying in the State of Maine has been added to the third district, under Supt. Bedlow, and the White Mountain lines and the offices at Concord and Manchester, N. H., heretofore under Mr. Bedlow's supervision, have been assigned to the care of Supt. Gates of the fourth district.

For convenience of reference, the three districts bearing a name, are now given a number, and in order to avoid a change in the number of those already well known by their numbers, the Metropolitan District is designated 1st, and the present 1st and 2d the 2d district; the Erie Railway District the 9th, and the Baltimore and Ohio Railway District the 10th.

These changes more nearly equalize the extent of the several districts in the Eastern Division, and bring the territory under the supervision of the superintendents to whom it is most accessible. We trust it will prove a desirable change to all.

Mr. Albert B. Chandler has been officially designated as Secretary of the Eastern Division, and is authorized to act in an official capacity, under the direction of the General Superintendent, his especial charge being the accounts, records and correspondence of the Division. These duties have long been performed by Mr. Chandler, and for which he is fully qualified by long experience, by an intimate knowledge of the condition of the entire division, and by those qualities of patient perseverance, kindness of heart and clearness of head, for the possession of which he is so well known.

DECEMBER 29, 1868.

The operators of Portland, Me., office wish to express thanks for the Christmas gift from their Superintendent, J. S. Bedlow, of a year's subscription to the JOURNAL OF THE TELEGRAPH—a most acceptable present and valued by each and all of us. PORTLAND.

Died.

On Sunday, December 27, Ellen, infant daughter of Edward A. and Ellen M. Calahan, aged 6 months and 6 days.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
JANUARY 1, 1889.

To all Offices on W. U. Lines :

The following changes have occurred since December 15, the date of the last tariff order. Please note them in your tariff book :

NEW OFFICES.

Alpsville, Pa., tariff same as Shaners, Pa.
Atlantic, Iowa, tariff same as West Side, Iowa.
Brighton Sta., O., tariff same as Cincinnati, O.
Brandon, Miss., tariff from Louisville 1.60, from Washington 3.25.

Crawford, N. J., tariff same as Elizabeth, N. J.
Dennysville, Me., tariff same as Pembroke, Me.
Freemansburg, Pa., re-opened, tariff same as Bethlehem, Pa.
Germantown, Tenn., tariff same as Colliersville, Tenn.
Hamburg, Iowa, tariff 30c. more than St. Joseph, Mo., from offices South and East thereof, and 30c. less than St. Joseph from offices North and West.

Memramcook, N. B., tariff same as Dorchester, N. B.
Missouri City, Mo., tariff same as Camden, Mo.
Nerepis, N. B., tariff 20c. more than St. John, N. B.
New Philadelphia, Ill., tariff same as Bushnell, Ill.
Norwich, O., tariff same as Concord, O.
Phillips, Mo., tariff 25c. more than St. Joseph, Mo., from offices South and East, and 25c. less than St. Joseph from offices North and West.

Painsec Junction, N. B., tariff same as Dorchester, N. B.
Saugatuck, Conn., tariff same as Westport, Conn.
Schuylerville, N. Y., tariff same as Cambridge, N. Y.
Willesley, Mass., tariff same as Natick, Mass.
Tyrone, Pa., will hereafter be checked direct. Tariff for all offices on line of Pennsylvania R. R. will remain unchanged. Other offices will add 50c. to rate to Harrisburgh or Pittsburgh. Offices having "special rate" to Harrisburgh or Pittsburgh will use it in computing tariff to Tyrone.

Bellefonte, Pa., will hereafter be checked direct. Tariff for offices on Penna. R. R. will remain unchanged. Offices between Erie and Scranton on Philadelphia and Erie and Lackawaxen, and Bloomsburg Railroads, will add 40 cents to their rate to Lock Haven, Pa. All other offices will add 50 cents to their rate to Harrisburgh or Pittsburgh. "Special rate" to Harrisburgh or Pittsburgh, if there is any, will be used in computing tariff for Bellefonte.

Cream Ridge, Merchantville, Moorestown, New Egypt, Pemberton, Sharon and Wrightstown, N. J., will hereafter be checked direct. Tariff same as Bordentown, N. J.

The following offices on the Kansas branch of the Hannibal and St. Joseph R. R. will hereafter be checked direct:

Tariff from offices heretofore known as Caton offices, will be according to the "Map Tariff." Other offices will add the rates here given to their tariff to Kansas City, Mo. :

Liberty, Mo., 40 | Holt, Mo., 50
Kearney, Mo., 45 | Lathrop, Mo., 55

OTHER LINES.

Downingtown, Pa., will hereafter be treated as an "Other Line" office. Tariff 30c. from Philadelphia, 40c. from Harrisburgh, or 70c. from Pittsburgh.

OFFICES CLOSED.

North Vineland, N. J. Business will hereafter be mailed at Vineland, N. J.; Washington, Wayne Co., Ind., Geddes, N. Y., Marcellus, N. Y., Selma, N. C.

TO OFFICES HAVING "SPECIAL SHEET A."

Check Brownsville, Tenn., at the same rate as to Memphis, Tenn., or 1.00 added to "special rate" to Louisville, Ky.

Offices on line from Buffalo to Rochester, including Rochester, will check Detroit and Monroe, Mich., at 95 cents. From Rochester to Syracuse, including Syracuse, at 1.05. From Syracuse to Albany and Troy, including Albany and Troy, at 1.15. All other offices East, South and North of Albany, in New York State, at 1.25. Offices on line from Pittsburgh to Harrisburgh, including Harrisburgh, at 1.25. From Harrisburgh to Philadelphia, including Philadelphia, at 1.40. Baltimore, Md., and Washington, D. C., at 1.50. Other offices sending business for Monroe and Detroit, via Philadelphia, will add 1.40 to their "special rate" to Philadelphia for tariff to Monroe and Detroit. Offices in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, check Monroe at same rate as Detroit.

GENERAL INFORMATION.

The rate to East Liberty, Pa., will hereafter be the same as to Pittsburgh. Offices having "special rate" to Pittsburgh will adopt it as rate to East Liberty.

Reductions have been made in the India and China rates, as follows :

From London, England, to
India, \$14.25
Ceylon, 15.25
China (Post Galle), 15.50

The name of Pittstown, N. J., office has been changed to Elmer, N. J., and Cottage Hill, Ill., to Elmhurst, Ill.

The following is a list of offices of the Montreal Telegraph Company with tariff from Western Union connecting points. The rate to be taken will be that from the point by which the business has heretofore been sent, the route for the business remaining unchanged :

	Sackville, N. B.	Portland, Me.	Standish, Que.	Montreal, Que.	Whitehall, N. Y.	Oswego, N. Y.	Buffalo, N. Y.	Detroit, Mich.
Abercorn, Que.	75	40	25	25	40	50	50	75
Acton, Ont.	75	60	50	40	60	50	25	25
Acton, Que.	75	25	25	25	40	50	50	75
Alla Craig, Ont.	75	75	60	50	75	60	25	25
Almonte, Ont.	75	50	40	25	40	40	40	50
Altona, N. Y.	75	60	40	25	40	50	50	50
Amherstburg, Ont.	75	75	75	50	75	60	25	25
Ancester, Ont.	75	60	50	40	60	50	25	25
Angus, Ont.	75	60	50	40	60	50	25	25
Ausable Forks, N. Y.	75	75	40	25	25	50	60	75
Antwerp, N. Y.	75	75	40	25	50	25	50	50
Arnprior, Ont.	75	50	40	25	40	40	40	50
Arthabaska, Que.	50	40	25	25	40	50	60	75
Arthur, Ont.	75	75	60	50	75	60	25	25
Aston, Que.	50	40	25	25	40	50	60	75
Aurora, Ont.	75	60	50	40	60	50	25	25
Aultsville, Ont.	75	40	25	25	40	40	40	50
Alymer, Ont.	75	40	25	25	40	40	40	50
Ayr, Ont.	75	60	50	40	60	50	25	25
Baden, Ont.	75	60	50	40	60	50	25	25
Barrie, Ont.	75	60	50	40	60	50	25	25
Bath, Ont.	75	50	40	25	40	25	25	40
Batiscan, Que.	50	40	25	25	40	50	60	75
Bathurst, N. B.	25	75	75	60	75	75	75	75
Bangor, N. Y.	75	60	40	25	40	50	50	50
Beachburg, Ont.	75	50	40	25	40	50	50	60
Beaconsfield, Ont.	75	60	50	40	60	50	25	25
Beauharnois, Que.	75	40	25	25	40	40	40	50
Becancour, Ont.	50	40	25	25	40	50	60	75
Belleville, Ont.	75	50	40	25	40	40	25	40
Belleville, N. Y.	75	75	50	40	60	25	50	60
Belle Ewart, Ont.	75	60	50	40	60	50	25	25
Beloell, Que.	75	40	25	25	40	50	50	75
Berlin Falls, N. H.	75	25	25	25	60	75	60	75
Bethel, Me.	75	25	25	25	60	75	60	75
Bethier, Que.	60	40	25	25	40	50	50	60
Bertie, Ont.	75	60	50	40	60	50	25	25
Bic, Que.	40	60	50	25	50	75	75	75
Black Brook, N. Y.	75	75	40	25	25	50	60	75
Black River, Que.	50	40	25	25	40	50	60	75
Bonaventure Station, Que.	50	25	25	25	25	40	40	50
Bord a Plouffe, Que.	60	40	25	25	40	50	50	60
Bothwell, Ont.	75	75	60	50	75	60	25	25
Boucherville Mt., Que.	75	40	25	25	40	50	50	75
Boundary Line.	75	25	25	25	60	75	60	75
Bowmanville, Ont.	75	60	40	25	50	40	25	25
Bradford, Ont.	75	60	50	40	60	50	25	25
Brampton, Ont.	75	60	50	40	60	50	25	25
Brantford, Ont.	75	60	50	40	60	50	25	25
Brasher Falls, N. Y.	75	60	40	25	40	50	50	60
Breelau, Ont.	75	60	50	40	60	50	25	25
Bridgewater, Ont.	75	60	40	25	40	40	25	40
Brighton, Ont.	75	50	40	25	40	40	25	40
Britannia Mills, Que.	75	25	25	25	40	50	50	75
Brooklin, Ont.	75	60	40	25	50	40	25	40
Brockville, Ont.	75	40	40	25	40	40	40	40
Brompton Falls, Que.	75	25	25	25	40	50	50	75
Brushes Mills, N. Y.	75	60	40	25	40	50	50	60
Bryant's Pond, Me.	75	25	25	25	60	75	60	75
Buctouche, N. B.	25	75	75	50	75	75	75	75
Berlin, Ont.	75	60	50	40	60	50	25	25
Burke, N. Y.	75	60	40	25	40	50	50	50
Cacouna, Que.	40	60	50	25	50	75	75	75
Caledonia, Ont.	75	60	50	40	60	50	25	25
Caledonia Springs, Ont.	75	40	25	25	40	40	40	50
Canton, N. Y.	75	75	40	25	50	25	50	50
Coteau, Que.	75	40	25	25	40	40	40	50
Cornwall, Ont.	75	40	25	25	40	40	40	50
Consecon, Ont.	75	60	40	25	50	40	25	40
Colborne, Ont.	75	60	40	25	40	40	25	25
Cobourg, Ont.	75	60	40	25	40	40	25	25
Clifton, Ont.	75	60	50	40	60	50	25	25
Clifton House, Ont.	75	60	50	40	60	50	25	25
Chatham, Ont.	75	75	60	50	75	60	25	25
Collingwood, Ont.	75	60	50	40	60	50	25	25
Clinton, Ont.	75	75	60	50	75	60	25	25
Champlain, N. Y.	75	60	25	25	25	50	50	50
Chateaugay, N. Y.	75	60	40	25	40	50	50	50
Carleton Place, Ont.	75	50	40	25	40	40	40	50
Chatham, N. B.	25	75	75	60	75	75	75	75
Campbellton, N. B.	25	75	60	50	75	75	75	75
Clarence, Ont.	75	40	25	25	40	40	40	50
Chambly, Que.	75	40	25	25	40	50	50	75
Clinton Mills, N. Y.	75	60	40	25	40	50	50	50
Clarksburg, Ont.	75	75	60	50	75	60	25	25
Centerville, N. Y.	75	60	25	25	25	50	50	50
Craig's Mills, Mo.	75	25	40	25	75	75	60	75

	Sackville, N. B.	Portland, Me.	Standish, Que.	Montreal, Que.	Whitehall, N. Y.	Oswego, N. Y.	Buffalo, N. Y.	Detroit, Mich.
Cayuga, Ont.	75	60	50	40	60	50	25	25
Crown Point, N. Y.	75	75	40	25	25	50	60	75
Cumberland, Ont.	75	40	25	25	40	40	40	40
Chippewa, Ont.	75	60	50	40	60	50	25	25
Cheever, N. Y.	75	75	40	25	25	50	60	60
Chateaugay Basin, Que.	75	40	25	25	40	40	40	40
Craig's Road, Que.	50	40	25	25	40	50	60	60
Compton, Que.	75	25	25	25	40	50	50	75
Coaticook, Que.	75	25	25	25	40	50	50	75
Canfield, Ont.	75	60	50	40	60	50	25	25
Camlachie, Ont.	75	75	75	50	75	60	25	25
Carronbrook, Ont.	75	75	60	50	75	60	25	25
Cowansville, Que.	75	40	25	25	40	50	50	75
Dickinson's Landing, Ont.	75	40	25	25	40	40	40	40
Dundas, Ont.	75	60	50	40	60	50	25	25
Derby Line, Vt.	75	40	25	25	40	50	50	75
De Kalb Junc., N. Y.	75	75	40	25	50	25	50	75
Dunville, Ont.	75	60	50	40	60	50	25	25
Drumbo, Ont.	75	60	50	40	60	50	25	25
Dalhousie, N. B.	25	75	60	50	75	75	75	75
Dunham, Que.	75	40	25	25	40	50	50	75
Des Rivieres, Que.	75	40	25	25	40	50	50	75
Delaware, Ont.	75	60	50	40	60	50	25	25
Dannemora, N. Y.	75	75	40	25	25	50	60	75
Davenport, Ont.	75	60	50	40	60	50	25	25
Danville, Que.	50	40	25	25	40	50	60	75
Don, Ont.	75	60	40	25	50	40	25	25
Doucet's Landing, Que.	50	40	25	25	40	50	60	75
Dresden, Ont.	75	75	75	50	75	60	25	25
Duffin's Creek, Ont.	75	60	40	25	50	40	25	25
Durham, Ont.	75	75	60	50	75	60	25	25
Dundee, Que.	75	40	25	25	40	40	40	50
Durham, G. T. R., Que.	75	25	25	25	40	50	50	75
Elora, Ont.	75	75	60	50	75	60	25	25
Etchemin, Que.	50	40	25	25	40	50	60	75
Evan's Mills, N. Y.	75	75	40	25	50	50	50	75
Ellenburg, N. Y.	75	60	40	25	40	50	50	75
Ecclesville, Ont.	75	75	75	50	75	60	25	25
Edwardsburg, Ont.	75	40	40	25	40	40	40	40
Essex, N. Y.	75	75	40	25	25	60	75	75
Ernestown, Ont.	75	50	40	25	40	25	25	25
Father Point, Que.	40	60	50	25	50	75	75	75
Farnham, Que.	75	40	25	25	40	50	50	75
Freiligsburgh, Que.	75	40	25	25	40	50	50	75
Forest, N. Y.	75	60	40	25	40	50	50	75
Fort Erie, Ont.	75	60	50	40	60	50	25	25
Forrest, G. T. R., Ont.	75	75	75	50	75	60	25	25
Fort Covington, N. Y.	75	40	25	25	40	40	40	50
Frenchman's Bay, Ont.	75	60	40	25	50	40	25	25
Fergus, Ont.	75	60	50	40	60	50	25	25
Falmouth, Me.	75	25	40	25	75	60	75	75
Grimsby, Ont.	75	60	50	40	60	50	25	25
Galt, Ont.	75	60	50	40	60	50	25	25
Gouverneur, N. Y.	75	75	40	25	50	25	50	75
Georgetown, Ont.	75	60	50	40	60	50	25	25
Guelph, Ont.	75	60	50	40	60	50	25	25
Goderich, Ont.	75	75	60	50	75	60	25	25
Granby, Que.	75	40	25	25	40	50	50	75
Glencoe, Ont.	75	75	60	50	75	60	25	25
Georgetown, Que.	75	40	25	25	40	50	50	75
Gould's Landing, Ont.	75	50	40	25	40	50	60	75
Gilford, Ont.	75	60	50	40	60	50	25	25
Gananoque, Ont.	75	50	40	25	40	25	25	40
Grenville, Que.	75	40	25	25	40	40	40	50
Grafton, Ont.	75	60	40	25	40	40	25	25
Granton, Ont.	75	75	60	50	75	60	25	25
Greenwood, Ont.	75	60	40	25	50	40	25	25
Gorham, N. H.	75	25	25	25	60	75	60	75
Gilead, N. H.	75	25	25	25	60	75	60	75
Hamilton, Ont.	75	60	50	40	60	50	25	25
Hanover, Ont.	75	75	60	50	75	60	25	25
Harriessburgh, Ont.	75	60	50	40	60	50	25	25
Heuvelton, N. Y.	75	75	40	25	50	25	50	75
Hawkesbury, Ont.	75	40	25	25	40	40	40	50
Hudson, Que.	75	40	25	25	40	40	40	50
Henderson, N. Y.	75	75	50	40	60	25	60	60
Hemmingford, Que.	75	40	25	25	25	50	50	75
Hamburg, Ont.	75	60	50	40	60	50	60	75
Hadlow Cove, Que.	50	40	25	25	40	50	60	75
Holland's Landing, Ont.	75	60	50	40	60	50	25	25
Huntingdon, Que.	75	40	25	25	40	40	40	50
Hespeler, Ont.	75	60	50	40	60	50	25	25
Ingersoll, Ont.	75	60	50	40	60	50	25	25
Isle Verte, Que.	40	60	50	25	50	75	75	75
Island Pond, Vt.	75	25	25	25	60	75	60	75
Industry or Joliette, Que.	60	40	25	25	40	40	40	50
Irish Creek, Ont.	75	50	40	25	40	40	40	50
Kemptville, Ont.	75	40	25	25	40	40	25	25
Kingston, Ont.	75	50	40	25	40	25	25	25
Komoka, Ont.	75	60	50	40	60	50	25	25
King, Ont.	75	60	50	40	60	50	25	25
Kingston, N. B.	25	75	75	50	75	75	75	75

	Sackville, N. B.	Portland, Me.	Stamstead, Que.	Montreal, Que.	Whitehall, N. Y.	Oswego, N. Y.	Buffalo, N. Y.	Detroit, Mich.		Sackville, N. B.	Portland, Me.	Stamstead, Que.	Montreal, Que.	Whitehall, N. Y.	Oswego, N. Y.	Buffalo, N. Y.	Detroit, Mich.		Sackville, N. B.	Portland, Me.	Stamstead, Que.	Montreal, Que.	Whitehall, N. Y.	Oswego, N. Y.	Buffalo, N. Y.	Detroit, Mich.
Krowlton, Que.,	75	40	25	25	40	50	50	75	Plattsville, Ont.,	75	60	50	40	60	50	25	25	South Paris, Me.,	75	60	50	40	60	50	25	25
Knappa, N. Y.,	75	60	40	25	40	50	50	50	Potadam, N. Y.,	75	60	40	25	40	50	50	50	Three Rivers, Que.,	75	60	40	25	40	50	50	50
Keeseville, N. Y.,	75	75	40	25	25	50	60	25	Potadam Junc., N. Y.,	75	60	40	25	40	50	50	50	Toronto, Ont.,	75	60	40	25	40	50	50	50
Kincardine, Ont.,	75	75	40	25	25	50	60	25	Perth, Ont.,	75	60	40	25	40	50	50	50	Trenton, Ont.,	75	60	40	25	40	50	50	50
Lindsay, Ont.,	75	60	40	25	25	50	40	25	Pakenham, Ont.,	75	60	40	25	40	50	50	50	Trois Pistoles, Que.,	75	60	40	25	40	50	50	50
London, Ont.,	75	60	40	25	25	50	40	25	Point Fortune, Que.,	75	60	40	25	40	50	50	50	Thornhill, Ont.,	75	60	40	25	40	50	50	50
L'Islet, Que.,	40	60	50	25	25	50	75	75	Plantagenet, Ont.,	75	60	40	25	40	50	50	50	Thornold, Ont.,	75	60	40	25	40	50	50	50
Lefroy, Ont.,	75	60	50	40	60	50	25	25	Port Neuf, Que.,	50	40	25	25	40	50	60	75	Thamesville, Ont.,	75	60	40	25	40	50	50	50
Levis, Que.,	50	40	25	25	40	50	60	75	Port Dalhousie, Ont.,	75	60	40	25	40	50	50	25	Tilsonburg, Ont.,	75	60	40	25	40	50	50	50
Lancaster, Ont.,	75	40	25	25	40	40	40	50	Port Burwell, Ont.,	75	60	40	25	40	50	50	25	Thornbury, Ont.,	75	60	40	25	40	50	50	50
Lynden, Ont.,	75	60	40	25	40	50	25	25	Pembroke, Ont.,	75	60	40	25	40	50	50	25	Ticonderoga, N. Y.,	75	60	40	25	40	50	50	50
L'Original, Ont.,	75	40	25	25	40	40	40	50	Port Henry, N. Y.,	75	60	40	25	40	50	50	25	Terrebonne, Que.,	75	60	40	25	40	50	50	50
Lyn, Ont.,	75	40	25	25	40	40	40	50	Port Elgin, Ont.,	75	60	40	25	40	50	50	25	Tyendinaga, Ont.,	75	60	40	25	40	50	50	50
Lisbon, N. Y.,	75	60	40	25	40	50	50	50	Port Rowan, Ont.,	75	60	40	25	40	50	50	25	Tavistock, Ont.,	75	60	40	25	40	50	50	50
L'Assomption, Que.,	60	40	25	25	40	50	50	60	Philadelphie, N. Y.,	75	60	40	25	40	50	50	25	Thornedale, Ont.,	75	60	40	25	40	50	50	50
L'Epiphanie, Que.,	60	40	25	25	40	50	50	60	Port Ryerse, Ont.,	75	60	40	25	40	50	50	25	Upton, Que.,	75	60	40	25	40	50	50	50
Lacolle, Que.,	75	40	25	25	40	50	50	75	Pierreville, Que.,	50	40	25	25	40	50	60	75	Uxbridge, Ont.,	75	60	40	25	40	50	50	50
Little Metis, Que.,	40	60	50	25	25	50	75	75	Point St. Charles, Que.,	50	40	25	25	40	50	60	75	Vienna, Ont.,	75	60	40	25	40	50	50	50
Longwood, Ont.,	75	60	40	25	40	50	50	25	Point St. Claire, Que.,	75	60	40	25	40	50	60	75	Vittoria, Ont.,	75	60	40	25	40	50	50	50
Lennoxville, Que.,	75	60	40	25	40	50	50	25	Prescott Junction, Ont.,	75	60	40	25	40	50	60	75	Vaudreuil, Que.,	75	60	40	25	40	50	50	50
L'Acadie, Que.,	75	40	25	25	40	40	40	50	Port Union, Ont.,	75	60	40	25	40	50	60	75	Valleyfield, Que.,	75	60	40	25	40	50	50	50
Lachine, Que.,	75	40	25	25	40	40	40	50	Parkhill, Ont.,	75	60	40	25	40	50	60	75	Wellington, Ont.,	75	60	40	25	40	50	50	50
Lachine Junc., Que.,	75	40	25	25	40	40	40	50	Port Perry, Ont.,	75	60	40	25	40	50	60	75	Wellington Square, Ont.,	75	60	40	25	40	50	50	50
Lansdowne, Ont.,	75	60	40	25	40	50	50	50	Prince Albert, Ont.,	75	60	40	25	40	50	60	75	Waterford, Ont.,	75	60	40	25	40	50	50	50
Lucan, Ont.,	75	60	40	25	40	50	50	50	Petrolia, Ont.,	75	60	40	25	40	50	60	75	Waterloo, Ont.,	75	60	40	25	40	50	50	50
Lawrence, N. Y.,	75	60	40	25	40	50	50	50	Preston, Ont.,	75	60	40	25	40	50	60	75	Woodstock, Ont.,	75	60	40	25	40	50	50	50
Morrisburg, Ont.,	75	60	40	25	40	50	50	50	Quebec, Que.,	50	40	25	25	40	50	60	75	Windsor, Ont.,	75	60	40	25	40	50	50	50
Montreal, Que.,	50	25	25	25	40	40	40	50	Queenston, Ont.,	75	60	40	25	40	50	60	75	Waterloo, Que.,	75	60	40	25	40	50	50	50
Matilda, Ont.,	75	40	25	25	40	40	40	50	Riviere du loup enhaut,	60	40	25	25	40	50	60	75	Watertown, N. Y.,	75	60	40	25	40	50	50	50
Millbrook, Ont.,	75	60	40	25	40	50	50	50	Que.,	60	40	25	25	40	50	60	75	Wyoming, Ont.,	75	60	40	25	40	50	50	50
Mitchell, Ont.,	75	60	40	25	40	50	50	50	Riviere du loup embas,	40	60	50	25	50	75	75	75	Whitby, Ont.,	75	60	40	25	40	50	50	50
Mill Cove, Que.,	50	40	25	25	40	40	40	50	Que.,	40	60	50	25	50	75	75	75	Waterdown, Ont.,	75	60	40	25	40	50	50	50
Moore's Junc., N. Y.,	75	60	40	25	40	50	50	50	Rimouski, Que.,	40	60	50	25	50	75	75	75	Wardsville, Ont.,	75	60	40	25	40	50	50	50
Malone, N. Y.,	75	60	40	25	40	50	50	50	Richibucto, N. B.,	25	75	60	25	50	75	75	75	Westport, N. Y.,	75	60	40	25	40	50	50	50
Madrid, N. Y.,	75	60	40	25	40	50	50	50	Repentigny, Que.,	60	40	25	25	40	50	60	75	Warwick, Que.,	75	60	40	25	40	50	50	50
Metis, Grand, Que.,	40	60	50	25	25	50	75	75	Renfrew, Ont.,	75	60	40	25	40	50	60	75	Windsor, Que.,	75	60	40	25	40	50	50	50
Merrickville, Ont.,	75	40	25	25	40	40	40	50	Raymondville, N. Y.,	75	60	40	25	40	50	60	75	West Milan, N. H.,	75	60	40	25	40	50	50	50
Maskinonge, Que.,	60	40	25	25	40	50	50	60	Richmond Hill, Ont.,	75	60	40	25	40	50	60	75	West Paris, Me.,	75	60	40	25	40	50	50	50
Massena Springs, N. Y.,	75	60	40	25	40	50	50	50	Richford, Vt.,	75	60	40	25	40	50	60	75	Waterville, Que.,	75	60	40	25	40	50	50	50
Meaford, Ont.,	75	60	40	25	40	50	50	25	Richville, N. Y.,	75	60	40	25	40	50	60	75	Widder, Ont.,	75	60	40	25	40	50	50	50
Milton, Ont.,	75	60	40	25	40	50	50	25	Richmond, Que.,	75	60	40	25	40	50	60	75	West Charlton, Vt.,	75	60	40	25	40	50	50	50
Mansonville, Que.,	75	60	40	25	40	50	50	25	Rockwood, Ont.,	75	60	40	25	40	50	60	75	Weston, Ont.,	75	60	40	25	40	50	50	50
Magog, Que.,	75	60	40	25	40	50	50	25	Richmond, Ont.,	75	60	40	25	40	50	60	75	Wallaceburg, Ont.,	75	60	40	25	40	50	50	50
Moira, N. Y.,	75	60	40	25	40	50	50	25	Richland, N. Y.,	75	60	40	25	40	50	60	75	Walkerton, Ont.,	75	60	40	25	40	50	50	50
Mt. Brydges, Ont.,	75	60	40	25	40	50	50	25	St. Anne de la Perade,	50	40	25	25	40	50	60	75	Whitevale, Ont.,	75	60	40	25	40	50	50	50
Madoc, Ont.,	75	60	40	25	40	50	50	25	Que.,	50	40	25	25	40	50	60	75	Yamachiche, Que.,	75	60	40	25	40	50	50	50
Metapedia, Que.,	25	75	60	40	25	40	50	25	St. Anne de la Pocatiere,	40	60	50	25	50	75	75	75	Yarmouth, Me.,	75	60	40	25	40	50	50	50
Mill Point, Ont.,	75	60	40	25	40	50	50	25	Que.,	40	60	50	25	50	75	75	75									
Methot's Mills, Que.,	50	40	25	25	40	40	40	50	St. Anne Bout de l'Isle,	75	60	40	25	40	50	60	75									
Mechanics' Falls, Me.,	75	60	40	25	40	50	50	25	Que.,	75	60	40	25	40	50	60	75									
Mallorytown, Ont.,	75	60	40	25	40	50	50	25	Sorel, Que.,	50	40	25	25	40	50	60	75									
Malton, Ont.,	75	60	40	25	40	50	50	25	Sterling, Ont.,	75	60	40	25	40	50	60	75									
Mt. Forest, Ont.,	75	60	40	25	40	50	50	25	St. Catherine's, Ont.,	75	60	40	25	40	50	60	75									
Markham, Ont.,	75	60	40	25	40	50	50	25	Simcoe, Ont.,	75	60	40	25	40	50	60	75									
New Liverpool, Que.,	50	40	25	25	40	40	40	50	St. Thomas, Ont.,	75	60	40	25	40	50	60	75									
New Market, Ont.,	75	60	40	25	40	50	50	25	St. Johns, Que.,	75	60	40	25	40	50	60	75									
Napanee, Ont.,	75	60	40	25	40	50	50	25	Sunnidale, Ont.,	75	60	40	25	40	50	60	75									
Newcastle, Ont.,	75	60	40	25	40	50	50	25	Stayner, Ont.,	75	60	40	25	40	50	60	75									
Niagara, Ont.,	75	60	40	25	40	50	50	25	Streetsville, Ont.,	75	60	40	25	40	50	60	75									
Newbury, Ont.,	75	60	40	25	40	50	50	25	Stratford, Ont.,	75	60	40	25	40	50	60	75									
North Lawrence, N. Y.,	75	60	40	25	40	50	50	25	St. Mary's, Ont.,	75	60	40	25													

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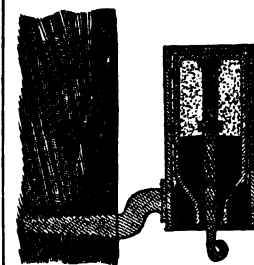
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NO. 4.

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VOL. II.

JEPHTHA H. WADE, ESQ.

Jeptha H. Wade, whose likeness illustrates this page, was born in Seneca County, N. Y., August 11, 1811. His early life was passed in mechanical pursuits, in which he was fairly successful, but for several years immediately succeeding 1835, devoted himself to portrait painting, for which branch of art he had a very decided natural aptitude. It is noteworthy that he took, while thus engaged, the first *daguerreotype* ever taken west of New York, he having procured a camera and studied out the process, unaided except by the vague printed directions accompanying the instrument. Mr. Wade was engaged in his work as a portrait painter when telegraphing originated in the building of the Baltimore and Washington line in 1844. He early identified himself with the new science and built the first line west of Buffalo—that upon the Michigan Central Railroad, from Detroit to Jackson, Mich.—and opened the Jackson office without assistance or instruction. Here he remained for some time as operator. The year 1848 found him in charge of the Erie and Michigan office at Milan, Ohio, where, a fortunate conflagration disposing summarily of his color tubes and brushes, he decided thenceforth to abandon art and devote himself entirely to telegraphy.

The writer's first personal acquaintance with Mr. Wade was in 1850, at which time he (Mr. Wade) was engaged in superintending the line which he had just completed between Cleveland and Cincinnati, bravely bearing arms against the "sea of troubles" resulting from defective insulation, and all the "thousand ills" that infant and experimental telegraphing was heir to. It was a hard fight against ignorance, prejudice, and the cupidity of those who could see no reason why the enterprise in which their money was embarked should fail to pay royal revenues at once. But he won it, and the writer's recollection is clear, that in the stormy season of the succeeding year the "Wade line" was the only clear working circuit in the old office at Apollo Hall. From this time forward, Mr. Wade's success as a telegrapher never varied. The "House consolidation," which placed the Wade line and Mr. Wade's and Col. Speed's interests in the Erie and Michigan lines in the hands of the Mississippi Valley Printing Telegraph Company, and formed the nucleus of the present organization, was speedily followed by the complete absorption of the Erie and Michigan, and the Western Union Telegraph Company stood complete. One of the principal originators of the first Pacific telegraph, Mr. Wade was made its first President, and held that position until the Company was in its turn absorbed by the Western Union. The building of this line was an enterprise requiring, in no ordinary degree, the characteristics so marked in the subject of this sketch—energy, foresight, judgment, determination. Through a country bristling with difficulties that might well

have appalled him, it was left solely with himself to determine how, where and when, if at all, a line should be built to connect Chicago and San Francisco. These questions he decided upon his own responsibility; and the result was a success as brilliant, telegraphically and financially, as the most zealous could have desired, or the most sanguine predicted.

No person, not thoroughly conversant with telegraphing in its infancy, can understand the reluctance with which capital was applied to the building of lines, or the difficulties which were encountered in placing them on a paying basis. Ill-judged competition, resulting in a ruinous division of business, expenses in the maintenance of separate systems of lines, and a lack of public confidence in a system as yet but im-



perfectly organized—these were among the causes that kept many of the lines unproductive, and drove many to bankruptcy. Mr. Wade was too prudent to allow the lines under his charge to become involved beyond their ability to pay, and he was among the first to perceive the causes that had militated against the success of the telegraph, as a business, and to see and apply the remedy—consolidation. One of his most prominent acts in bringing about this result was a trip to California in 1860–61, which resulted, through his rare diplomatic tact and judgment, in a complete adjustment of all conflicting telegraphic interests in that State, and the advancement of the influence of the Western Union Telegraph Company to a pre-eminent position on the Pacific coast. Consolidation perfected,

and nearly all the lines on the continent being parts of the Western Union Company, Mr. Wade became its President, in which capacity he served several years, finally declining a re-election, in order to devote the remainder of his days to his private business, and the care and enjoyment of the ample fortune so deservedly won by his industry, integrity and great business capacity. Though no longer in the active management of the telegraph, Mr. Wade remains a Director in the Western Union Telegraph Company. He is far from being an idle man, his early habits of industry remaining intact, and the care of his private fortune giving him ample employment. He is heavily interested in several of the most extensive manufactories of the country, where his clear head and accu-

rate judgment are highly valued; is a director in three or four railroads; and active in the management of three of the largest banks in Cleveland, of one of which he is President. The following complimentary resolution was passed by the Board of Directors upon Mr. Wade's retirement from the Presidency of the Western Union Telegraph Company.

At a meeting of the Board of Directors of the Western Union Telegraph Company, held in the City of New York July 18, 1867, a letter was read from J. H. Wade, declining a re-election to the office of President, whereupon it was unanimously

Resolved, That in receiving the letter of J. H. Wade, Esq., declining re-election to the Presidency of this Company, we cannot pass it to the official files without recording our testimony to the distinguished service he has rendered to the general system of American Telegraphs, and especially to the Company whose management he now resigns.

Connecting himself with it in its earliest introduction to public use, and interesting himself in its construction, he was the first to see that the ultimate triumph of the telegraph, both as a grand system of public utility and of secure investment, would be by some absorbing process which would prevent the embarrassments of separate organizations.

To the foresight, perseverance and tact of Mr. Wade we believe is largely due the fact of the existence of one great Company to-day with its thousand arms, grasping the extremities of the Continent, instead of a series of weak, unreliable lines, unsuited to public wants, and, as property, precarious and insecure.

Resolved, That we tender to Mr. Wade our congratulations on the great fruition of his work, signalized and cemented by this day's election of a Board representing the now united leading telegraph interests of the nation, accompanied with regrets that he is not with us to receive our personal acknowledgments, and to join us in the election of a successor to the position he has so usefully filled. Office of the Western Union Telegraph Company, New York, July 10th, 1867.

WILLIAM ORTON, President.

O. H. PALMER, Secretary.

Mr. Wade is now 57 years old. Time has dealt gently with him. His physical condition is perfect—"his eye is not dimmed nor his natural fire abated." His rare judgment is unclouded, and the tact and kindness which in the past endeared him to those with whom he was associated, remain unchanged. A man of many strongly-marked characteristics, one of the most salient points in his character is a certain

rugged fidelity to those who were his friends in early life; and no man claims his friendship or sympathy, "for auld lang syne," in vain. The zest with which he enjoys a joke is traditional among the craft, and his friends "save us" their best stories "for Mr. Wade," sure of that best reward to a raconteur—apt appreciation and a hearty laugh. M.

The Government and the Telegraph.

At the recent banquet given to Prof. Morse, reference was very properly made by at least one of the speakers to the proposition which has been advanced in some quarters to place the telegraph under the control of the Government. It was stated, furthermore, that the only bill pending before Congress providing for such control did not contemplate acquiring the present system of lines, but proposed to commence the construction of new lines by putting up one of four wires between this city and Washington. This is the plan of which Hon. Mr. Washburne is the father, and for the purpose of collecting information for its development he is understood to have made a special trip to Europe a year ago. We would be glad to have him inform us in what European country he found the precedent for his scheme to appropriate the public money to enable the Government to embark in a competition with its own citizens.

It was certainly not in England, for although the British Government has decided to make the telegraph a department of the postal service, its first movement in that direction was to open negotiations for the purchase of all the existing lines. The result of these negotiations is an agreement to sell to the Government for a sum equal to twenty times the net profits of the present year, such profits to be ascertained by Commissioners appointed for that purpose.

This appears to be a liberal arrangement toward the telegraph owners, and one which our companies would undoubtedly be willing to accept; and yet it is no more than any Government should be ready to give in consideration of the perpetual surrender by its citizens of their right to profit by investments in a business which is destined to become of such immense importance as the telegraph. But we are opposed to the assumption of private enterprises by our Government on any terms. There can be nothing pleaded in justification, unless it be public necessity. In the case of the telegraph no such necessity exists. Certainly there is no lack of facilities between this city and the national capital. On this route three rival companies have been operating competing lines for several years, and a fourth is now erecting another set. Either possesses facilities equal to those proposed in the Washburne bill, and one of them vastly greater. Nor are the charges on this route excessive. Two of the companies have thus far been unable to make any dividends, and the ability of the third to do so, at low rates, cannot have been materially assisted by the profits on the business between these points.

Mr. Washburne proposes to make the tariff on his line fifteen cents for ten words, instead of forty cents, the rate now charged. Is the mere difference of twenty-five cents per message in favor of those having occasion to use the telegraph between these points a consideration of such importance as to justify the Government in expending a large sum directly, and, perhaps, indirectly destroying existing property which cost vastly more? But he will probably answer, this is to be an experiment to test the practicability of operating the telegraph by the Government at low rates. Then why not try the experiment where the results will prove something? Men of largest experience in the management of the telegraph claim that their business is mainly dependent on trade and commerce, and that merely personal and social communications constitute but a small item in the aggregate number of messages; that a small manufacturing town will give greater returns than another of much larger population but less enterprising in trade. An experiment to

test the correctness of these opinions might claim consideration if it were to be instituted between places to which private enterprise denied the telegraph, on the ground that it could not be made to pay. But we are inclined to coincide in the above opinion, and to believe that the lines under private control will everywhere follow closely the demands of business at all points which promise even moderate profits. We believe, however, that the companies will find it for their interest to offer the public lower average rates; first, because the business will thereby increase more rapidly, and, secondly, because the operation of competing lines, which will be constructed to meet the demand for lower rates, will, by dividing their receipts, diminish their profits more than would probably result from liberal reductions in advance of competition. —N. Y. Times.

Foreign Telegraph Prices.

The price of transmission between Russia and Denmark, for a simple dispatch of twenty (20) words, is fixed at 8½ francs, of which 5 francs belongs to Russia, for the transmission across the Empire (excepting Caucasus), and 3½ francs to the company for the transmission by the cable and to the Danish Telegraphs.

The transmission of a dispatch between Russia and London costs 12 francs, and 13 for other parts of Great Britain. The basis of the calculations remains always the same: 5 francs for Russia and 3½ francs for the transmission by cable and Denmark. The Russian Government allows a subsidy of 1 franc for each dispatch transmitted by the cable, with the exception of Government and Administrative dispatches. The dispatches for Great Britain in the same manner, London excepted. This last exception will continue as long as England maintains at home a different tariff for the transmission of dispatches into the interior.

The grant is made for 30 years, and the Russian Government engages, on its part, not to grant, during this lapse of time, a single concession for a direct submarine communication between Russia and Denmark. After the expiration of this term the monopoly and subsidy ceases; but the company preserve the right of continuing to work their line by conforming themselves to the actual concession.

This subsidy will not in any case exceed the sum of 40,000 francs annually. When the number of dispatches transmitted amounts to 100,000 dispatches, the subsidy will cease to be paid. But the company will again receive it in the before-mentioned proportion, if, by unforeseen circumstances, the number of annual dispatches is reduced below 100,000.

Domestic Telegraphy.

Sir William Clayton, Bart., England, has just completed a system of telegraphy over his estate at Harleyford, near Great Marlow, Bucks, which enables him to communicate most comfortably from his study with his bailiff, coachman, gardener, gamekeeper and the several lodge keepers. The instruments are Messrs. Siemens' Magnetic Dial Telegraphs, and the communication is established by the copper-sheathed cables of the same firm, laid underground by the aid of a plough. A "tell-tale" at the study indicates by "drops" the calling stations, and by an arrangement of switches Sir William is enabled to put his instrument in circuit with either of the calling lines, or himself call into either of them. There are, at present, six separate circuits, forming three miles of lines, and an extension to other parts of the property is shortly intended. On the roof of the house, Sir William has also erected an anemometer which registers in his study. Both arrangements are of the most complete character and of the most improved construction.

The agent of one of the Lowell manufacturing companies has had a telegraph wire stretched from his bedroom to the mills, that he may be notified at any hour of the night of fire or other calamity there.

Correspondence.

CLEVELAND, Dec. 21, 1868.

EDITOR JOURNAL OF THE TELEGRAPH:

If it is a fact that the conductivity of copper wire in our relays decrease on account of the continual passage of either current in one direction, I suppose the company will, on the 1st of January, or such other time as it may select, cause all the main batteries to be reversed—or if not, why not?

Many an old operator has noticed a deterioration in a favorite magnet after several years' acquaintance. This is more marked in some than others, which is not strange, as very different degrees of electrical tension prevail on different circuits. It would cost nothing to change the poles of all main batteries occasionally, and it might prove worth trying.

By the way, the boys in this office have a custom which is not general; and it is a good one. As messages are sent with the right hand, the left times and marks them, which, aside from insuring correct timing to a minute, enables him to quit his desk the moment his relief comes. (This repays the trouble of learning the knack.) Again, his work is always complete, and the marking is much better than when done with the right hand, because the unpractised left bears on very hard.

Don't let this item crowd out anything more interesting on account of priority. Yours, BILLIOWS

"The Campbells are Coming!"

Here is another letter which brings sunshine to our Christmas table, and to our hearts as well. The turkey was a beauty, weighing 20 lbs., and was as delicious as it looked. J. D. R. is a lucky dog.

CARLISLE, Pa., Dec. 21, 1868.

EDITOR JOURNAL OF THE TELEGRAPH:

Enclosed please find a turkey for your Christmas dinner; please accept it from one of your old subordinates, in memory of the good old times. It is not as large as I intended sending; but some scamp who had no fear of the Burgess before him stole the one intended to be sent, and this one is only a small specimen of our Cumberland County turkeys. I hope you and yours may enjoy it for your Christmas dinner.

I cannot forget my old and good friends. Cannot you make it suit sometime to get around this way and pay a call on your old friends up this valley? You have many true ones connected with the happy days of the A. and O. line. Wishing you a happy Christmas and a merry New Year, I remain, yours truly, J. CAMPBELL.

Telegraphs in South Australia.

There are at present 1,113½ miles of telegraph lines open in South Australia, which represent 1,642½ miles of wire. The Australian tariff is considerably less than those generally adopted in England and on the Continent of Europe. The advantages of the system may be understood from the statistical facts that, whereas last year in South Australia the ratio of the number of telegrams sent, to the number of letters transmitted through the post, was 1 to 18, in Belgium there was 1 telegram for every 32 letters, and in England 1 telegram for every 121 letters. In the first mentioned country there were, on an average, 3 telegraphic messages sent for every 4 of the population, while 1 telegram for every 7 in the population in England constituted the ratio there.

It has been proposed that, as in England, the telegraphic and postal systems be blended, and it is suggested that, in order to accomplish this result, the postmasters should remit in postage stamps the cost of the messages forwarded, which could be cashed at the post-office.

The revenue of the year amounted to £12,368 2s. 4d., an increase of £178 over that of the former year. Great inconvenience was experienced from the wilful destruction of insulators.

THE MORSE BANQUET.

Letters Received by the Committee of Invitation.

EXECUTIVE MANSION,
WASHINGTON, D. C., Dec. 26, 1868.

GENTLEMEN: I have the honor to acknowledge the receipt, and to express my thanks for the courtesy, of the invitation to be present at the banquet to be given to Professor Morse on Tuesday next. I sincerely regret that my engagements are such as to prevent my attendance, for it would afford me pleasure to unite with you in rendering honor to one to whom the age owes so great a debt for untiring devotion to its advancement.

Respectfully yours, ANDREW JOHNSON.

Mr. Cyrus W. Field, { Committee, etc.
Mr. Wm. Orton, }

DEPARTMENT OF STATE,
WASHINGTON, Dec. 21, 1868.

GENTLEMEN: I give you my thanks for your courteous invitation to the banquet which is to be given by the telegraph builders to the inventor of the electric telegraph. The demonstration is as well conceived by the former as it is well deserved by the latter. I regret that my engagements prevent an acceptance of the invitation. If I could be only partially successful in using the great invention for the purposes of extending commerce, diffusing intelligence, cementing peace, and promoting freedom, friendship and fraternity at home and abroad, I then should feel that I had some right to join in your future celebrations. I am, gentlemen, your obedient servant,

WILLIAM H. SEWARD.

To Messrs. Cyrus W. Field, Wm. Orton, &c., New York.

CLARENDON HOTEL,
NEW YORK, December 22.

DEAR SIR: It would give me great pleasure to be present, if possible, at the banquet to be given to Professor Morse on the 29th instant, to testify my respect for one who has conferred so much honor upon the name of an American citizen, and such great benefits upon the country and the world.

I am compelled, however, to leave for Albany and cannot return in season.

Please express my sincere regrets, and believe me

Very respectfully, JOHN T. HOFFMAN.

Cyrus W. Field, Esq.

STATE OF NEW YORK, EXECUTIVE DEPARTMENT,
ALBANY, Dec. 28, 1868.

DEAR SIR: You cannot too greatly honor Prof. Morse, and I regret that the pressing labors incident to the close of my term of office will prevent me from uniting in the rich entertainment which his friends will offer him to-morrow night.

Very respectfully,

R. E. FENTON.

Cyrus W. Field, Esq., New York.

FROM GEN. MC'CLELLAN.

HOBOKEN, December 28, 1868.

GENTLEMEN: I received only this morning the invitation with which you have favored me to be present at the banquet given to Professor Morse.

I regret that it will not be in my power to manifest by attendance the very high respect and esteem in which I hold your honored guest, and with my sincere thanks for the invitation,

I am, most respectfully and sincerely your friend,

GEO. B. MC'CLELLAN.

Cyrus W. Field and Wm. Orton, Esqs.

HAMILTON COLLEGE,
CLINTON, Dec. 30, 1868.

MY DEAR SIR: I regret extremely that I had left the city before your kind note of invitation was sent to me at Dr. Chamberlain's. It would have given me a rare pleasure to attend a banquet in honor of Mr. Morse. It was my good fortune to be in Paris with him in 1838, when the value of the invention was hardly recognized, and subsequently, traveling with a friend in the East, to bring the electric telegraph to the notice of scientific gentlemen in Italy, Greece and elsewhere. What results from those painful and discouraging beginnings! And if the inventor be worthy of all honor, hardless less so is he who, amidst discouragements quite as great, and disappointments still more trying, succeeded at last in accomplishing the grandest result in the whole history of similar invention—a re-

sult which makes the stories in the Arabian Nights tame and common place.

With many thanks for your courtesy, my dear sir, I remain very respectfully yours,

S. G. BROWN.

Cyrus W. Field, Esq., New York.

FROM THURLOW WEED, ESQ.

Mr. Weed very much regrets that his health will not permit his acceptance of the invitation to the dinner to be given to Professor Morse, whose scientific discovery, bringing the whole civilized world into instantaneous mental communion, seems more a revelation of Divine than an inspiration of human wisdom.

December 26, 1868.

DEAR SIR: I am too much of an invalid to attend the banquet to Professor Morse.

But I heartily respond to any honor done to my old friend. Very respectfully, your obedient servant,

THOS. S. SULLY.

Cyrus W. Field, Esq.

FROM THE GOVERNOR OF JAMAICA.

CLARENDON HOTEL, 26th December.

SIR: I am very much flattered by your invitation to join the banquet to be given to Professor Morse, LL.D., on Tuesday, but I regret to inform you that I am in bed suffering from a severe inflammatory attack. I am the more sorry at not being able to be with you, as the subject of Telegraphy is of great interest in the Government of Barbadoes, which I have just left, and in the Government of the Bahamas, to which I am proceeding.

I have the honor to be, sir,

Your very faithful servant,

JAS. WALKER.

FROM THE DANISH SECRETARY OF WAR.

WASHINGTON, D. C., December 27, 1868.

MY DEAR MR. FIELD: I have duly received the invitation to the intended banquet to our friend Prof. S. F. B. Morse, which you have had the goodness to address to me.

Nothing could have given me greater pleasure than to join you and the other friends of Prof. Morse on this occasion, when he is, once more, to receive a mark of the great esteem in which he is held at home and abroad; but to my great regret, the state of my health forbids me to undertake the journey to New York, or to incur the excitement, however pleasant, of a public dinner.

Do me the favor, therefore, to accept for yourself and to convey to the other members of the committee of invitation, on whose behalf you have addressed me, my sincere thanks for their kindness and the expression of my great regret at being prevented from availing myself of their much valued invitation.

I have the honor to be, with high regards,

Your obedient servant,

W. RAASLOFF.

Cyrus W. Field, Esq., New York.

UTICA, N. Y., Dec. 28, 1868—Afternoon.

MY DEAR SIR: I have the pleasure to acknowledge your invitation, received but now, to be present to-morrow evening in New York at a banquet to be given to Professor Morse.

With fewer miles or more hours between now and then, it would be hard to forego such a pleasure as you set before me. It would be a high gratification to see honors paid to a guest of so much renown, and by men who have themselves so largely and so usefully illustrated the genius and the enterprise of America.

The occasion should be and will be memorable, and I count it a misfortune to have no voice or part in it.

Accept my thanks and the assurance of my respect.

Your obedient servant,

ROSCOE CONKLING.

Cyrus W. Field, Esq.,

POST OFFICE,
NEW YORK, Dec. 29, 1868.

DEAR SIR: I regret to say I will have to deprive myself of the honor of being present and pay my respects, at the dinner to-day, to Professor S. F. B. Morse, the originator of the telegraph, now spreading instant intelligence throughout the world, and one who is so eminently entitled to the thanks of all humanity for the blessings it has conferred.

I am delighted to know all your guests will be such as to do honor to themselves in thus paying this tribute of respect to the man who has done honor to the nineteenth century and especially to our beloved country.

I am, with the highest regard and esteem, respectfully yours,
JAMES KELLY, P. M.
Cyrus W. Field, Esq.

NEW YORK, Dec. 29, 1868.

DEAR SIR: I do not feel well enough to be present this evening to join in honors to my friend Professor Morse, as I fully intended to have done, and which I regret very much.

It would have caused me much pleasure to join with his many friends on that occasion in expressions of sincere respect and affection.

Few persons of genius have had more difficulties and discouragements to encounter in prosecution of scientific inventions than our friend, and none have lived to triumph over them all more signally than he, and I am sure no one personally can be more worthy to bear and enjoy such world-wide honors as he has won.

Yours very truly,

RICH'D M. HOE.

Jas. D. Reid, Esq., Secretary.

PRINCETON, N. J., Dec. 24, 1868.

DEAR SIR: I have just received your kind invitation. I cannot express how deeply I feel disappointed in not being able to be present at the banquet. Professor Morse has benefitted the whole civilized world, and all friends of science and of art should combine to do him honor. I am prevented from attending only by a previous engagement. Yours ever,

JAMES MCCOSH.

Cyrus W. Field, Esq.

ROCHESTER, Dec. 21, 1868.

DEAR SIR: I much regret that a business engagement which requires me to be in Indiana at the time appointed will deprive me of the pleasure to take part in the banquet to Professor Morse.

I should consider it a great privilege to aid in the slightest degree in doing honor to one who has contributed so largely as Professor Morse has done toward the success of the great work of binding in iron chains nature's most subtle and powerful element and compelling it to contribute to the wants of mankind.

I hope the Professor will live many years to enjoy the honors he has so deservedly won.

Very respectfully yours,

H. R. SELDEN.

James D. Reid, Esq., Secretary.

HEADQUARTERS ARMY OF THE UNITED STATES,
WASHINGTON, D. C., Dec. 21, 1868.

GENTLEMEN: General Grant directs me to express his thanks for your kind invitation to the banquet about to be given to Professor Morse, as well as the pleasure it would give him to accept it. Circumstances, however, oblige him to decline, though much against his will.

I am, gentlemen, very respectfully, your obedient servant,

ADAM BADEAU,

Bret. Brig.-Gen. of A. D. C.

Messrs. Cyrus W. Field and Wm. Orton, for Committee of Invitation.

FROM SIR CHARLES BRIGHT.

ON BOARD STEAMER NEW ENGLAND,
OFF SANDY HOOK, Dec. 21, 1868.

MY DEAR SIR: The invitation which you have so kindly sent me to be present at the banquet to be given to Professor Morse has reached me at a most untoward time, for I am on the point of leaving for the South upon a matter of so much moment that I am unable to change my plans (as I should have done in the case of any business affecting myself only) in order to enjoy the great gratification of once more evincing the deep feeling of respect and regard which I entertain, in common with all who are connected with telegraphs in Europe, toward your illustrious fellow-countryman. To me, who have had the privilege of personal friendship with Professor Morse since the time of our experiments together in reference to the Atlantic cable in 1856, the disappointment of being compelled to deny myself the pleasure of being with you on such a notable occasion is greater than it can be to others who have known him only by the inventions which have left his name so deeply marked in the records of scientific discovery.

Will you do me the favor of expressing my sincere respects to the Professor, and believe me to be,

Very faithfully yours, CHARLES T. BRIGHT.

Cyrus W. Field, Esq., New York.

Extracts from the Remarks of Geo. H. Thurston, in National Board of Trade, Cincinnati, December 2, 1868, on the Absorption by the Government of the Telegraph Lines.

In the encroachment of the Government upon the avenues for the employment of private capital and private enterprise, we are following the lead of monarchies. In England the Government has lately monopolized the telegraph by the purchase of all the telegraph lines in Great Britain. And upon these terms: The price paid is, first, twenty years' purchase of the net profits of the Companies, based upon the profits of each Company for the year previous to the purchase. Secondly, payment for the estimated aggregate value of their capital. Thirdly, compensation for the loss of the prospective profits of the Company on its ordinary shares. Fourthly, each and every officer and clerk who has been five years in the service of the Telegraph Company, will, if he has no offer of appointment from the Postmaster General of equal value to that held by him under the Companies, receive during his life an annuity, graduated according to the number of years he has been in the telegraph service, but equal to two-thirds of his previous emoluments.

I feel free to say that as a stockholder and as an officer representing a body of stockholders, that any absorption by the United States Government of the telegraphic lines of this country under a recompense one-fourth as liberal, ought to on purely selfish grounds meet my support: but, sir, as a tax payer, as a commercial man, as a good citizen, and as one who would see the patronage of the Government decreased instead of enlarged, I view the proposition with apprehension, and oppose it from principle.

I believe there is in this plan the setting of a dangerous precedent, tending to sanctioning the absorption by the Government of many of those avenues in which personal enterprise and private capital now find employment. It seems to me it is in opposition to the very spirit of a Republican Government. Such a government appears to me to be solely for the protection of the liberty, the life and the property of its creators, and it was never contemplated it should come in competition with the enterprises of those who formed it. With the guarantee of free speech, and a free press, under such a form of rule, went hand in hand a guarantee of the widest field for the exercise of private enterprise, the employment of private capital, to the building up of competition in all branches of business.

It has been said that already the telegraph is encroaching upon the revenues of the Post Office Department, inasmuch as it is transmitting letters which would otherwise go by mail. Is not this then indicative that the very end is being reached by private enterprise which it is claimed the Government must step into possession of the telegraph lines to bring about? Great as have been the reductions in the rates of postage, it is to attempts made through individual enterprise to lessen the cost and shorten the time for the transmission of letters, that cheap postage is in some measure due. Whether the postal service of the country would not be as well, if not better performed, by private enterprise is even now a mooted question. And in view of the postal deficiency of the last year, there would seem to be great propriety in leaving unquestioned to competitors the cheapening of the transmission of telegraph messages, until at least the postal department maintains itself beyond doubt.

It has been charged that the deficiencies in the post office revenues are the results of iniquitous contracts. Be that as it may, are there any who claim that the introduction of the telegraph service into the departments of the Government is going to make all men honest? I cannot but look upon the incorporation of the telegraph with the postal service as creating so many more possible sources to breed corruption, if the charges we hear daily made are true.

The precedent is altogether a dangerous one. Already in England, since the purchase of the telegraph lines, has arisen, and is urged, a plan for the purchase of all the railroads of that country. Would not the absorption of the telegraph lines by this Government lead to the same cry here? And if the Government shall, on the cry of any great or small body of its citizens that certain facilities or luxuries cost the public more under private enterprise than the same could be furnished by the Government, proceed to act as is proposed in telegraphs, what may it not monopolize?

The plea of the cry for the Government to do the tele-

graphing of the country, is that the people should have telegraphing cheaper. Now, sir, who are the people who use the telegraph? Why, sir, nine-tenths of all messages are sent by merchants, manufacturers, bankers and speculators, who use the telegraph because they can make transactions quicker and more profitably than they can by using the mail. It is a mere matter of dollars and cents. If then there is an over taxation for the use of the wires, where does it fall but in the right place? on those almost exclusively who use the wires because it is profitable so to do, and who would not to any extent were it otherwise. Why then should the Government rush into an experiment, at a probable loss yearly, to the increase of the taxation of the great mass of the people?

While I would be the last to utter a word that might prevent the Government from aiding in every way the increase of business in this country, and augmenting the facilities for its transaction, yet from my knowledge of the class between whom telegraphic messages chiefly pass, it would seem to me that any act absorbing into the postal department the telegraph lines, would be legislating for the benefit of a few, to the almost certain risk of taxing the many. And further, if monopolized by the Government, I fear the very class who would expect to be most benefitted would find the telegraph robbed of all that celerity, secrecy and reliability which now renders it valuable to business men.

The Government cannot be sued for loss resulting from the delay in the transmission of a letter, and it is not to be presumed that one could do so in case of loss resulting from delay in delivery or error in transmission of a telegraphic message. Yet for such delay or error telegraph corporations can be sued and recovery made, if the case is proven.

All know the liability of wires to get out of order, to break, to become entangled, and in other ways rendered useless for a time. While the telegraph service of the country is in the hands of competing companies there is every inducement to their officers to shorten the time of all such interruptions. Prestige, business, dividends, all depend upon uninterrupted lines. But monopolized in the hands of Government employees, who will doubt, who knows anything of delays in the postal service, that the repairs of interruptions would be, to say the least, a much slower operation than it is under the spur of competition.

It would appear then that the reliability, from inability to sue for damages, would be gone. It would also place a dangerous opportunity in the hands of ambitious, corrupt or designing men, who might belong to the governing power, to perpetuate their rule or politically destroy their opponents. The very class who might expect to be benefitted, would in the end find themselves crippled in the very facilities they who cry for the government telegraph expect to increase.

Supposing the government telegraph retains all the celerity, secrecy and reliability of corporate telegraphs, wherein is the service to be bettered? There is no evidence in any branch that the Government employs any better men than corporations to do the work. On the contrary, is it not notorious that political influence causes the appointment of very inferior men? On the reverse, the object of corporations being to make money, the best men are chosen.

The bill before Congress proposes to charter the United States Postal Telegraph Company, naming several persons as the incorporators, for the purpose of constructing lines of telegraph and operating them, and maintaining them upon the post roads and routes of the United States. It provides for its capital stock and in every way creates a telegraph corporation. The same bill then goes on to authorize the Postmaster-General to establish a postal telegraph system, and specifies that the Postmaster shall receive bids from companies for the transmission of messages; and specifies the rates for messages of twenty words or figures, or less, shall not exceed twenty cents, and five cents for each additional five words or figures, for every five hundred miles or less of transmission. It also provides that messages may have priority over others by the payment of extra rates. The bill finally provides that if the United States Postal Telegraph Company, whose incorporation is so shrewdly interwoven with powers and instructions for the Postmaster-General, shall refuse or neglect to contract with the Postmaster-General to carry messages at the rates proposed in the bill, its incorporation then shall become void.

Is it in any way necessary to inquire why the incorporation of a telegraph company is so cunningly interwoven with this authority to the Postmaster-General to join the sending of telegraphs with the carrying of letters in his

department? Why should the rates be fixed and the life of the corporation hinged upon its contracting at such rates? The more especially may the question be asked, when in a pamphlet urging upon Government the sending of messages, published by Gardiner B. Hubbard, one of the incorporators named in the bill, it is said: "It is not claimed that either the Western Union or any other company, or even the Government itself, could transmit messages through the country at the rates proposed in the bill without loss." Is there not room for suspicion that the projectors of the United States Postal Telegraph prefixed the rates at losing figures that they might be the only contractors bidding? Is it not equally clear that under the contract they would have a monopoly?

If it is in real good faith contemplated that the Government should, to benefit the public, control the telegraph business, why, in creating the necessary legislation to enable the Postmaster-General to assume those duties, create in such a manner that it is hard to say what is Postal Telegraph Company and what Postmaster-General, a corporation to stand between the people and the Government. A sort of middle man, who by first contracting at exceedingly losing rates obtains the monopoly of the transmission of messages, and by so doing smothering out all competition; and then is at liberty, according to the bill, to break the contract by forfeiting the trifling sum of thirty thousand dollars! A cheap price for a monopoly! Or, if not choosing so to do, can charge such extra rates by the bill as they may choose for messages requiring immediate dispatch, as if most messages by telegraph did not require immediate dispatch, or else why use the wires! and as if in a short time the great majority of messages would not from necessity or priority be costing extra rates. Is it necessary to dwell on the corruption possible under such a plan. To the avoidance of this it may be urged that the Government should buy all the lines. This would contemplate the expenditure of thirty or forty millions of money and consequent taxation for its interest, to say nothing of the establishment of a host of fresh Government officers, and the creation of a swarm of political office holders, not to mention the probability, taking the postal service as a criterion, of future taxations for deficiencies; while to the extension of the lines into all remote as well as more settled districts to suit the demands of party and politicians there would be no end.

It would seem to me that the whole aspect of the question as to the incorporation by the Government of the telegraph with the postal service of the nation is most unfortunate. The tendency of such a movement would seem to be to lessen its value, to increase the Government patronage, to create expenditures of money or increase of debt and consequent taxation therefor, and threaten taxation to supply deficiencies if the lines are purchased by the Government, and if placed upon the contract system to eventuate in the suppression of competition and the establishment through the influence of Government of a monopoly.

The sole good proposed to be gained is a cheapening of the cost of telegraphing throughout the United States, because in a few closely populated and small countries in Europe, telegraphing appears to be cheaper than in this country. Is it really cheaper? It must not be overlooked that the distances in the United States are greater between populous towns than in Europe, and that the country save in a few sections is more sparsely populated. The area of Belgium is only about one-fourth the State of New York, and its greatest length 175 miles, while three-fourths of its population live within fifty miles of Brussels, and of the four largest cities Antwerp is reached by rail in thirty minutes. In what section of our country is population so condensed? There the rate is ten cents for an average distance of seventy-five miles for an average message. From Pittsburgh to Baltimore and to Philadelphia a distance of about three hundred and fifty miles to each point, the rate is only 30 cents, or about 7½ cents for each seventy-five miles of transmission, while after night twice the number of words can be sent for the same price. Between New York and Pittsburgh, a distance of about five hundred miles as the wires run, the rates are forty-five cents, or 6½ cents for each seventy-five miles of transmission. Between Louisville and New York the rates are one dollar, and the distance by wire is 975 miles, or about 7½ cents for each seventy miles. These rates have been established not only where the distances are four, five and ten times greater than the average distance of transmission in Europe, but where the population is on many routes very sparse in comparison with the dense population of Belgium, in which nation the rates for telegraphing are the smallest in sum. The rates of England and

Switzerland and France, when compared in the same manner with established companies in this country, show the same results.

It must also not be forgotten in the comparison that the cost of the skilled labor, and in fact all labor in the United States, employed on the telegraph lines, far exceeds that of England, and yet the rate for transmission has been reduced to a lower rate per mile than in Europe, under all the disadvantage of high rate of wages, long distances and sparser ratio of population. Self-interest is fast developing not only the increase of lines, but greater facilities and still lower rates. What profit then is there in giving ear to the few who, illy understanding the subject, cry that the Government should absorb the telegraph business on the plea that it will cheapen rates to the standard of Europe? That is already done or being done, without risk of expenditure of money by the Government, liability therefrom of taxation to the people, or danger of increase of the Government patronage and its attendant evils.

I think all who will dispassionately consider the subject will come to think with myself, that the further cheapening of telegraphic charges had better be left to the same power which has tunneled our mountains, constructed our railroads, opened our mines, built up our manufactures, the power of competition, driven by the impatience, the energy, and the brain of the American people.

Presentation.

Mr. G. A. Kraft, who for the last eleven years has been engaged in the telegraph service, having now retired from it, his fellow-operators have presented him with a beautiful gold-headed cane as an evidence of their friendship and esteem.

CORRESPONDENCE.

To G. A. Kraft, Esq., office W. U. Telegraph Co., Twenty-seventh street and Fourth avenue, N. Y.:

DEAR SIR—We, the undersigned, operators on No. 6, while regretting the cause which prompts your withdrawal from among us, would in a fitting manner recognize your claim to our friendship and esteem, a regard which your obliging nature, genial disposition, and social qualities have firmly established.

Accept with this token of our friendship our best wishes for your future welfare and prosperity in whatever business you may engage.

P. J. Hobart,	F. Wheaton,	J. R. Butler,
J. Batterson,	A. E. Sturges,	T. Hynes,
S. B. Curtis,	M. H. S. Jackson,	T. H. Weeks,
G. E. Pardee,	D. H. Sternberge,	G. W. Harris,
G. P. Sim,	G. Benedict,	M. P. Conway,
	Jno. Brampton.	

MR. KRAFT'S RESPONSE.

MY FRIENDS—I tender my sincere thanks to you all, regretting that I cannot see and thank each of you in person. Wishing you all success and happiness, I bid you farewell.

G. A. KRAFT.

The Chinese Woman's Telegraph.

During the recent visit here of the Chinese Ambassadors, one of them stated in reply to the inquiries of a physician, that it was not customary in China, except among the lower classes of the people, for the doctor to see or touch female patients. In order to ascertain the pulse of the sick woman, a string is tied around her wrist and is extended outside the window to the doctor, who holds the string between thumb and finger, and by this form of telegraph is enabled to count the pulsations. This seems a ludicrous plan; but it is far less mischievous than our custom of admitting men doctors to the private apartments of females. The opportunities for the medical education of women in this country are greatly increasing; and we hope the day is not far distant when the women will be able to rout the men from the sick room, and compel them to stand out in the cold, under the window sill. In China, only women nurses attend in child-birth.—*Scientific American*.

We have received from Mr. J. D. Wheat, of St. John's Run, West Virginia, a description of a Self-closing Key, but it is exactly the plan advertised by Mr. J. B. Frey, and contains no new features to require notice.

Telegraph Salaries in France.

In a letter addressed last month to the *Journal la Gironde*, in response to an article a little ambiguous which appeared under the title of "*les Telegraphes a bon marche*," an employee of Bordeaux makes the following complaint:

"Another cause of delay of '*le bon marche*,' is the lack of operators, but you will not be surprised that so few young people are adopting the telegraph profession, when you know that after serving twenty years for the salary of 1400 francs, equal to about \$200, they then hope to receive 2400 francs, or about \$350 in their old age. In order to be just I should add that in the more important offices, where there is night service, extra pay is given at the rate of 50 centimes or half a franc per hour. The situation of the messenger being still more miserable it is equally difficult to procure them. This is the system which Mr. Washburne and Mr. Hubbard, of Boston, so much admire, and would foist on the American people, a government service made cheap by the employment of an inadequately remunerated service.

China.

There is a special agency established at Pekin, China, for the purpose of sending Russian-Chinese dispatches; this agency should have the effect of conquering the prejudice of the Chinese Government in regard to the telegraph. Until the present this government has sent its news, to distant provinces, by means of fires.

The transmission, by this means, of the news of Grand Tartary, continued 6 days. The Russian dispatches are still sent by mail, from the frontiers to Pekin. Various cities of China have been for a long time united together by telegraph wires.

The Gentleman.

I have stated that the forbearing use of power is a rare attribute of the gentleman; indeed, we may say that power—physical, moral, purely social or political—is one of the touchstones of genuine gentlemanship. The power of the father over his children, and the old over the young, and the young over the aged; the officer over his men, the master of a vessel over his hands, the magistrate over the citizens, the employer over the employed, the rich over the poor, the educated over the unlettered, the experienced over the confiding, the keeper of a secret over him whom it touches, the gifted over an ordinary man, even the clever over the silly—the forbearing and inoffensive use of all this power or authority, or a total abstinence from it where the case admits it, will show the gentleman in a plain light. Every traveler knows at once whether a gentlemanly or rude officer is searching his trunk. But the use of power does not only form a touchstone; even the manner in which an individual enjoys certain advantages over the others is a test. No gentleman can boast of the delights of superior health in the presence of a languid patient, or speak of great good luck when in hearing of a man bent by habitual misfortune. Let the man who happily enjoys the advantages of a pure and honest life, speak of it to a fallen fellow-being, and you will soon see whether he be, in addition to his honesty, a gentleman or not. The gentleman does not needlessly and unceasingly remind an offender of a wrong he may have committed against him. He can not only forgive, he can forget; and he strives for that nobleness of soul and manliness of character which impart sufficient strength to let the past be truly the past. He will never use the power which the knowledge of an offense, a false step, or an unfortunate exposure of weakness, gives him, merely to enjoy the power of humiliating his neighbor.—*Dr. Lieber*.

SHAWK & BARTON,

Manufacturers of

ELECTRICAL INSTRUMENTS,

And Dealers in

TELEGRAPH SUPPLIES,

Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
Office Wire,	Mercury,	Lightning Rods,
Insulators,	Relays,	Induction Coils,
Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials
Acids,	Switches,	Philosophical Apparatus,
&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

WESTERN UNION STANDARD PATTERNS,

and shall keep up with the times in all valuable improvements.

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COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

embracing such instruments of other manufacturers as are good and serviceable.

We are prepared to take contracts on liberal terms for the construction and equipment of

TELEGRAPH LINES

of any required length, in any part of the United States, for individuals or for corporations.

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AND

OUTSIDE OFFICE CONNECTING WIRES.

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AIR LINE

AND

OUTSIDE OFFICE INSULATED WIRES

that can be had

Parties using are invited to examine them at our Office.

SAMUEL C. BISHOP,

May 30, 1893.

General Agent.

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EXTRA MUOILAGE
THICK, CLEAR AND ADHESIVE.

Who has not used

STICKWELL'S MUOILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaniards "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Muilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 3OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUOILAGE PACKED ONE DOZEN IN WOOD BOXES.

S. S. STAFFORD,
Sole Proprietor, N. Y.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JANUARY 15, 1869.

Mr. Thurston's Address.

On page 40 will be found an address delivered by Mr. Geo. H. Thurston, before the National Board of Trade, Cincinnati, Dec. 2, which we commend to the reader for the force of its reasoning, the clearness of its statements, and the energy of its author's protest against the scheme now before Government for the absorption of the telegraph lines. It relieves us of a duty we had assigned to ourselves of presenting arguments similar in character, but which Mr. Thurston has expressed so clearly as to render the performance unnecessary. It is all the better because it comes from such a source. Mr. Thurston is a vigorous opponent of what is so glibly styled "the great monopoly," and bears it no love, but on that very account his language will impress certain minds which no utterances of any one who ever rested his shoulder against the walls of 145 Broadway, could affect. We regret that we cannot give the address entire. As it is, we have preserved its points unweakened, perhaps strengthened by the omissions our space made imperative.

One of the strongest arguments employed to influence public opinion in favor of the governmental assumption of telegraph lines, or the base proposition of a governmental competitive line, is the low rates charged in Europe. Belgium, which, in the year 1866, lost 275,000 francs by reducing her rates to half a franc per message, is the standard authority and pattern of our telegraph reformers. That half franc is the note on which all their songs are tuned. The loss by its adoption is unspoken and unsung.

Now, half a franc is equal to our 18 cents, but if the relative circumstances of the people of Belgium and of the United States be considered—the well-known poverty of the one and the general independence and prosperity of the other, the Belgian half franc is equal to the American half dollar. And yet, notwithstanding the acknowledged disparity in the social condition of the people of the two nations, the American tariff, distance being considered, is only *half* that of even Belgium for day service, and for night service less than one quarter of the cheapest of European tariffs. This point is well shown in Mr. Thurston's address.

Not only so: in Belgium the half franc message has no assurance given of promptitude. It is sent as soon as convenient, and the telegraph officers, knowing that dispatch is everything to a merchant, and which all messages in America receive, offer to give messages prompt transmission by paying *two tariffs*, or 26 cents. Now, as the average distance of transmission in Belgium does not exceed 75 miles, and, we believe, is much less, it must be apparent that the American tariff, which, from New York to Philadelphia, 100 miles, is 25 cents, and New York to Boston, 200 miles, is 30 cents, without referring at all to the vast difference in the circumstances of the people, is largely lower for genuine, prompt telegraph service, than the cheapest tariff of any kingdom in Europe. And when it is added that a message six times as long as that which in the day-time cost 25 cents is sent at night for only twice that amount, or one-third of the day cost, and as low as one-tenth of the day price when messages exceed 120 words, the marked difference between the two systems will be more apparent.

If Government assumes our telegraph system, we agree with Mr. Thurston, that those who may be supposed to expect the largest benefits from the change will be the

first to complain, and we believe further that the motive of this movement, at least so far as Mr. Hubbard, the Boston President of horse railroads, is concerned, is less the public weal than the grinding of an enormous ax, which, after cutting and hacking the public money bag of the nation, will find its way back to the hands who know best how to use it.

Telegraph School for Women.

Among other aids to women in obtaining suitable and remunerative labor is the opening of a telegraphic school at the Cooper Institute, New York. Here, at least, instruction will be acknowledged as possible without the deceptive promises of employment, respecting which so much has been said, and which there can be no doubt has been carried too far by some of the institutions where telegraphy is taught. With the pressure constantly brought to bear on telegraph companies to cheapen rates, with competing lines drawing off that portion of the business which provided the margins of profit, and with the multiplication of short lines connecting factories and foundries with central offices, we expect to see demands made for women to serve in telegraph offices far beyond what now exists. Young men find channels of wealth in other pursuits and must follow them, they think, to meet the responsibilities and expenses of the married state. Reduction of salary consequent upon competition drives them to change. This is not generally the case with women. Marriage to them is home and an end of personal money-making for support. Thus they accept terms inferior to men because they need support only until the marriage state provides it. There are, of course, exceptions. Women of executive ability command already salaries approximating those of men. We are glad that it is so. In the telegraph there is a sphere for woman which time must widen. There is no use hiding the necessity which is becoming more and more evident. For the long exhausting heavy work the man is essential and must be had. So far, man has proved the more reliable. He has an instinctive knowledge of business composition. This enables him to detect errors which a woman never suspects. By training she will, no doubt, acquire this, but for short lines, for office work, for a variety of service yet to be introduced into the labor of telegraph offices, and for which she is so well adapted, it is easy to see that the service of woman must, in the very nature of things, be largely demanded.

Ocean Telegraphs.

In the Senate, January 5, Mr. Morton offered a joint resolution forbidding the landing of any submarine cable in any part of the territory of the United States without the consent of Congress, which was referred to the Committee on the Judiciary.

Mr. Conkling introduced a bill to authorize the New York, Newfoundland and London Telegraph Company to land one or more submarine cables upon the shores of the United States, and to maintain and work such cables for the transmission of messages and intelligence between the United States and Europe, of any of the intermediate places, during the existence of the company's charter. Referred to the Committee on Commerce.

A TELEGRAPH VIA THE MOON.

Mr. Sumner presented the petition of Mahlon Loomis, M.D., of the District of Columbia, setting forth that he has discovered and invented a new mode of telegraphing, dispensing with the use of wires, and using the earth, as now, to form one half of the circuit, and the continuous electrical element far above the surface of the earth for the other part of the circuit, and asking an appropriation of \$50,000 to enable him to complete the demonstration of the value of his invention. Mr. Sumner said, in presenting the petition, he merely performed a duty, but he thought this alleged invention was either a great case of moonshine, or else it marked an epoch in the progress of invention. The petition was referred to the Committee on Patents.

By a sad accident which occurred to Cyrus W. Field, Esq., about ten days ago, that gentleman has been confined to his room under the most careful surgical treatment. The accident occurred while passing over his estate, on the edge of a steep slope, on which the ice had formed so as to make walking hazardous. Approaching too near the edge, he was carried swiftly to the foot of the declivity, much bruised, but fortunately without internal injury. Mr. Field hopes to be so far recovered as to leave for England on the steamer of January 20th.

Sitka to Japan.

The East India Telegraph Company are endeavoring to obtain assistance from Congress to extend a cable by way of the Aleutian Islands from Sitka to Japan. The accomplishment of this work will complete the girding of the earth. If Governments interfere at all in schemes set on foot by private enterprise, this seems one of those it can legitimately aid. We need connection with China, but the distance is immense and the cost great. Let Government build the oceanic part of the route as an international highway and collect a toll on messages until the private company can purchase it, or let it give such assistance as is asked to permit an early accomplishment of the great work. Six routes are being completed from England to India. Can America afford to be without one?

At the annual meeting of the stockholders of the American Compound Telegraph Wire Company of New York, held January 14th, the old board of directors, together with the old officers, were re-elected for the ensuing year.

The reports of the Secretary and Treasurer show very satisfactory progress in the introduction of the compound wire, and the results were such as to warrant a dividend, which was declared.

L. G. Tillotson & Co. are agents for this company, and of whose operations we have desired to take more special notice. We shall do so hereafter, and are happy to be informed of its prosperity.

CAPTAIN-GENERAL LERSUNDI gave a splendid banquet to Gen. W. F. Smith, President of the International Ocean Telegraph Company, at which toasts were given and speeches made expressive of a desire for the preservation of peace and good relations between Spain and the United States.

The following is a specimen of the letters we receive from gentlemen personally unknown to us, but whom we are glad even thus to know:

NORWICH, Conn., Dec. 21, 1868.

EDITOR JOURNAL OF THE TELEGRAPH:

Enclosed please find \$1 subscription for Vol. 2. There is so much of curious interest in your little bi-monthly, I should scarcely know how to do without it. When some future D'Israeli comes to write the "Curiosities of Science," it will be found that they exceed those of *Literature*, and that electricity and magnetism will contribute no small part of the material.

Truly yours,

C. O.

The Franco-American Telegraph.

LONDON, Jan. 14.—The Great Eastern is taking on board the submarine cable of the Franco-American Atlantic Telegraph. She will sail in June next to lay the cable from Brest to the American coast.

THE Senate Committee of Commerce have called upon the Attorney-General for his opinion upon the right of Congress to regulate the landing of telegraph cables upon the coast.

AN interesting notice of a presentation to Supt. James Coleman at Memphis is crowded out, but will appear in our next number.

Married.

On the 7th inst., at the residence of F. H. Kean, Esq., by A. T. Spalding, pastor of the Walnut Street Baptist Church, Louisville, Mr. T. R. Boyle and Miss Eva Vallandigham. No cards.

On Tuesday, December 22d, 1868, at the residence of Jos. McCabe, Bridgewater, Pa., by the Rev. Mr. Morrow, M. E. Booth of Rootstown, O., to Miss Amanda Carst of Bridgewater, Pa.

December 3d, 1868, at the residence of John C. Metz, Esq., Phillipsburg, N. J., by the Rev. John Beck, James Edwin Moon, Manager B. D. R. R. office, Phillipsburg, N. J., formerly of Lambertville, N. J., to Miss R. Jane Person of Phillipsburg, N. J.

Died.

In Augusta, Ga., of typhoid pneumonia, on the night of December 27th, Wilson Graham, Linesman for the Western Union Telegraph Company. Deceased was a native of Missouri, and was decently buried from the Catholic Church under the kind auspices of Supt. Brenner.

The Weary Hand.

WRITTEN BY POORDOG TRAY, ESQ.

NIGHT, December 24-25, 1868.

'Tis midnight, cold and dark and dreary,
The lines work hard and my hand is weary;
The sleet and rain fall fast on the ground,
My wearied ears too long have heard the sound,
And the lines work hard, my hand is weary.

My fingers tire, 'tis the twentieth sheet,
But still I hear the falling sleet;
I hear the rain as it patters around
Upon wires and roof and the frozen ground.
And the lines work hard, my hand is weary.

My eyes are tired, I can hardly see;
I'm here alone and no one pities me,
And the cold, cold rain falls down very fast,
By my watch 'tis one o'clock and past,
And the lines work hard, my hand is weary.

My hand almost fails me, weak are my eyes,
I'm forced to work and none will sympathize;
My fire has gone out and still it rains,
And the wind blows hard against the panes,
And the lines work hard, my hand is weary.

This is the thirtieth sheet I've had to write,
Waiting anxiously to receive "good night,"
Tired and sleepy and hungry, and all
I hear is "report coming" and the rain fall,
And the lines work hard and I am weary.

I'm almost gone so sleepy and tired,
But 'twas for this work that I was hired;
A poor boy is a tool for others' gain—
He is the one to hear the sleet and rain
And to take report however weary.

The town clock has just struck the hour of two,
And though I still labor I am not through.
My back is very tired and my eyes pain,
But report still comes and so does the rain,
And the lines work hard and I am weary.

Just as the clock struck the hour of three
I heard the welcome words that set me free:
"Good night" came slowly over the wire,
But still it rained and I had no fire,
And thus the night operator does retire!

N. Y. Telegraphers' Ball.

The annual ball of the New York Telegraphers will be held this year at the Apollo Hall, corner of Broadway and Twenty-eighth street, New York, Friday evening, January 29. These gatherings have always been largely attended, and conducted with taste and decorum. Last year many of our distinguished citizens were present, and the occasion is remembered by those who were present as most agreeable and delightful. We trust the expectation of the managers for the present year may be fully realized, and the re-union be as cheerful and successful as they could desire. Tickets \$2.

Shawk & Barton.

We have to record the opening of an establishment for the manufacture of telegraph machinery in the forest city of Cleveland, O., the members of which are already well known, and who advertise elsewhere under the name of the firm which heads this article. Mr. Shawk has for twelve years been engaged in the shops of the Western Union Telegraph Company at Cleveland, and was for four years their superintendent. He is an ingenious, careful, prompt business man, and is the owner of a system of fire alarms which, in our judgment, is the simplest in use, and which we are surprised is not more extensively known. He comes before the public bearing the highest testimonials alike for his ability as a mechanic and his excellence as a man.

Mr. E. M. Barton all operators know as one of the very best of men and most skillful of our craft. Since he was sixteen years of age he has been in telegraph harness, and wherever known he has been honored and beloved as a man of great personal probity and purity of life. He served for a long time in the New York Central office of the Western Union Telegraph Company, and has for the last few years been chief operator at Rochester, N. Y. In both of these offices, and in the society of his many friends in both cities, he has secured for himself an enviable reputation as a steadfast friend and a christian gentleman. We wish this new firm every success in a field which seems widening daily, and which is making constant demands for increased manufacture of telegraphic appliances.

Telegraphic Cables.

WASHINGTON, Jan. 14, 1869.

Mr. Doolittle (Dem., Wis.) offered the following joint resolution:

Whereas, Cable companies organized under the authority of the United States, propose to land cables on the shores of foreign powers; and, whereas, also cable companies, organized under the laws of foreign powers, propose to land cables on the shores of the United States, and the consent of these powers and the United States is necessary; therefore,

Resolved, That the President be authorized to consent to the laying of one or more telegraph cables from the shores of any foreign power to the shores of the United States, by any company authorized under the authority of any foreign power, provided said power will also consent to the laying of cables from the United States to the shores of such powers on reciprocal terms; and provided further, till such powers give such consent, the consent of the United States is withheld, and the laying of such cables by the authority of any foreign power is declared to be unlawful.

Referred to the Committee on Foreign Relations.

HARRISON BROTHERS & CO.,

Proprietors of the

GRAY'S FERRY AND KENSINGTON

WHITE LEAD, COLOR AND CHEMICAL WORKS,

connected by 126 miles of private telegraph wires, with their offices No. 16 Burling Slip, New York, and 105 South Front street, Philadelphia.

PHILADELPHIA, Dec. 22d, 1868.

Mr. DAVID BROOKS, City:

DEAR SIR—In the last issue of the JOURNAL OF THE TELEGRAPH there is an article the object of which is to show, theoretically, that the insulating properties of your insulator are affected by heat and cold. As the wire of ours, insulated with your insulator of the improved form has stood the test since September, 1867, we desire to say we made a very thorough test on the 16th instant while it was storming heavily, and worked the 115 miles without perceptible escape, while our factory wires, with the ordinary insulators, only 10 miles in length, were used with difficulty.

Yours, respectfully,

HARRISON, BROTHERS & CO."

EDISON'S

DOUBLE TRANSMITTER.

THE MOST PRACTICAL APPARATUS OF ITS KIND YET INVENTED.

Complete Sets (put up in working order), price \$400, \$450, \$500.

For further information, address:

THOMAS A. EDISON,

Care CHARLES WILLIAMS, JR.

Telegraph Instrument Maker,

109 COURT STREET,

Boston, Mass.

Reduction of Telegraph Rates.

The Directors of the Montreal Telegraph Company, in pursuance of their long-established policy, have decided to make another large reduction in their rates on the 1st of January next. The rate from Montreal to all offices within the Province of Quebec and as far west as Toronto, including Hamilton, is to be twenty-five cents for ten words and one cent for each additional word. The following are examples of the extent to which reductions have been made:

From Montreal to	Former Tariff.	Reduced to.
Father Point and Cacouna	50c. and 4c.	25c. and 1c.
Portland	50c. and 4c.	25c. and 1c.
Whitehall	50c. and 5c.	25c. and 1c.
Pembroke and Perth	35c. and 3c.	25c. and 1c.
Pictou and Peterboro	40c. and 4c.	25c. and 1c.
Hamilton	40c. and 4c.	25c. and 1c.
St. Catharines and London	50c. and 5c.	40c. and 2c.
Buffalo	65c. and 6c.	40c. and 2c.
Port Colborne	70c. and 7c.	40c. and 2c.
Chatham	70c. and 7c.	50c. and 2c.
Detroit	75c. and 7c.	50c. and 2c.
From Sackville to Detroit	\$1.50 and 14c.	75c. and 3c.

Arrangements have also been made with the Western Union Company by which the through tariffs of the companies have been reduced to the following points:

	Former Tariff.	Reduced to.
From Montreal to Boston	60	50
From Montreal to New York	75	50
From Montreal to Chicago	\$1 50	\$1 00
From Montreal to St. John, N. B.	1 00	75
From Montreal to Halifax, N. S.	1 05	80

And from other places in nearly like proportion.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
JANUARY 15, 1869.

To all Offices on W. U. Lines:

The following changes have occurred since January 1, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Ackworth, Ga., tariff same as Allatoona, Ga.
Alden Creek, N. Y., tariff same as Booneville.
Bartlett, Iowa, tariff 40 cents more than St. Joseph, Mo., from Western Union offices South and East thereof, and 40 cents less from offices North and West.
Brigham City, Utah, tariff same as Bear River, Utah.
Charleston, Mo., tariff 95 more than St. Louis, Mo.
Chaumont, N. Y., tariff same as heretofore.
Cornwallis, W. Va., (re-opened) tariff same as heretofore.
Deer Park, L. I., (re-opened) tariff same as heretofore.
Ft. Steel, W. T., tariff same as Benton, W. T.
Grove Port, O., tariff same as Columbus, O.
Halifax, N. C., tariff same as Weldon, N. C.
Haydenville, Mass., tariff same as Northampton, Mass.
Mayfield, Ky., tariff from points in Central and East Divisions 1.40 from Louisville and 3.00 from Washington.
North Dighton, Mass., tariff same as Dighton, Mass.
Needham, Mass., tariff same as Newton Centre, Mass.
Ogden, Utah, (re-opened) tariff same as heretofore.
Plainfield, Iowa, tariff same as Waverley, Iowa.
Prospect, N. Y., tariff same as Dunkirk, N. Y.
Remsen, N. Y., tariff same as Booneville, N. Y.
So. Adams, Mass., tariff same as Pittsfield, Mass.
Temple, Pa., tariff same as Allentown, Pa.
Tunnel Sta., N. Y., tariff same as Harpersville, N. Y.
Vincetown, N. J., tariff same as Bordentown, N. J.
Williamsburg, Mass., tariff same as Northampton, Mass.
Windsor, Conn., tariff same as Windsor Locks, Conn.
Glenwood, Mo., } Offices heretofore known as Caton
Liberty Landing, Mo., } offices will use the Map Tariff. Other
Corning, Mo. }
offices will add 20c. to the rate to Macon, Mo., for Glenwood tariff, and 5c. to the rate to Camden, Mo., for Liberty Landing tariff. The tariff to Corning will be 20c. more than the rate to St. Joseph, Mo., from points South and East thereof, and 20c. less from points North and West.

OFFICES CLOSED.

Allatoona, Ga., Benton, W. T., Ft. D. O. Russell, W. T., Ironton, Mo., Portland, N. Y., Shell Mound, Tenn., Butler, Ga., So. Yarmouth, Mass., West Harwich, Mass., and North Islip, L. I.

GENERAL INFORMATION.

Business for South Yarmouth, West Harwich, Dennisport, and West Dennis, Mass., will hereafter be delivered from South Dennis, Mass., charges for delivery 50 cents to each.

Tariff for Other Lines from Marshall, Texas, to Tyler, Texas, has been reduced to 75 and 5.

Those offices who have heretofore sent and checked business for Canada, to Rouse's Point, N. Y., will continue to do so, using the rate from Montreal, given in JOURNAL of January 1, with 20 cents in currency added.

The following explanation of the tariff of the Montreal Company in last JOURNAL will take the place of the paragraphs printed after the rate for additional words.

The tariff as given above for points in Canada and New Brunswick is in gold, and for points in United States is in currency.

When the rate is 25 in gold collect 40 and 2 in currency.

"	"	40	"	"	60 and 3	"
"	"	50	"	"	75 and 3	"
"	"	60	"	"	90 and 4	"
"	"	75	"	"	100 and 5	"

When messages are sent, whether paid or collect, to any of the offices in this list they should be checked in currency, for example:

Pittsburgh sends a prepaid message of 10 words to Acton, Ont., via Buffalo. It should be checked thus: 10 words 90 and 40 paid. If sent collect, 10 words 90 collect.

If sent to Ogdensburg, N. Y., via Oswego, N. Y., thus: 10 words 1.40 and 25 paid, or 10 words 1.40 collect.

This tariff will go into effect January 1.

The notice in last JOURNAL relative to Tyrone and Bellefonte, Pa., should read as follows:

On and after January 1st, Tyrone and Bellefonte, Pa., will check direct with all Western Union offices. Tariff for offices on Pennsylvania R. R. and Bald Eagle Valley R. R. same as at present. Offices on Philadelphia and Erie R. R. and Lackawaxen and Bloomsburg R. R., including Wilkesbarre, will add 25 cents to their rate to Lock Haven. All other offices will add 50 cents to their rate to Pittsburgh or Harrisburg, or 60 cents to rate to Philadelphia, taking the lowest amount. Offices having "Special Sheet A" will use "special rate" in computing tariff to Tyrone and Bellefonte.

The name of the new office at Cranford, N. J., was given as Crawford in last JOURNAL.

On and after Jan. 20, offices having "Special Sheet A" will check Suspension Bridge, N. Y., at same rate as Lockport, N. Y.; also, check Mechanicsburg, Pa., 15 cents more than "special rate" to Harrisburg unless otherwise ordered.

WM. OXON, President.

Arrest by Telegraph.

A few weeks ago a dispatch was received from the Chief of Police at Manchester, by the City Marshal of Halifax, N. S., requesting him to arrest two persons who were coming as cabin passengers in the mail steamer from England, on a charge of embezzlement. On the arrival of the steamer, the birds of passage were stopped in their flight from the murky fogs of England to brighter blossoms and purer air somewhere far off in the south. Counsel was retained on behalf of the prisoners, and immediately a whole host of legal questions started up to confound the minds of the lawyers and the court. Just as in old battles, when some warrior, loved of the gods, had come to grief, the gods would come to his rescue. "Apollo shrouds the youthful hero in a veil of clouds," so if any daring police magistrate lays his unholy hands upon the liberty of the subject, a cloud of legal objections is immediately raised to protect the person arrested.

The questions involved in this case are of some importance, and the discussion of them will be useful as tending to settle what the law is upon the subject of arrest by telegraph. Can any person be arrested by telegraph? That is the fundamental question. If the answer is in the negative, then one of the great uses of the telegraph will be rendered ineffectual. A man commits a foul murder, say in Liverpool, and before he can be arrested he gets on board a steamer, say for Halifax. The news of his crime is flashed across the Atlantic, a full description, reasonably enough to satisfy a police officer at least, and the name of the party, accompany it. Is it reasonable for any man to say that such a man should not be arrested? In the case in question the court ordered the prisoners held until advices from England were received. Whether this was legal or not it was universally accepted as, at least, expedient.

The telegraph has not been in operation long enough to give rise to much litigation or legislation of the character referred to, but a few more cases of this kind will impress upon the legislatures of all countries connected by ocean telegraph the necessity for some definite rules on this subject. Such rules may form a portion of the treaty of Extradition agreed upon between Lord Stanley and Mr. Johnson. Not only in criminal matters, but also in civil cases, the telegraph promises to become of great practical importance. In a late case the Chief Justice of Nova Scotia observed that in certain cases of vessels insured by letter, lost or not lost, and information was received by the insured of the loss of the vessel before the letter of instruction had arrived at its destination, the insured was bound to communicate with the underwriters by telegraph.

In remanding the prisoners in the case referred to, the court used the following language, after stating the circumstances of the arrest: In deciding again to remand these prisoners, I feel that I am exercising judicial discretion in a case of difficulty and without any English precedent to guide my course. In the case of Llinos, that was before the Supreme Court of this Province a few years ago, and which is accurately reported in the *Halifax Evening Reporter*, the Court, while adverting to many English cases in which a reasonable suspicion of guilt proved to exist has been held to warrant the detention of the suspected party, expressed a decided opinion that an authenticated telegram, proceeding from a *police authority* abroad, would be sufficient to warrant the detention of a person indicated as charged with crime, at all events, for a reasonable time to allow of sufficient proof being transmitted. In this case I cannot but feel embarrassed by the mental conflict that I experience between arguments which a sense of convenience and necessity in relation to the ends of justice suggests, on the one hand, and considerations of the sacredness

of personal liberty, and the safeguards that the law has thrown around it on the other—safeguards which, from my position, I am especially charged to maintain inviolate. I feel, then, that I should, by discharging these prisoners, practically ignore, as an effective engine for detecting crime, and preventing an escape from justice of real criminals, the existence of that instrument which science presented to civilization when it invented and introduced the Electric Telegraph. When I reflect that if a convicted murderer or traitor, sentenced by an English Court, were to escape from his jailor, and, secreting himself on board an ocean steamer, transport himself to these shores, and the submarine wires were to flash beneath the sea intelligence of his escape, in anticipation of his arrival here—in that case a question identical in principle with that before me might be presented for my decision—I cannot hesitate to decide, as I do decide, that these prisoners must be detained in their present custody until after the arrival of the next steamer from England.

Personals.

W. H. Harrington, Manager Western Union office Clinton, Iowa, designs wintering in Troy, N. Y.

We are sorry to learn that by the abolishment of the post of "constructor of lines" in the Metropolitan District, our good friend Mr. Stephen C. Hendrickson is thrown out of his accustomed employment. Mr. H. has been a faithful and skillful officer, and has served the Company well and long. We have no doubt that in some new sphere he will secure congenial employment and appreciation.

E. D. L. Sweet, Esq., of Chicago, in renewing his subscription speaks thus of his new work as Secretary of the Board of Trustees of the Young Men's Christian Association: "Farwell Hall will be completed and dedicated January 19. Though I have had a hard summer's work, I feel that it will be one I shall ever look back to with pride and pleasure."

Thomas Brown takes charge of the New Brunswick, N. J., office, vice L. M. Levy transferred to Washington, D. C.

Pennington takes charge of the Market street depot office Newark, N. J., vice P. H. Flynn transferred to New York.

Wm. P. Curl, operator main office Philadelphia, resigned. Peny O. Bryan, of Charleston, appointed to main office Philadelphia.

E. Alex. Scott appointed to main office Philadelphia.

John E. Cardwell, of Philadelphia main office, takes charge of Lancaster, Pa., office, vice D. H. Potts transferred to Elizabeth, N. J.

Miss E. Carrie Cook takes charge of the Fifteenth street brokers' office Washington, D. C.

Del. Hackley takes charge of the Lock Haven, Pa., office, vice F. D. Squire transferred to Washington, D. C.

G. W. Cosden takes charge at Elkton, Md., vice H. A. Wells transferred to Trenton, N. J.

F. H. Gartlan takes charge at Dover, N. J., vice R. A. Torrington resigned.

Ed. Sholes relieved S. A. Emery at Lanark, Ill., December 14. Mr. Sholes is a son of the late esteemed superintendent of the N. W. Tel. Co., C. C. Sholes, and a more worthy young man does not exist.

Smith Rae relieved G. D. Field at W. U. R. R. office Beloit, Wis., December 9.

W. J. Weld took charge of Rockton, Ill., office same date, vice Rae promoted.

Thoms Master relieved T. N. Shanks at Mt. Carroll, Ill., December 22.

THE speech of Mr. Orton, President of the Western Union Telegraph Company, at the banquet to Professor Morse, was as solid and effective an argument as could be devised to affect the minds of business men against the proposition to have the Federal Government seize, own, and manage the telegraphs of the United States. When Congress assembles again we shall have something to say on this proposal to overburden, with a novel and enormous business, the government machine, which is already crippled in efficiency by the vast variety of its concerns, which cannot even lay duties wisely nor collect taxes thoroughly, and which everywhere and in all things is outstripped by the efficiency of private enterprise.—*N. Y. World*.

MR. ISRAEL WASHBURN, an old citizen of Worcester, Mass., about 70 years of age, the proprietor and founder of the celebrated Washburne Iron Wire Works there, is dead. Several months ago he had experienced a severe paralytic shock, and his death was not altogether unexpected. Mr. Washburne had accumulated great wealth in the manufacture of telegraph and other kinds of wire, and will long be remembered for his munificent gifts for charitable purposes.

CHESTER, PARTRICK & CO.,

TELEGRAPHIC & ELECTRICAL ENGINEERS,

CONTRACTORS, &c.,

38 SOUTH FIFTH STREET,

PHILADELPHIA.

Manufacturers and Merchants of every variety of

TELEGRAPHIC, ELECTRIC AND PHILOSOPHICAL AP-

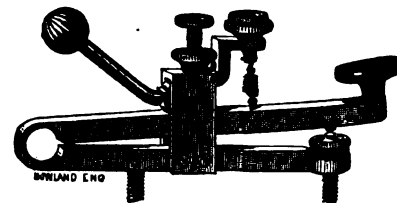
PARATUS, BATTERIES, WIRE, ACIDS, INSU-

LATORS, MEDICAL INSTRUMENTS,

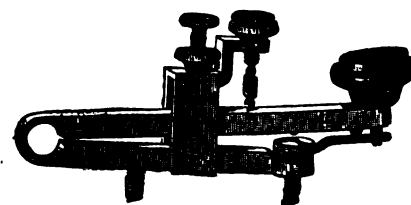
AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closer.



2.—Patent Self-closing anti-trunion Key.

3.—Kerite or (horn covered) copper or compound wire or cables.

4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

The Handkerchief Telegraph.

Every person who has read the play of "Othello" remembers the ejaculation of the jealous Moor, when he called upon Desdemona to produce the handkerchief! the handkerchief! They also remember that because she did not bring forth the handkerchief, and it being found in the possession of Cassio, the black scamp crammed a pillow down her throat, producing suffocation and death. We merely remind our lady readers of this fact in order to place them on their guard, in case they should happen to be wedded to a fellow like that jealous Moor, and should be caught by him making use of a code of signals we propose to give. This code is called the language of the handkerchief, and as it is quite a fashionable mode of communicating thought in Eastern cities, and as all the fashions of the East are adopted here, we give it. It must be remembered, however, that the "code" is only to be used at balls, parties, theatres, and on the street, but never in church.

Drawing it across the lips—Desirous of an acquaintance.

Drawing across the eyes—I am sorry.

Taking it by the centre—You are too willing.

Dropping—We will be friends.

Twirling in both hands—Indifference.

Drawing across the cheek—I love you.

Drawing through the hands—I hate you.

Letting it rest on the right cheek—Yes!

Letting it rest on the left cheek—No!

Twirling it in the left hand—I wish to be rid of you.

Twirling it in the right hand—I love another.

Folding it—I wish to speak with you.

Over the shoulder—Follow me.

Opposite corners in both hands—Wait for me.

Drawing across the forehead—We are watched.

Placing on right ear—You are changed.

Letting it remain on the eye—You are cruel.

Winding around forefinger—I am engaged.

Winding around third finger—I am married.

Putting it in the pocket—No more at present.

A Merri Superintendent.**CHRISTMAS PRESENTATIONS.**

One of the pleasantest and gayest of Christmas gatherings was the occasion of the presentation to Mr. C. G. Meriwether, General Superintendent of the Fourth District of the Western Union Telegraph Company at Mobile, Ala., of a very handsome diamond ring, by the employees of the Mobile office.

The ring itself was a very valuable testimonial, and was made more so by the very kind words in which it was presented by Mr. Wm. Sandford, the very handsome and popular Manager of the Mobile office. This gentleman's little speech was neat and appropriate, and we doubt whether Mr. M. was more astonished by the brilliancy of the ring than by that of the ring of friends who pressed congratulations upon him.

There was a notable "spread," jokes went round by telegraph, and *bon-mots* were expressed via the Mobile & Ohio R.R. The superintendent of the latter road, Mr. Fleming, and of the Southern Express Company were on hand; the drama and the press were represented by Messrs. De Leon and Waldron; there was a feast of reason and a flow of soul, and all went merry as a Cowbell-ton's bell.

We know of no one of our friends more deserving of such a compliment than Mr. M., and we hope he will soon take the "daughter of some good mother" and let her wear it as his marriage gift, and trust his shadow may never be less.

Thus saith the Mobile *Register* and *Tribune*, and the JOURNAL OF THE TELEGRAPH says amen.

Here is the correspondence:

MOBILE, Ala., December 25, 1868.

C. G. MERIWETHER, Esq., Supt. Fourth District Western Union Telegraph Co.:

Dear Sir—It is with great pleasure that I am permitted in behalf of the operators and employees of the Fourth Dis-

trict of the Western Union Telegraph Company, to ask of you the acceptance of this beautiful diamond ring as a Christmas present from them, as a slight token of their appreciation of you, as their executive head, and for the impartial manner in which you have discharged the duties incumbent upon you.

Wishing you a Merry Christmas and a Happy New Year,
I remain yours very truly,

WILLIAM SANDFORD.

MOBILE, December 25, 1868.

WM. SANDFORD, Esq.:

Dear Sir—Allow me to return you and all the employees of the fourth district my most sincere thanks for this most beautiful and costly present. I accept it and shall always prize it not only for the value it possesses in itself, but for the kind spirit in which it is given. I shall keep it as a valuable memento of this occasion and as a kind remembrance of you all. May the personal friendships founded on regard and esteem, formed for many of you long years ago when we labored side by side in the ranks, continue to shine in the future with as bright and as pure a light as that which now flashes from the gems in this ring. It is a source of extreme gratification to me to say that in all my efforts to conform to and carry out the orders of my superior officers, I have always found a cheerful and prompt obedience on the part of every manager and employee on the district. It is to this promptness and obedience on their part that I am indebted for any success that may have followed any of my efforts. I wish you all a Merry Christmas and a Happy New Year. During the coming year may you all be able to answer at all times when duty calls, and may the *Grand Chief Operator* who has called several of your number away during the past year to work on that line which extends into "that undiscovered country from whose bourne no traveler returns," fail to sound the last call for any of you. Yours, very truly,

CHARLES G. MERIWETHER.

The *Tribune* adds: We had hardly recorded the presentation of the ring mentioned above when we heard of a new "telegraph ring" in Montgomery, Ala., who sent him by all odds the handsomest Meerschaum we have seen for many a day.

Pure meerschaum mounted in gold and inscribed with name and date, is in itself "a joy forever." But the intrinsic value of this costly gift is far less than that added to it by the kind words of presentation in the following correspondence:

MONTGOMERY, Ala., Dec. 25, 1868.

Mr. C. G. MERIWETHER, Supt. 4th Dist. W. U. Tel. Co.,
Mobile, Ala.

Dear Sir: The undersigned, employees of the Western Union Telegraph Company, at Montgomery, Ala., desire to tender you as a "Christmas gift," and as a slight testimonial of their respect and esteem, the accompanying "Meerschaum Pipe."

It is earnestly hoped by each and every one that this offering will prove an acceptable one, and be the means of adding an additional charm to your enjoyment of the "fragrant weed."

Yours, very truly,

C. W. HILLS,

VIRGIL P. MOON,

JOHN L. JONES,

O. K. GALLASPIE,

CHAS. E. HALL,

JAMES MURRAY,

H. F. LINES,

P. H. COOKE,

THOS. K. SCOTT,

T. A. NETTLES,

F. H. JORDAN,

S. E. HOLT.

THE WEST. UNION TELEGRAPH CO.,
SOUTH. DIV., SUPT'S OFFICE, 4TH DIST.,
MOBILE, Ala., Dec. 26, 1868.

Gentlemen: Your magnificent Christmas present came to hand by express to-day. Allow me to thank you most heartily.

I shall always value it, not only for its intrinsic worth, but for the kind expressions of esteem and regard for myself, which accompany it and which render it doubly valuable.

Thanking you again kindly, I wish you all a Happy Christmas; and may you one and all live to enjoy and celebrate many of them.

Yours, truly,

C. G. MERIWETHER.

To Messrs. Hills, Lines, Moon, Murray, Cooke, and others, employees of Montgomery (Ala.) Office.

CHARLES WILLIAMS, JR.,

109 Court Street,

BOSTON, MASS.,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

BATTERIES,

AND MATERIALS OF ALL KINDS.

WM. KIDD,
A. BOODY.

C. H. PRICOR,
C. S. OTIS.

KIDD, PRICOR & Co.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,

NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission

S. S. STAFFORD'S COMBINED

WRITING AND COPYING FLUID,

Labeled by me, for the last ten (10) years, ARNOLD'S FLUID
Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33½ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD,
Chemist, N. Y.

A. S. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office,)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

CHAS. T. & J. N. CHESTER,

104 CENTRE STREET, N. Y.,

TELEGRAPH ENGINEERS,

And Manufacturers of

INSTRUMENTS, BATTERIES,

AND EVERY DESCRIPTION OF TELEGRAPH SUPPLIES,

Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

Telegraphers' Mutual Life Insurance Association.

ASSESSMENTS RECEIVED.

Joseph Knittle,	Isaac V. Ford,
Jas. T. Maxwell,	C. S. Follett,
John Fuller,	Francis J. Nicholson,
H. A. Tuttle,	J. S. Hunter,
Robert B. Welch,	S. M. G. Wenck,
J. J. Calahan,	Jacob P. Bogar,
E. Chapman,	Wm. T. Lindley,
W. R. Munroe,	W. H. Sawyer,
Geo. Chivis,	J. White Kelly,
W. C. Chapman,	Wm. L. Ives,
A. B. Chandler,	Charles L. Snyder,
Sam. Dunlap,	Claude G. Freeman,
Thomas Dolan,	John A. Costerlin,
B. F. Ely,	Waldo H. Collins,
J. U. Anale,	James Lytle,
Thomas J. Landy,	Alvah B. Waite,
Arthur W. Mechen,	Henry W. Wynkoop,
Frederic Crouse,	Jacob M. Rhoads,
Charles E. Merritt,	Dwight B. Case,
J. M. Nye,	B. Dexter Hubbard,
W. N. White,	J. B. Leach,
P. H. Shaughness,	James P. Bogar,
Benj. Stevens,	A. W. Campbell,
Geo. H. Smith,	J. McGovern,
Mary E. Smith,	W. S. Taylor,
John P. Fowler,	Geo. B. Gaines,
Rees D. Williams,	Geo. R. Pace,
Leonard Read,	C. J. Gaines,
W. G. Jamieson,	P. M. Painter,
Louis Maury,	R. C. Humphreys,
W. O. Havens,	David McDonald,
C. B. Munday,	A. A. Howard,
W. Sandford,	J. W. Crouse,
Geo. T. Williams,	John D. McFarland,
J. W. Lawlor,	Wm. McIntosh,
John H. Pearce,	Geo. W. Moore,
J. F. Stevens,	C. M. Clark,
C. M. Knox,	Joseph T. Heenan,
E. C. Armstrong,	John J. Heenan,
A. Kern,	Thomas F. Heenan,
D. W. Warner,	James W. Smith,
B. F. Bush,	B. J. Corban,
Samuel C. Taylor,	Geo. O. Smith,
James R. Heenan,	Chapin Cole,
M. C. Newman,	W. W. Wall,
W. W. Lysle,	C. W. Moore,
John W. Smith,	J. Bohanna,
W. W. Smith,	Chas. L. De Forest,
B. H. Johnson,	Henry C. Beckwith,
O. H. Summers,	E. D. Sanford,
J. C. Mattoon,	Geo. Purdon,
Edwin C. Bush,	J. M. Worden,
Geo. E. Gilleland,	John Wenzel,
W. O. Buell,	Wm. Roche,
B. F. Follett,	Colin Fox,
W. H. Ashby,	L. B. Dwight,
Geo. A. Lance,	Cornelius Corbett,
Freeman D. Adams,	C. E. Moody,
C. A. W. Briggs,	W. S. Lakin,
Samuel Moore,	C. Oscar Blake,
A. R. Phillips,	Alfred Saville,
W. H. Blanchard,	C. D. Sprague,
R. W. Marriott,	M. V. B. Buell,
G. M. Simmons,	Geo. S. Downes,
Clarence A. Bolton,	John Norton Hills,
Theodore Fullen,	M. H. Redding,
Mrs. E. M. Baker,	J. D. Stone,
W. H. Chivvis,	A. G. Scranton,
A. J. Burton,	Geo. Farrell,
Geo. K. Walcott,	John A. Wright,
James E. Moon,	Zebina Hubbard,

Ch. McLaughlin.

Lightning Rods.

It is known how important it is to be able to be always assured of the material worth and of the constant working of the lightning conductor. A conductor which imperfectly conducts the electric fluid is no longer a preserver from the lightning, but a formidable accessory. The savant M. H. De Parville proposes a very simple and a very practical means of ascertaining the integrity of conductors. The process of M. De Parville consists in constantly passing the current from a small pile through the lightning rod, and leading the conductors to a spring sounder. The sounder remains quiet when the lightning rod works well; on the contrary, it resounds when the electricity is no longer passing, or when (exceptionally) it has been forgotten to recharge the pile.—*Jour. des Telegraphs.*

Foucault's Ship Telegraphs.

Dr. Foucault has introduced, on board of the steam packet *Europe*, belonging to the Transatlantic Company, a telegraphic system of his invention, destined to increase the security of the vessel, and to facilitate the transmission of the orders to the crew. From their cabins the officers can correspond with the helmsman, and they are immediately advised of the approach of another vessel, as well as of all the accidents which may happen.

This system is provided with an alarm clock, and the transmission of signals is so rapid that in an instant all the sailors receive the necessary instructions. It is said that the Minister of the Navy intends to apply the invention to the vessels of war in the French navy.

NOTE.—We have had the pleasure, through the courtesy of Dr. Foucault, of seeing the operation of his signals. In directing the course of the ship from the pilot bridge the commander turns a pointer to the north, starboard, or larboard, as the case may be, and which can only be replied to by obedience to the order given, the wheel performing the office of manipulator. In like manner the amount of veerage allowed the pilot at sea is given, and any departure from this causes an alarm-bell to ring in the captain's office.

THE following is the latest news from Paris:

"The telegraph wires of the United States, in working condition, in 1848, was near 16,800 kilometres (about 10,450 miles). In 1858 this number had increased to 64,000 kilometres (about 40,000 miles), and before the end of the present year there will be 168,000 kilometres (about 105,000 miles) of wire finished and in working order. If it increases in this proportion the 400,000 kilometres (about 250,000 miles) of wire, which they regard as still being necessary, can be easily finished before 1878. But there is a serious difficulty, the streets of New York are already bristling with posts filled with wires; experience has shown that their working becomes more difficult as the number of wires are increased. Likewise in storms, the posts filled with wires offer so much surface to the wind that they are frequently overthrown, especially in the winter. They prefer, then, instead of establishing new wires, rather to seek the means of increasing the rapidity of transmission. They have already created a vocabulary of signals, representing entire words, and even entire sentences, for common use; the transmission is much quicker, but it will be very difficult to apply this system to the dispatches which are addressed to the press and which forms one of the principal elements of traffic."—*Jour. des Telegraphs.*

The French Cable.

Recent publications represent this enterprise as cloudy, and ventilate a few unpleasant facts concerning it.

1. It is represented as an exclusively anti-American affair. To prove this, the names of the Baron Erlanger, the European agent of the late confederacy, William Henry Schroeder, of London, Hon. Robert Lowe and others, regarded as hostile to our government are cited as its projectors. This we do not regard as having any special significance, although it might for a time possibly affect the employment of the new cable.

2. The value of the exclusive rights on the shores of France and the United States are doubted. The grant of the Legislature of the State of New York has no value, inasmuch as only Congress can confer it. Thus, a payment of \$50,000 in gold, and \$50,000 more promised, as payments for the rights thought to have been secured, are lost or spent in vain.

3. The American trustees, in whose hands the landing ground in Duxbury, Mass., has been placed, are members of the Coast Survey, and as government officers, are disqualified from holding any such trust.

4. The stock is represented as having been secured by a trick in advertising that in London, where the enterprise must have been looked upon as hostile, £1.5 was offered on £1 paid in, leading to an immediate subscription in France of the entire residue.

Aside from all these questions, which, after all, amount to very little, the commercial success of the enterprise appears to us as questionable. It is fallacious to carry out an arithmetical increase of business, based upon a reduction of rates. There must be an actual commer-

cial or social necessity for communication to make the medium of carrying it on remunerative. Is there such an intercourse between France and America as to make this direct cable a success? Four-fifths of the cable intercourse so far has been British. Will the new French cable change that relation? and is there in waiting any social or commercial necessity on which any great enlargement of intercourse may be predicted? It may be that there is. Time will solve all these questions. What the world is most interested in after all, is in providing such accessibility of communication as shall bring the populations of the globe so near to each other as to foster the feeling of a common interest and a universal brotherhood. Whatever tends to this is welcome.

A PARLIAMENTARY return shows that there are in Great Britain and Ireland 90,668 miles of wire for public use, and 4,969 miles of wire used for railroad companies only. The number of miles of posts and underground lines constructed is 21,751 open to the public, and 245 used for railway purposes only. The average number of wires per mile is 4.16. There are 4,695 miles of submarine telegraph cables (including the Atlantic cable) connected with places in the United Kingdom, and 8,146 miles of wire. The average number of these wires per mile is 1.73. There are 3,381 telegraph stations open to the public.

The arrangements for the purchase of the British Telegraphs are actively going on, and a commission appointed by the Accountant General has nearly concluded the inquiry into what the net profits of the company really are. A complete collection of the instruments used has been arranged in the library of St. Martin's le Grand. It is said to be a most interesting display, and one which shows in a remarkable manner the vast progress which has been made since the first application of electricity to the purpose of telegraphy.

Russia.

The establishment of the Electro-Magnetic Telegraph in Russia dates from the year 1853. The first lines were those from St. Petersburg to Moscow, Cronstadt, Warsaw and Koenigsberg. With the establishment of this last line, for which an agreement was concluded with Prussia, commenced the international telegraphic correspondence with the other States of Europe.

From that time the telegraph system was extended over all Russia. In the course of 13 years the two capitals were put in communication with the most important and the most distant cities, and with all the neighboring States. It is to be remarked that the execution of the telegraphic system presents infinitely more difficulties in Russia than in the rest of Europe, as much from the immense distances as of the climate, of the smallness of the population of many of the districts and high price paid for transportation of materials. In 1865 there were 61,450 versts of telegraph with 323 stations, and they sent 1,644,375 messages. No one can contemplate the former cost, in time and money, necessary for sending dispatches, without counting the road horses killed on post routes they required, upon many of the points, from one to two months to reach, without feeling the great change the telegraph has effected.

It is a fact not generally known, perhaps, that Washington drew his last breath in the last hour of the last day of the last week of the last month of the year, and in the last year of the century. He died at 12 o'clock Saturday night, December 31, 1799.

A BEAUTIFUL THOUGHT.—The sea is the largest of all cemeteries, and its slumberers sleep without monuments. All other graveyards, in all lands, show some distinction between the great and small, the poor and rich; but in the ocean cemetery the king and the clown, the prince and peasant, are all alike undistinguished. The same waves roll over all—the same requiem by the minstrels of the ocean is sung to their honor. Over the remains the same storm beats, and the same sun shines; and there, unmarked, the weak and powerful, the plumed and unhonored, will sleep on until awakened by the same trump.

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New Postal Regulations with Great Britain.

THE new postal convention with Great Britain goes into effect on the first day of January, 1869. It provides as follows:—

LETTERS, 12 cents per single rate of one-half ounce in the United States, or 6 pence (12 cents) in Great Britain, prepayment optional. A fine of 5 cents in the United States, or 2 pence (4 cents) in the British post-office, will, however, be levied and collected in addition to the deficient postage on each unpaid or insufficient prepaid letter received by one country from the other.

NEWSPAPERS, 2 cents each in the United States, or 1 penny each in Great Britain, if not exceeding four ounces in weight.

BOOK-PACKETS, including printed papers of all kinds, etc., and also patterns or samples of merchandise, including seeds and grain, when not exceeding one ounce in weight, 2 cents in the United States or 1 penny in the British post-office. When exceeding one ounce and not exceeding two ounces in weight, 4 cents in the United States or 2 pence in Great Britain. When exceeding two ounces and not exceeding four ounces in weight, 6 cents in the United States or 3 pence in the British post-office, and when exceeding four ounces in weight, an additional rate of 6 cents in the United States or 3 pence in Great Britain, will be charged for every additional four ounces or fraction thereof.

The postage chargeable upon *all articles of printed matter*, including newspapers, books, and also patterns or samples of merchandise, *must be fully prepaid at the mailing office in either country, and is in full to destination*, the receiving country delivering the same in all cases without any charge whatever.

The Bronze Doors of the Capitol.

THE bronze doors designed, one for the entrance to the House of Representatives and the other for one of the doorways of the Senate chamber at Washington, and which had their inception some fifteen years ago, are now in their places and receiving their finishing touches. Each door weighs entire eight thousand pounds, its casing six thousand more, so that the total weight of the bronze-work in each door is fourteen thousand pounds. The designs upon the panels illustrate the history of the discovery of America by Columbus, and sprang from the genius of Crawford and Rogers, the former of whom died before his portion of the work was quite completed. The sum total of the cost to the Government will be about fifty thousand dollars.

A NEW invention—by M. Delaunier, of Paris—for destroying fire-damp in mines has been lately laid before the Academy of Sciences. It consists of a copper conductor, broken at intervals, but joined by very fine gold wire soldered to the copper, the gold wire being surrounded by flowers of sulphur, which ignite easily. By passing strong currents of electricity through the copper wire, the gold wire becomes red-hot, and thus ignites the sulphur, which burns any noxious gases which may be present. It will, of course, be understood that the electric current is made to pass through the apparatus before the descent of the miners into the mine. The Academy of Sciences have, it is stated, reported very favorably on M. Delaunier's invention.

M. DELUMIER, in a communication to the Academy of Science, states that the following mixture forms an exciting liquid for galvanic batteries of great energy and economy, disengaging no deleterious fumes or gas. Dissolve twenty parts by weight of proto-sulphate of iron in thirty-six parts of water. Then stir in seven parts of a solution of sulphuric acid (equal parts); then in the same manner add one part of diluted nitric acid (equal parts).

Electricity as an Illustration.

There is scarcely anything more freely or effectually used in the oratory of the lecture room or the pulpit, as an illustration, than the electric fluid, or its co-relations, light, heat, magnetism, and the like. One can scarcely read a newspaper, secular or religious, without remarking this fact. Dr. Cheever was accustomed to employ the peculiarities of the lightning and the telegraph wire with great power and beauty. Here is a specimen from another noted religious writer:

"I have seen a heavy piece of iron hanging on another—not welded, not linked, not glued to the spot—and yet it cleaved with such tenacity as to bear not only its own weight, but mine too, if I chose to seize it and hang upon it. A wire charged with an electric current is in contact with its mass, and hence its adhesion. Cut that wire through, or remove it by a hair's breadth, and the piece of iron drops dead to the ground, like any other unsupported weight. A stream of life from the Lord, brought into contact with a human spirit, keeps the spirit so firmly that no power on earth or in hell can wrench the two asunder. From Christ the mysterious life stream flows, and to Him it returns again. In that circle the feeblest Christian is held safely; but if the circle be broken, the dependant spirit instantly drops off."—*Arnol.*

Removal of Telegraph Wires.

About one year ago the Keystone Telegraph Company, afterwards merged into the Pacific and Atlantic, placed four wires on the poles of the Western Union Telegraph Company along Market street from Third street to West Philadelphia.

On last Friday night these wires were removed, and on Saturday an injunction was granted by Judge Allison restraining the Keystone or Pacific and Atlantic Co. from again placing their wires on the poles referred to.

The Pacific and Atlantic assumed the right to use these poles under their contract with the Pennsylvania Railroad Company, which allows them the use of the railroad company's poles between Philadelphia and Pittsburg, but which did not and could not give them the right to use the poles on Market street in this city, in which the Pennsylvania Railroad Company had no right, beyond that of having their own railroad wires thereon, which privilege they enjoy, in return for certain facilities furnished to the telegraph company when the poles were set up.

A Curious Experiment.

Take a piece of pasteboard about five inches square, roll it into a tube with one end just large enough to fit round the eye, and the other end rather smaller. Hold the tube between the thumb and finger of the right hand (do not grasp it with the whole hand); put the end close against the right eye, and with the left hand hold a book against the side tube. Be sure and keep both eyes open, and there will appear to be a hole through the book, and objects seem as if seen through the hole instead of through the tube. The right eye sees through the tube and the left eye sees the book and the two appearances are so confounded together, that they cannot be separated. The left hand can be held against the tube instead of the book, and the hole will seem to be seen through the hand.

Repudiation in the St. Paul Chamber of Commerce.

ST. PAUL, Minn., December 22.—The Board of Directors of the Chamber of Commerce last evening passed a resolution repudiating their subscription to the Mississippi Valley National Telegraph Company, on the ground of misrepresentation.

SOME years ago a man in Berlin assisted an old man who had slipped on the pavement. A few days back he was surprised by receiving fifteen thousand dollars, left him by the person he had so slightly benefitted.

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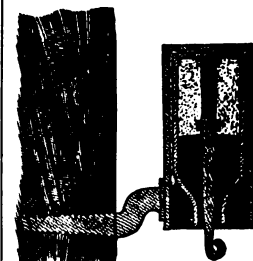
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JOURNAL OF THE TELEGRAPH.

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VOL. II.

Trial By Telegraph.

BY HON. J. D. CATON.

In the spring of 1849, St Louis steamers were daily arriving at the landing at Ottawa, and generally left teeming with the throng rushing to the gold-regions of California, then lately discovered. Telegraph communication had already been established between Ottawa and Chicago, but it was so new that many looked upon it as a myth, and it had secured the entire confidence of but few, of whom I was one.

One day a constable came to my chamber with a telegram from some one in Chicago, desiring the arrest of a man described for the larceny of a watch.

The officer stated that he recognised the accused, who had just arrived from Chicago, and who had already taken passage on the steamer then at the landing, and which would sail in three hours, and desired my opinion as to his duty in the premises. I told him if he would make a complaint before me, setting out the telegram in his affidavit, and stating that he believed that the party was guilty of the larceny charged, I would issue a warrant upon it. This was done, and very soon the accused was before me. He was a laboring man of respectable appearance. He stated that he had boarded with the complainant in Chicago, that he had procured the watch in a fair trade, of which the other party had become dissatisfied, and had made some threats before he left Chicago, and gave the name and residence of a witness who would prove these facts. Accused also stated that he had taken passage on the boat with several companions, bound for California together. That to be taken back to Chicago to vindicate his innocence, would break up all his arrangements, and result in most serious inconvenience at least.

The whole bearing of the man impressed me with the belief that he was telling me the truth, and I feared I had acted hastily and imprudently, if not illegally. I had gone too far to let the man off on his own statement, and yet I feared that to detain him would be a great wrong.

Soon it occurred to me that if I could arrest a man by telegraph, I might try him by telegraph. I immediately sent a dispatch to Hon. J. H. Woodworth, then Mayor of Chicago, whom I well knew, stating the case, and asked him to have brought before him the complainant and the defendant's witness, and examine them, and see if there was reasonable cause for detaining the prisoner, and to report by telegraph, in two hours if possible; well-knowing that then, as now, Chicago was a fast place, and always did business quick.

Before the expiration of the two hours I received a report from Mayor Woodworth, stating that he had examined the complainant and the defendant's witness, and that he was satisfied that there was not sufficient ground for the charge of larceny. Of course, the prisoner was at once discharged, and with his friends rushed in triumph to the steamer, followed by quite a crowd who had become interested in the

novel proceeding, and among whom a general sympathy had arisen on behalf of the accused. In three minutes after he was on his way to the new Eldorado, but whether he made his pile or not I do not know, for I have never heard of him since.

This was the first, if not the only trial, I ever heard of being conducted by telegraph eighty miles off. But it seemed much more of a mystery then than it would now. I still believe that my whole course was legal. I am one of those who believe that the law is capable of adapting itself to all the improvements of advancing civilization.

OTTAWA, ILL., 1869.

Magnetic Traveling Stones.

They have walking stones in Australia, and, as we are informed, they have traveling stones in Nevada. Here is a description: They were almost perfectly round, the majority of them as large as a walnut, and of an irony nature. When distributed about upon the floor, table, or any other level surface, within two or three feet of each other, they immediately begin traveling toward a common center, and there huddle up in a bunch, like a lot of eggs in a nest. A single stone removed to a distance of three and a half feet, upon being released, at once started off with wonderful and somewhat comical celerity to join its fellows; taken away four or five feet, it remained motionless. They are found in a region that, although comparatively level, is nothing but barren rock. Scattered over this barren region are little basins, from a few feet to a rod in diameter, and it is in the bottom of these that the rolling stones are found. They are from the size of a pea to five or six inches in diameter. The cause of these stones rolling together is doubtless to be found in the material of which they are composed, which appears to be loadstone or magnetic iron ore.

Major Abasa's Yarn.

Major Abasa, of the Collins overland telegraph expedition, told me of a peculiar mode of effecting marine insurance. I do not believe it will ever be popular among American sailors.

"The Chukchees in their trading excursions frequently cross Behring's Straits by way of the Diomed Islands. Their voyages are made in boats formed of seal-skins sewn together and stretched over light frames of wood. The boats dance like corks upon the waves, and when heavily laden in anything beyond an ordinary breeze they are far from safe. The owner of each boat is generally the captain, and has a crew of six or eight men.

"When a storm arises, and the boat must be lightened, its owner looks after its welfare. He throws his crew into the water and reserves his goods to the last."

"But," I asked, "do the men never object to this peculiar jettison?"

"I believe not," said the Major. "They are under the impression that duty requires the sacrifice. They are pagans, all of them, and drown themselves with a complacency unknown to Christian nations."

The Telegraph and the Government.

OPINIONS OF THE PRESS.

[From the New York Tribune.]

We have said that the Government ought to let the telegraph business alone. It is outside of its province altogether. The scheme to annex the telegraph to the Post-Office proceeds nominally upon the assumption that there is an identity between the carrying of letters in a bag by stage, rail and horseback, and the sending of telegrams on wires. The two differ wholly, having nothing in common save final communication by writing. They are as unlike as the express package business and the carriage of newspapers by mail. The Government might as properly push the Adams and the Merchants' Union Express Companies out of their business, and carry bundles and parcels all over the United States, as to undertake to do telegraphing for the people. There is no country in the world so supplied with telegraphic facilities as are the United States. In Europe, containing the accumulated wealth of two thousand years of busy civilization, having a population of 288,000,000, and containing 39 cities each possessing over 100,000 inhabitants, there is but one telegraph to every 60,249 persons. In the United States, having a population of only 31,000,000, and containing but ten cities of 100,000 inhabitants, the remotest history of the country scarcely reaching back 250 years, there is a telegraph office to every 7,549 of population.

Beyond all question, we Americans have the best telegraph system in the world, and one that provides perfectly for its own extension to meet future wants, without taking a dollar from the Treasury or imposing a tax on the people. There is no need of the interference of the Government in this thoroughly established and perfectly managed business. The proposal to do so is meddlesome and mischievous.

If it were adopted, where would a limit be put to this extension of the functions of Government into the domain of private enterprise? There is now strong talk in England in favor of the ownership and management by the Government of all the railways in the kingdom. If Congress should vote to assume and carry on the business of telegraphy, inevitably there would come in time a howl that the Government should provide the people with cheap fares and freights; and a political party would be formed to effect the purchase of all our railroads, that they, too, may be run by the United States. The dike erected to confine its functions to civil and military administration is already broken down in many places. Where will the overflow of its authority stop if it goes into telegraphing? It will not stop until the simply representative character of the Government is lost; until the self-helpfulness and freedom of the people are gone; until the Federal machine is smashed by a mountainous bankruptcy; until the scoundrelism which permeates the non-collection of the whisky revenue shall characterize office-holding all over the United States.

This fatal career once entered on, there will be no

retreat. The beginning would touch the end. The construction and operation by the Government of a line of telegraph from Washington to New York would inevitably involve in time the purchase of the other lines and their operation by the Postmaster-General. This man, in nineteen cases out of twenty, would probably be a second-rate lawyer, starved out of his profession into politics, and as unfit to superintend a system of telegraph as to sail a frigate. The Washington rule, of three times as many employees as are necessary to do the work, would be forthwith introduced into the Telegraphic Bureau. Fifty thousand operators, messengers and laborers would be spawned upon the country. They would be officially born with a constitutional aversion to hard work and with an incurable tendency to shirk. They would of course be of the "twenty per cent." breed. They would chronically want their salaries raised, and they would periodically get them raised. They would be politicians—for their places would be controlled by Congressmen and party leaders, and would be largely filled for partisan purposes. Every change in the Federal Administration would change, to a great extent, the officials and employees of the Telegraphic Bureau. Unsteadiness, irresponsibility, unskillfulness, neglect and waste would certainly characterize its service. The Government would lose enormously. Every interest in the country would suffer more or less. The Press would suffer most. But so widespread and comprehensive would be the injury, that there is not a family in the United States which uses the telegraph for messages of death, of new life, of safety, of sorrow, messages of request, appointment, inquiry, response, order, and countermand, that would not experience delays or failure in the receipt or delivery of dispatches that require, and do now get through the existing lines, speedy and accurate transmission. Can there be an honest question that this result would follow the assumption of telegraphy by the Government? We call on Congress to put its foot on this Government Telegraph scheme so hard as to discourage its resurrection for at least a decade.

Telegraphing by Government.

We use the telegraph very extensively, and pay it a good deal of money: so that there are few whose personal advantage from cheapening its use would be greater than our own; yet we do not regard with favor any of the bills looking to the establishment of a Government Telegraph. Here are some of our reasons:

I. The prevalent tendency in our day is toward a further restriction rather than an enlargement of the sphere of Government. We have (for instance) a good many public markets in this city, which are, for the most part, public nuisances. Had the city left this whole business of purveying free to private enterprise, only overseeing it in the interest of public health, few can doubt that our supply of food would have been better and cheaper than it is. The same is the case with many other attempts to serve or save the citizen through the agency of Government. Most certainly, we would not limit the sphere of Government to the mere prevention of breaking heads and picking pockets; but we should ponder long before enlarging it.

II. A Government Telegraph is usually proposed as an adjunct of the Post-office. Our Government already claims and enforces a monopoly of the business of carrying letters, charges its own prices, collects some \$15,000,000 a year from the people for letter-carrying, and then loses some \$6,000,000 a year by the business. We submit that it should show a better balance-sheet on this account before extending its sphere of operations.

III. We never owned any telegraph stock, and expect to own none; we are a daily and heavy customer

to telegraphs, and expect to live and die such. We presume that a Government Telegraph would somewhat cheapen the cost of messages; but the money invested in establishing it would never be returned to the Treasury. The clamor for a reduction of charges (as now with letters) would steadily overbear any hope of profit. Can it be right, we ask, to tax the whole people for the benefit of that small minority who send messages by telegraph? Would it not be better to start Government establishments for potato-growing on a gigantic scale, so as to supply the poor cheaply with wholesome and nourishing food? Where one wants cheap messages, many would be benefited by having a sure and ample supply of cheap potatoes.

IV. Government, in this and other free countries, is and must be largely an affair of party. The Government of this country has been, is, and must be, to a great extent, the rule of the dominant party. Would it be well to have the telegraph under the absolute control of either party in an excited Presidential election? Could the outs safely use it? Could the people implicitly trust it? Remember how the mails were rifled under Jackson, with the tacit approval of Postmaster-General Kendall, on the assumption that it was right to take and burn Abolition documents if circulated in Slave States. Consider Gen. Jackson's and Gov. Marcy's official recommendations that the circulation of such documents be prohibited by law. We should not like to have the telegraph controlled, throughout the ensuing Presidential canvasses, by our political adversaries, nor yet by our political friends.

V. The Government is heavily in debt, and its finances are not in good condition; yet it is bored and importuned for subsidies on this side and on that—all of them on the pretense of public advantage; many of them with just grounds for such assumption. If the Northern and Southern Pacific Railroads could both be built within the next five years, we believe they would add five hundred millions of dollars to our national wealth within the twenty years succeeding. We demur to their present construction by Government aid, simply that the state of our finances forbids it. But, if our Government is able to build telegraphs where they are not wanted, why not railroads where they are the very first necessity of settlement and civilization?

We might go on for an hour longer, but let the above suffice for the present. We think the Government should let the telegraph business alone.—*N. Y. Tribune.*

[From the New York World.]

The Proposed Governmental Telegraph.

Unfortunately for the peace of Congress and the interests of the owners of Western Union Telegraph stock, Washburne, of Illinois, once went to Europe, and while straddling about Belgium and France, contracted some facts, statistics, and crude impressions concerning the management of telegraphs by government, which have broken out on him here at home in the form of a disease. "Washburne of Illinois" crossed the sea eastward—a watch-dog of the shaggiest, savagest strain. He recrossed the sea with a kunocephalic idea that the arbitrary system of Louis Napoleon, which made the magnetic telegraph an instrument of state and "the fingers of the police," was the one thing necessary to make the people of the United States prosperous and happy. He was in love with Napoleon the telegrapher. Of all that he saw in old and wondrous Europe, he brought home only the idea that telegraphing should be taken out of the hands of the people of the United States and made a function of government. He proposed to annex the telegraph to the post-office.

There was never such a hallucination as Washburne's idea that the people of Europe have greater telegraphic facilities than the people of the United States have, and his deduction therefrom that telegraphy performed by a government is cheaper and better than that performed

by individuals or a company. Here are the statistics of telegraphs constructed and operated under governmental control, as compared with those constructed and operated under private control:

UNDER GOVERNMENT CONTROL.				
Name of Country.	No. of Offices.	No. of Messages sent.	Population.	Proportion of Offices to Population.
Austria.....	851	2,507,472	39,411,309	1 to 46,311
Belgium.....	356	1,128,005	4,964,451	1 to 14,008
Bavaria.....	4,541,556
Denmark.....	89	308,150	2,468,713	1 to 27,000
France.....	1,209	2,507,472	38,302,625	1 to 31,600
Italy.....	529	1,760,889	25,925,717	1 to 49,300
Norway.....	73	269,375	1,433,488	1 to 19,000
Prussia.....	538	1,964,003	17,739,913	1 to 33,000
Russia.....	308	836,653	68,224,832	1 to 221,000
Switzerland.....	252	668,916	2,510,494	1 to 10,000
Spain.....	142	533,376	16,302,625	1 to 109,000
Totals.....	4,347	12,486,311		

UNDER PRIVATE CONTROL.				
Name of Country.	No. of Offices.	No. of Messages sent.	Population.	Proportion of Offices to Population.
Great Britain and Ireland.....	2,151	5,781,189	29,591,009	1 to 13,714
Domin. of Canada.....	382	573,219	3,976,224	1 to 10,400
United States.....	4,126	12,386,952	31,148,047	1 to 7,549
Totals.....	6,659	18,741,360		

—which, being interpreted to the Washburnian comprehension, means that in Continental Europe, where the telegraphs are built and operated by monarchs as arms of the civil administration, there are but 4,347 offices among a population of over 250,000,000—only one office to every 60,249 people; while in the United States, where telegraphy has been a free business to everybody, and has been wholly developed as a private enterprise, there are 4,126 offices in a population of 31,000,000—a convenient office to every 7,549 inhabitants. These facts ought to be conclusive. But again: the extent of miles and wires belonging to a single American company, the Western Union Telegraph, is more than twice that of the government of France, three times that of Prussia, and equals the combined systems of Belgium, France, Switzerland, Austria, Prussia, Spain, Italy, and the lesser German States all put together. Once again: The Western Union Telegraph in one year, 1868, added more than 5,000 miles of wires to its lines—a single item of its resources equal to the entire telegraph system of Belgium. More: In Belgium, one message is sent to every seventh person; in Great Britain, one to every fifth person; in the United States, one to every two and a half persons. The proportion of telegrams to letters in Great Britain is 1 to 121; in Switzerland, 1 to 69; in Belgium, 1 to 37; in the United States, 1 to 22. There cannot be a doubt, except in the "Washburne family," that the people of the United States are more abundantly provided with telegraphic facilities, and use the telegraph to a greater extent than any other people on the earth. What excuse, therefore, can be found for the scheme to shove the government into the business of telegraphing, unless it is to vastly multiply Federal offices to be filled by General Grant's appointments?

The question of the comparative cheapness of governmental and of popular telegraphy, raised by Washburne, can be settled in like summary fashion. The total number of telegrams transmitted in Europe in one year, 1866, was 18,683,000, costing \$15,286,500. Their average cost was 81 5-6 cents. The Western Union Telegraph Company alone, in 1867, transmitted 10,067,768 messages, at a cost to the public of \$5,728,000. Their average cost was 57 cents. In 1866 the Western Union Company furnished the press of the United States with 14,751,181 news messages, at a cost to the proprietors of the papers of \$521,509, or three and a half cents a telegram! That quantity of news delivered to the press alone for \$521,509 was greater than the entire telegraphic correspondence of Continental Europe in the same year, for which the arbitrary and meddlesome governments charged their subjects \$11,507,632. We have before us a list of sixty of the principal telegraph stations in Europe and the same number in the United States, with the tariffs of charges and the distances in air-lines from London and New York, respectively, from which it appears

that the rates from London average more than twice as much for the same distance as those from New York.

But what need is there to accumulate facts of this character? The above should be conclusive. They demonstrate that there is no necessity for, and no justification of, the addition of a governmental system of telegraphy to the wholly sufficient system we now enjoy. The scheme to annex the telegraph to the post-office, which Mr. Washburne is working to engineer through Congress, can have no other practical result than immediately to increase the public expenditures, to add to the oppressive burden of our taxes, to multiply offices to be filled with partisans, and in the end to break down all private lines, and finally to greatly increase the cost of transmitting messages; for the majority of the people—who do yet not use the telegraph, but find the mails sufficient for their wants—would not stand a system of telegraphing for the benefit of the minority which annually presented a deficit of income as compared with expenditure, and drew upon the common treasury for the deficiency.

We protest, in the name of our over-taxed and over-governed people, against this mischievous and wasteful scheme. The publishers and readers of newspapers have a special interest in defeating it. Washburne's bill provides for a general tariff of one cent a word on his government lines, with an additional charge of three cents for delivery, and stipulates that a reduction of not more than 50 per cent. shall be made for press reports. This rate would increase the average cost of news for the press of the United States more than 300 per cent., and would compel the newspapers to submit to a tax of a million dollars a year for the privileges they now enjoy. Of course, there would have to be a corresponding increase in the price of papers and the charges for advertising, or a compensating diminution of the quantity of news received by telegraph. In either way, the public would be largely the losers.

[From the Brooklyn Union.]

The Government and Telegraphs.

It does not follow that because some Governments have taken the telegraph lines under their control, that of the United States should do likewise. The Governments which we are urged to follow into the telegraph business are "paternal." It is their pride that they take care of their people; that they restrain them from going on too rashly, lift them up when they fall, and give them employment on Government works projected for the purpose when they find them out of work. The Government of the United States does nothing of the kind. It is not paternal. It is based on the presumed capacity of the people to attend to their own affairs and take care of themselves. It regards itself as the agent of the people, to attend to the general affairs which it is commissioned to attend to, and to no others.

The telegraphic business does not come under its commission.

Some imagine that the management of telegraphs by the Government may be legitimised by analogy with its management of the Post Office Department. Not so. The Constitution gives the control of the Post Office to Congress. It says nothing about telegraphs. If the Post Office system had been organized with its ramifications extending as now to every hamlet in the country, and all by private enterprise, as the telegraphs are now, at the time of the adoption of the Constitution, that would have said nothing about post offices. There were no post offices or mail routes then; there was no one but the Government to establish them, and no prospects of there being any one but the Government to do it, for a generation. The people were suffering for the want of them, and the Government was very properly directed to establish them. We have telegraph lines, all that will pay, convenient enough to all settled neighborhoods, and better managed than the Government will ever manage them. It will be folly to transfer them to the Government.

If any fancy that greater responsibility will be obtained by Government control, let them remember when they have a valuable package to send, they forward it, for the sake of safety, by a private express company, rather than by the Government Post Office.

If they think that economy will be subserved, they may remember that while it is the interest of private manage-

ment to be economical, Government management is notoriously extravagant and profligate. While the Post Office Department fails to meet its expenses, the private carriers of mails, whether for the Government or for persons, make large profits. The Government is obliged to affix heavy penalties to independent carriage of the mails, in order to prevent express companies and private parties coming up and taking the Post Office business from it. Even if the Government should manage to reduce the rates to the senders of messages, the difference would be more than made up for in the taxation necessary to supply the deficiencies in the Telegraph Department, as the people have now to supply the deficiencies of the Post Office Department.

If it is thought that new lines are wanted, which the Government will build and private parties will not, it must be thought on the other side that if they will pay, private parties will build them, and if they will not pay, the Government cannot afford to build them.

If the object of the new plan be to do away with a monopoly, that object can be as effectually and more cheaply accomplished by the enactment of a free telegraph bill, giving to any company the right to construct telegraphs where it will upon complying with proper conditions and raising enough money. This will develop legitimate competition and keep prices within bounds.

For the Government to assume control of the telegraphs will be for it to take upon it what does not belong to it, what it cannot manage economically and properly, what will be a source of expense to it, and what will prove a fruitful source of corruption, and entail upon it an army of jobbers and corruptionists, who will grow and fatten upon it as long as it holds on to the telegraphs, or rather so long as they hold on to it, for they will prove a veritable old man of the sea.

Telegraph Suit Decided.

CHICAGO, January 6.—The Chancery branch of the Supreme Court case affecting the interests of rival telegraph companies, was decided yesterday by Judge Jameson. The questions of the right to use the poles originally erected by the Great Eastern Railroad Company was involved. It was moved in the Court to tear down the wires of the rival companies, but the Court decided only the personal quarrel. The injunction is dissolved, and no injury accrues to either of the companies.

The Electric Light.

We had occasion to refer to this light at the time of its exhibition on board of the French steamer *St. Laurent* last October, and recur to it again with great pleasure, as it appears that for the purpose of signals in time of fogs, for the use of ships at sea, and for our lighthouses, nothing equal to it has been invented. The principle of induction, upon which our physicists have been at work since its discovery by Faraday in 1830, is now pretty thoroughly understood, and it is high time that a cheap, convenient, and practical magneto-electric machine was invented.

The French machine was sufficiently perfect to be used on the voyage at a trifling expense. It was called the Berlioz electric light, and was, in fact, a modification of the apparatus invented by Clarke. By revolving sixty-four reels of copper wire before forty series of horse-shoe magnets at the rate of three hundred turns a minute, a double current of electricity is induced in the copper wires, the one direct as they approach the poles, the other reversed after they have passed them. In this arrangement no device for breaking the current is required, as it is found that, though the current is interrupted at each reversion, the light is not perceptibly affected unless the interruption exceeds one-twentieth of a second. The apparatus was about five feet square, and required one or two horse power to drive it.

The light is produced by the combustion of two carbon pencils in a reflector. Very much depends upon the regularity with which these pencils are fed into

the flame, and this difficulty was overcome by the late eminent physicist Foucault. He invented a clock-work that runs five hours without winding, and feeds the carbon points exactly in the ratio of their combustion, and there is no interruption in the light.

Another important point is to render the rays of light parallel, so that none shall be lost. This is accomplished by a parabolic mirror placed behind the light, and the effect is further heightened by the use of the Fresnel lens. The power of the light obtained in this way is something remarkable. To produce the same amount of light with an oil-flame, the size of the flame must be two thousand times as large as that of the electric light. The French company claimed that the light was equal to that of sixteen hundred candles, and yet that its cost was only about twelve cents an hour.

The effect of such a concentration of light is similar to the heat effects of the oxyhydrogen blow-pipe; nothing but the most opaque substances can resist it. It penetrates the densest fog, and casts its rays for miles. A gentleman residing two miles from where the *St. Laurent* was lying happened to be on the piazza of his house when the reflector was turned upon it, and he was able to read a book with perfect facility. If our ferry boats carried such a reflector, the pilots could see across the river in the darkest night, and, by moving the apparatus, could sweep the whole horizon, and avoid all danger of collision. While this concentration of light at one point, thence to be thrown by powerful lenses to great distances, is the best possible arrangement for signalling and piercing for fogs, it is not so good where more diffused light is required, and hence the electric light, as well as the oxyhydrogen light, have not been so successful for public buildings as they have been in streets or squares where light is required only to illuminate a certain path. Concentration is wanted for signals, and diffusion for general lighting purposes. It is possible that some of the difficulty could be overcome by a different arrangement of the burners, but, as at present applied, the want of diffusion is a very serious drawback.

The Pacific Telegraph.

LETTER FROM FERRY M'D. COLLINS.

WILLARD'S HOTEL,
WASHINGTON, JANUARY 2, 1869.

To the Editors of the *Evening Post*:

In your journal of December 26 you publish an article headed "A Pacific Telegraph," in which the "Collins Overland Line" is referred to. As the question of a "Pacific Telegraph" is one which the *Evening Post* has always taken a lively interest in, I desire, through your columns, to state very briefly its present status. That the overland route, or rather that portion left unfinished by the Western Union Company, has been abandoned, is true, but the general proposition of connecting our Pacific coast with Asia has not for a moment been abandoned by me.

Under the grants to myself by Russia, Great Britain, British Columbia, and the United States, more than one-half of the overland line and its connections has been constructed. First, on the American side up to within 260 miles of Sitka, in Russian America; and secondly, on the Asiatic side continuously, except one section on the Amour River, for the construction of which all the materials are now on the ground, on to Europe, across the whole of Asia.

The break in the line, as it may be stated now, exists between a point on Simpson's River, 260 miles southeasterly of Sitka, to a point (Poseyet) on the Asiatic coast, 42° N. L., 134° E. L. from Greenwich, a distance of but about 2,700 miles by way of the Aleutian and Kurile Islands, along which it is now proposed to construct this last link, which will give us a continuous telegraph around the globe.

From Hakodadi, in Northern Japan, it is proposed, in the present plan, to lay cables to Nagasaki and Yokohama, and from Nagasaki to Shanghai, thus uniting China and Japan in the telegraphic system; the distance from Hakodadi to Shanghai, by way of Nagasaki, is about 1,100 miles.

The whole plan is now before Congress, and would have been acted upon at the last session but for the delay in the settlement of the purchase of Russian America.

The route indicated in the article referred to is much longer than the route determined upon in my plan; on the route by way of the islands of the North Pacific there need be no section of greater length than five hundred miles, and that section, if advisable, can be reduced by touching at Kamschatka.

The approaching completion of the Pacific Railroad, and our steamers plying between San Francisco, Japan and China, give us the solution of the Pacific Telegraph; for who can believe that commerce, considerations of national necessities, and American enterprise, will much longer hesitate to provide the chief agent in subjecting the vast commerce of Asia to our rule. With the telegraph completed from our Pacific coast so as to unite with the Russian system overland to India and Europe, connecting Japan and China with San Francisco, we at once divert and direct the whole tide of Asiatic commerce from the West to the East.

With this telegraph London would have to communicate through New York and San Francisco, in order to conduct the commerce of Europe with Japan and China. The ideas, the monetary exchanges, and the daily wants of that vast commerce would become so engrafted upon our own commerce and people, that in the future we would not only command but control the European trade of the East, and reap therefrom what by position and progress is our legitimate right.

Very truly your obedient servant,

P. McD. COLLINS.

A Clincher.

M. H. WASHBURN TURNED AGAINST HIMSELF.

EDITOR JOURNAL OF THE TELEGRAPH:

DEAR SIR: In reading the bill proposed by Mr. Washburne in May last for the construction of a Government Telegraph line from Washington to New York, which was referred to the Committee on Post Offices and Post Roads, I perceive that Mr. Washburne bases his calculations, not on the practical workings of the telegraph, but upon figures. He estimates that 2,000 words can be transmitted each hour by a single operator, and that he can work ten hours a day, thus making 20,000 words a day's work for each operator, and upon this estimate Washburne proposes to meet the deficiency in the Post-office department.

Without considering at this time the unconstitutionality of the bill, as such business was no more contemplated by the framers of our Constitution than the building of railroads, or opening stores for supplies; and without demonstrating, as we could easily do, the danger to our institutions of exposing all secret correspondence to the espionage of officials who might use their knowledge to retain their power, a danger which cannot exist under the present system, when all postal communications are under seal, and which it is unlawful for the postmaster to read; we will simply demonstrate the futility of Washburne's argument by facts taken from the Post Office itself.

It is well known that the postal system at present in operation is not only defective, and that letters are not delivered promptly, but that the Government loses money in carrying letters at three cents for each letter of half an ounce in weight. As the Government charges six cents an ounce for all letters and for all written communications, we will base our estimates

of the true expenses of the Post Office on the present established rates of postage, and prove to Mr. Washburne that the present deficiency in the Post Office is owing to the *excessive and outrageous profits made in carrying letters*, and that, as the business will increase with each reduction in rate, the true cure for the present evils is not to violate the Constitution and enter into business of which Government officers have no knowledge, but to reduce the present rate of postage to a *proper and just profit*.

Now it is well known that it is easier for a man to sort 2,000 letters an hour than to read and telegraph 2,000 words in the same time, especially as all telegrams are filed and numbered in telegraph offices. As Mr. Washburne estimates ten hours as a day's work, each man in the Post Office can sort 20,000 letters daily. Allowing a like time for distribution, a man can sort and distribute 10,000 letters a day, and if his services be valued at \$4 a day, the expense of sorting and distributing letters is *only one twenty-fifth part of a cent on each letter*. Now, supposing the letters to be only half an ounce each (which is the most unfavorable view to take of the matter in regard to profit, these letters would weigh 5,000 ounces, or about 313 lbs.—about one-seventh of a ton. As most letters are written to places within 200 miles of each other, we will, by way of caution against excessive estimates, estimate the average distance at 300 miles. Under our present system, the Government pays freight on letters, on the average, for that distance. At ten dollars a ton for freight for 300 miles, the railroad companies would not lose money, and most freight is carried at less than this rate. Supposing, now, the freight be estimated at double this rate, the Government would pay \$20 a ton for carrying letters for 300 miles. As it takes 64,000 letters to weigh a ton, the actual cost of transportation is 1-32d part of a cent for the freight of each letter. Now, adding the cost of sorting and distributing letters, 1-25th part of a cent, and the cost of freight 1-32d part of a cent, we find the expenses of the Post Office, *if properly managed, are less than one-tenth of a cent on each letter*. Now, at three cents postage on each letter—and much more than that for a large portion of the letters—we find that the Government should realize thirty times the cost of the service performed by it. But, instead of a profit, we find that the Government *loses money*, and Mr. Washburne proposes to make a department which ought to make *three thousand per cent. on its letters*, but loses money by its mismanagement and shameful contracts for mail service, make up its losses by entering into a business which has never afforded large profits under individual management, *even at rates fully treble those proposed by him*. If the Franklin line of telegraph, with a modest capital, cannot earn a dividend, at 40 cents a message, from New York to Washington, how can the Post Office make money at one-third of this price? How can a department that loses money in a business affording 3,000 per cent. profit, make money in a losing business?

The true secret of reform in the Post Office Department is to reduce the rates of postage to one cent a letter, which will afford a modest profit of 1,000 per cent., according to Mr. Washburne's own reasoning; thus we shall stimulate letter-writing, and place the facilities of the Post Office within the reach of a very large class of our citizens, to whom each cent is needful to eke out their necessary expenses. Let us try this course first, and keep the clerks in the Post Office fully employed, and not violate the spirit of our Constitution in miserable experiments, and squander the public money in an undertaking in which individuals dare not venture their own.

J. R. H.

THE more merit a man has, the more does he applaud it in others.

A Big Thing.

A few days before the banquet given to Prof. Morse, a gentleman on Wall street, desirous of procuring a ticket, sent to the Secretary of the Banquet Committee to purchase one, giving the messenger twenty dollars for that purpose.

The messenger was a fat, rubicund lad, with a bloom on his cheeks and a sparkle in his eye which a Broadway belle might envy, but he was sublimely ignorant of the Delmonican charges for refreshments, which sometimes stagger banqueteers at that palatial resort of men and women of long purses and dainty appetites. So when "Bob" presented himself for a dinner ticket, he expected to bear back with him a heap of change, and was much surprised at the delay of the secretary in changing his twenty-dollar bill, which his eyes followed scrutinizingly to the drawer where it was deposited.

"Ain't you goin' to give me no change back," at last inquired Bob, as a cloud, half anger, half astonishment, circled round his very open eyes, and the ruby of his cheeks grew deeper.

"Oh, no! my lad," replied the official; "the tickets are twenty dollars each. It is all right."

It took at least thirty full seconds before Bob could believe that he had heard aright, and that it was at all possible that any dinner given to mortal man could command such a price. During these thirty seconds Bob's breath went and came, and his eyes glistened the secretary as if he were the genteelst of all gentle thieves, and he, Bob, the victim of a very polite villainy.

"Twenty dollars for a dinner ticket!" at last he exclaimed in a voice between a sigh and a yell. "By golly, ain't that a big thing for old Morse?"

"What do you mean?" inquired the Secretary, kindling a little at the idea that the banquet was regarded as a speculation.

"Why, nothin'; only ain't old Morse goin' to make a big thing out o' that? It can't cost the old fellow more'n ten at the most, an' I should think it couldn't cost him more'n five. How many are going to be there?"

"About two hundred."

"Golly," exclaimed the now thoroughly excited Bob, after a brief pause, during which he was engaged in an earnest use of the multiplication table to arrive at the product of 200 times 20, "that's four thousand dollars! Jiminy! old Morse! make more'n two thousand out o' that dinner, won't he?"

The Secretary, of course, endeavored to set Bob right on the gastronomic speculation which had thus burst upon his bewildered vision, and tried to impress upon Bob's mind that Prof. Morse had nothing to do with the money for the tickets, and also explained to him the magnificence and costliness of the banquet for which the Delmonicos were to charge \$4,000. But the idea had evidently stuck, and the blue eyes and the cherry cheeks turned towards Wall street, reading "twenty dollars a ticket" on the Broadway mud, and up on the clock of old Trinity, and on the folds of the flag of Wells, Fargo & Co., and was fully persuaded that the easiest way of making money was by selling dinner tickets at twenty dollars a piece.

EDITOR JOURNAL OF THE TELEGRAPH:

The regular monthly meeting of the Elizabeth, N. J., Y. M. C. Association was held January 25. Several of the clergy and quite a large number of ladies were present. Mr. F. L. Pope, well known throughout the telegraphic community, read a very interesting essay on his travels in British North America while in the service of the Russo-American Telegraph Company. The essay was well received and complimented by several of the members present.

Another Happy Superintendent.

PRESENTATION TO COL. JAMES COLEMAN.

The telegraph office on South Court street, where business goes at all times with clock-like regularity and quietness, was the scene of a very pleasant affair on Christmas day, and mirth resounded above the ticking of the telegraph machines. The occasion was the presentation of a splendid and valuable gold watch, manufactured by the celebrated Nardin, costing over four hundred dollars, to Col. James Coleman, superintendent of the sixth district of the Western Union Telegraph Company, by the employees of the office and other friends.

At an early hour in the morning Col. Coleman, who had accepted an invitation to dine with a friend, received a message from John Van Horne, Esq., general superintendent at Louisville, to the effect that he apprehended that there was a conspiracy in the sixth district, and he wished Col. Coleman to be in the office at half-past three o'clock, that he might have an opportunity of "conversing" with him over the wires in regard to it. Col. Coleman was somewhat uneasy relative to the matter, which he could not understand, and he was promptly in attendance at the time mentioned, and notified the Louisville office of the fact. A reply was instantly received from Mr. Van Horne to the following effect: "The conspiracy has burst up and you are in the hands of the kuklux."

Major Will A. Woodson, agent for the Associated Press, then stepped forward and explained the riddle in the following terms:

"Colonel: For nearly eighteen hundred years a good old custom has existed of presenting on this day testimonials of appreciation and affection to those who have endeared themselves to us; and in behalf of the employees and others of your district, allow me to present you this watch, as a token of our esteem and regard for one in whom we have ever found all those qualities which men delight to honor. 'Take it, sir; and when you gaze upon its truthful face, as it 'checks off' the hours of time, rest assured that there will be no 'error sheets' sent back, and may it serve to recall the memories of those who have united in the offering." [Applause.]

He then handed the elegant watch on which was engraved inside the case the following inscription:

"Presented to Col. James Coleman, superintendent, by the employees and others of the sixth district of the Western Union Telegraph Company. Memphis, Tennessee, Christmas, 1868." The watch was manufactured by James Nardin & Co., is a full chronometer, very heavy cases, and cost four hundred dollars.

Colonel Coleman, who was visibly affected, responded as follows:

"In receiving this beautiful and substantial testimonial of regard from your hands, in behalf of your brother operators and co-laborers of the telegraphic fraternity of my district, taken so suddenly by surprise, I am unprepared to make the proper acknowledgments and give expression to my feelings in the manner in which this handsome honor conferred upon me deserves. But rest assured that I am not insensible to gratitude; and the feelings produced by this unexpected and generous act, on the part of my brothers of the mystic art, is deeply engraven upon the tablets of my heart; and it will always be a source of proud satisfaction and an evidence of the high esteem in which I am regarded by those with whom I am daily associated and who know me best. I cannot say I merit this marked distinction. We have labored together in the cause of our company and the public, and I congratulate myself that there is not a more faithful, competent and gallant corps of men in the service of any department of the telegraph than those in my employ. The public has intrusted you

with the most responsible and delicate duties, and in all of which you have performed your labors and discharged your duties with the most entire satisfaction. Our own relations have always been of the most genial character, and not an unpleasant sentiment has ever passed between us. The public owe you more than most of them are aware. After the toils of the day your labors do not cease. There is not a single night in the year, not even excepting the sacred Sabbath, but your duties summon most of you into the ranks of midnight toil, and while the man of trade and commerce and speculation enjoys the sweet comforts of his home fireside or the delights of repose, dreaming of brilliant speculations, large gains and future bright hopes, you are still at your post, faithful to the trust imposed upon you by him, transmitting to and fro, almost to the ends of the earth, his communications, while all are slumbering in the quietude of night. And yet there is no class of men so poorly rewarded, and whose labors are so little appreciated by the public as the telegrapher, simply because they are ignorant of the obligation they are under to him. You are the representatives of an honorable profession, and of a powerful company with a capital of more than \$40,000,000, and whose wires extend from the Atlantic to the Pacific, and from the lakes to the Gulf embracing a large territory. Still continue to serve your company and do your duty to the public faithfully, and I will always endeavor to promote your interests and welfare. I feel that on this occasion I have a double reason to rejoice—both for the honor conferred upon me by you, and that liberty has been restored to our unfortunate and distinguished citizens who have been so long banished from their native land. I tender again to you my sincere and grateful thanks for the beautiful and costly present; and although of much intrinsic value, the spirit in which it is given enhances its value far beyond price. The remembrance of this evidence of your esteem and friendship shall live forever in a faithful and sincere heart. It is sweet to feel that we have the love and confidence of our friends. I wish you, gentlemen, a most happy Christmas, and in the future many long and peaceful years, and that all the crosses of life will be only 'crosses' of the lines." [Applause.]

China and the Appliances of Modern Civilization.

[From the London Telegraph, Jan. 5.]

... Were China opened up by railways and spanned by telegraph wires it would, through force of habit, begin to lose its present dread of foreigners, and the danger of attacks on our countrymen would disappear. But many of those even who know China will scout such an idea as absurd. China, the most stubbornly antiquated of countries, echoing with the sound of the railway whistle! The notion might seem as preposterous as the plan of making a railway to the moon. Nevertheless, with all their hatred of foreigners, the Chinese have a keen eye to the main chances. Let them see that a thing is profitable, and, after hesitating for a time, they will use it. Show them that railways and telegraphs will pay, and in the course of a generation the Stephensons and the Wheatstones of the West will have effected a vast change in the Celestial land. Already, indeed, the appliances of modern civilization have done much to shorten the distance between the West and the East. Take one striking example of the fact. Kiakhta is a town on the border line between China and Asiatic Russia. A telegram sent from that town at half-past ten on Saturday morning last arrived at our Foreign Office on Sunday morning. Some time ago it was a boast that, by means of pony mails, letters could be sent from Pekin to Kiakhta in three weeks. But let a telegraph be constructed between that capital and

the frontier town, and London might communicate with Pekin in a single day. Thus our diplomatic agents in China could at once receive instructions direct from headquarters, and the risk of war between the two countries would be proportionately lessened. The great fact, however, is, that the telegraphic agency has at last made its way even into the remote, untraveled wilds of Central Asia, and that the most distant and most thinly peopled countries are obtaining the means of instantaneously communicating with the centres of civilization.

Indian Telegraph Rates.

The following official order has been issued:

"From the first of January next, the maximum rate of a message of twenty words from London to Calcutta, and vice versa, will be £2.17 (equal to about \$20). This tariff will apply to eight routes, as follows:

1. By Holland, Austro-Germanic Union, Turkey.
2. Belgium.
3. France.
4. France, Switzerland, Austria, Servia, Turkey.
5. France, Italy, Turkey.
6. Northern Germany, Russia, Persia.
7. Holland, Germanic Union, Russia, Persia.
8. Belgium, Northern Germany, Russia, Persia.

The fourth of the above routes will be especially utilized for Indian correspondence by a convention between the States concerned. The sixth is the promised line of Messrs. Siemens Brothers."

On the issue of this order the government of India issued the following:

"Notify to the press, and bring into operation on October 1, the following new telegraphic tariff for messages transmitted between any two telegraphic stations in India or British Burmah.

1. For every ten words of ordinary English language, one rupee.
2. For every ten words in foreign language, or words of concealed meaning, or in cypher, two rupees.
3. For repeating a message by order of the sender, twice the value of a single charge.
4. Railways and other private lines will charge precisely the same rates, and divide in equal shares the cost of messages passing over more than one line."

The Indo-European traffic has all along been in, to say the least, an unsatisfactory state as regards transmission of messages, and, if not radically remedied, will render reduced rates only productive of increased irregularity and injury.

The Telegraph Department of India has always been worked at a loss.—*Engineering.*

HERE is a veritable communication for the JOURNAL, which we give *verbatim et literalim*. Don't laugh.

EDITOR JOURNAL OF THE TELEGRAPH.

"The story what I am about to relate to not only to my Readers but to my Brother ops that they may be on their guard. I will begin. There is a young man on our line his private signature is 'A' and his call is 'Gd' and he was paying his attentions to a very nice young lady her first name was Emma and one day he popped the question to her to have him and my Readers what do you think she said she said my Boy you are most too young yet you will have to wait a little longer for me to decide that great question This is true for he told me himself 73 OPERATOR

PLEASE answer this question through the columns of your paper. After six o'clock, p. m., I often hear the phrase "Night message," after check of a message. What is it for, and what does it mean?

If you will answer I will be much obliged. Yours respectfully,

E. L. MAIZE,

Huntingdon, Pa.

Answer: "Night messages" are dispatches which the senders agree may be delivered the next morning, and be sent during the night. These messages are received at lower rates than the ordinary tariff.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, FEBRUARY 1, 1869.

The Argument.

During the past fortnight a sharp and exhaustive examination of the status of the American telegraph system, and the feasibility of attaching it to the Government as a part of the postal service of the nation, has been progressing before a Congressional committee at Washington. Some of the elements of this investigation have not been over pure. There has been brought into the examination of a subject of the deepest significance to our future, an amount of long-maturing and well-husbanded malice. Even the means taken to perfect the condition of telegraphic property by ascertaining its true condition under the most rigid tests, and under the manipulation of a skillful foreign engineer, for the purpose of immediate rectification, have been used to prove the still existing condition of all such property. All this proves the existence of a hostility inconsistent with the dignity of legislation, and yet is the sure proof to us that a project which has to resort to such aids, must be powerless in accomplishing its purpose. A false argument is either the offspring of a weak mind or of a false purpose.

The range of evidence, however, has been wide, voluminous, and interesting. The spread of information thus obtained will so reveal the telegraph system, its rapid spread throughout the world, especially in our own land, its efforts to adapt itself to all public and social necessities, the variety and sublimity of its mission, as to render it more than ever a recognized necessity of our advancing civilization. The logic of the facts presented by the telegraph companies has been sharp, overwhelming, unanswerable. Even with a somewhat extensive knowledge of the main arguments in this investigation, we have been surprised at the complete demonstration which the naked, unaided facts of the case has given. These evidences we will from time to time furnish our readers.

Aside, however, from all the figures which have been given, a deeper consideration has urged our resistance to all governmental interference with this and kindred enterprises. The centralizing desire, of which this movement is but an evidence, is the legitimate progeny of the late war. Power in the Government during that conflict was a necessity, and its use sharp, arbitrary, unsparring, was acquiesced in and demanded. But its display, even after war had ceased, dazzled and captivated the public mind. It was a transient worship of that which might easily have established a despotism which would have sucked the national blood from all its arteries, and made Washington not only the regulator but the absorber of enterprise. Nor was it to be expected that men which the war developed, patriotic enough, but instinctively enamored by foreign tour with the displays of imperial power, should at once lose the taste of the sweetness of dominion, and be content with the limits which universal peace point out as the safety of a healthy and free government. Yet in these very limits, especially as applied to the development of popular enterprises, are bound up the destinies of this great nation.

Herbert Spencer says: "While representative government is, by its intrinsic nature, better than any other for administering justice or insuring equitable relations of citizens to each other, it is, by its intrinsic nature, worse than any other for all the various additional functions which governments commonly undertake. To the ques-

tion, 'What is representative government good for?' our reply was, 'It is good, especially good, good above all others, for doing the thing which a government *should* do. It is bad, especially bad, bad above all others, for doing the things which a government *should not* do.'

"To this truth we may add a correlative one. As fast as a government, by becoming representative, grows better fitted for maintaining the rights of citizens, it grows not only unfitted for other purposes, but dangerous for other purposes. In gaining adaptation for the essential functions of a government, it loses such adaptation as it had for other functions, not only because its complexity is a hindrance to administrative action, but also because, in discharging other functions, it must be mischievously influenced by class bias. So long as it is confined to the duty of preventing the aggressions of individuals on each other, and protecting the nation at large against external enemies, the wider its basis the better; for all men are similarly interested in the security of life, property, and freedom to exercise the faculties. But let it undertake to bring home positive benefits to citizens, or to interfere with any of the special relations between class and class, and there necessarily enters an incentive to injustice. Therefore do we say that *as fast as representation is extended, the sphere of government must be contracted.*"

These sentiments are our own. We believe in the old democratic motto, "That government is best which governs least." We protest against an interference with popular enterprise which must, in the nature of things, injure both government and people. Especially do we resist that which, if assented to, would be an admission that the purity of representative government is less dear to us than the mere cheapening of a commodity which must, by the pressure of public opinion, and the general relation of other values, sooner or later find its true status and limitation.

Ocean Telegraph Projects.

It is always obnoxious to object to a public undertaking which promises general advantage, and yet there are not unfrequently, questions of right and public propriety involved in the fairest and most philanthropic schemes, which claim consideration. There are many things puffed to apparent success by paid advertisements, which have in themselves merit, which as simple proposals challenge approval and support, yet, which may be so related to other considerations as to render them essentially vicious and full of harm.

Here, for example, is a company which asks permission to land a cable on the shores of the United States to connect directly with Europe. Connection with Europe is desirable, as are all plans to unite nations together in the strongest and friendliest bonds. It seems a surly thing to object, yet see how it places the American people. The company who thus asks permission to land a cable on our shores, has already secured a monopoly of the shores of France, so that a simple grant of the privilege of landing a cable on the American shore, is, in fact, the grant of a monopoly of cable communication between America and Europe. Are we ready for so one-sided a scheme as this? If grants are to be given to foreign organizations, let these, at least, be reciprocal. The grant given to Europe to connect with America, should be met with like grants to lay American wires on the shores of Europe. We suspect that our telegraphic philanthropists will find this a harder diplomatic feat than they are willing to admit.

There is another consideration which it is obnoxious to urge, however true in itself, and however fair as between man and man. Here is the Atlantic cable, which after immense labor and a heroism of hope and perseverance which has challenged the admiration of the world, has been successfully laid. Has this investment of brain, and courage, and money no claims upon public protection? Is the solution of the problem of sub-atlantic communication at such a cost to be rendered unremunerative by the schemes of foreign capitalists, or by an unjust public sentiment? We know how weak such an argument always appears. Nothing provokes a reader laugh. Yet there is a justice in even this. If the product of inventive genius secures from Government seventeen years of absolute protection to enable the inventor to obtain remuneration for his skill, why should not the courage and daring and

skill which has performed the largest service of the century, at immense cost, and at so great hazard, be equally protected? We may provoke a smile by the proposal, yet we make it in full view of all that it demands and means, that Europe and America grant to the existing cable company, under distinct requisitions as to its liberal management, the same protection which would be accorded to any inventor in any civilized country for the product of his brain. If this would not be justice, we would like to know why? If the inventor of a rat trap or a washing machine, or the concocter of some villainous pill is protected for seventeen years in his invention, however useful or devilish, why not protect that which the world acknowledges a blessing to mankind.

The circumstances connected with this enterprise render these views of public justice increasingly impressive. For nine years the land lines built to meet the cable paid no dividend, and were maintained at great expense. The Atlantic Cable Company up to this time has not divided more than nine per cent. Its annual income cannot now be stated as exceeding six per cent, regard being had to contingencies and provision for accidents. Common justice seems to demand that such protection be given to those who have invested so largely their means in this international enterprise as shall render their property of reasonable value, and induce the use of capital in other schemes of public utility.

One thing at least should be done, and must be, if right is to govern legislation. If any concession or privilege be granted to a new enterprise, which confers shore rights on a part or the whole of the American coast, the same privilege should be granted to the pioneer company upon whose experience these new enterprises are undertaken.

A Day of Rest.

The N. Y. Times, commenting on an article in *The Liberator*, which urges the Jews to transfer their Sabbath from the seventh to the first day of the week, forcibly says:

"Best being the great cardinal idea on which Sunday is based, it is and should be doubly prized by us overworked Americans. Already, the nerves and brains of our people are taxed beyond endurance. On every hand, we see frightful evidences of this in the increase of paralysis, insanity, attenuation, nerve disease in every form; we see our people, as they get into the harness of life, abandoning all relaxation and amusement, or plunging into it, if at all, in the excitements of wine, gaming, horse-racing, &c., &c.; and we see, as a matter of course, men and women wrecks at forty, or lying fast asleep under green bedclothes, their work and their lives but half done.

'Now whatever views men may have about the proper observance of this divine day, whether they advocate the practices of Catholic Rome, or Puritan Boston, all will admit that it ought to be a day of rest. We hold it to be a vital thing, a reviving and renewing of life, that all our people on this one day of seven—even if they do not go inside a church—lay aside the plow and the hammer, drop their buying and selling, shave and wash and dress themselves decently, walk about with their families, read their books or newspapers, and thus thoroughly change the drift of their thoughts as well as their occupations.

'We believe this is a vast benefit, inasmuch as it secures a relaxation of the tension of daily toil and speculation, even if it does nothing more; and we know that this rest of one day in seven is a most important fact in securing health to our people.'

[Note] We would be glad if it were possible to have every man and woman connected with the Telegraph in full enjoyment of an unbroken Sabbath. We know that there is a desire which we trust to see more executive manifest, to limit as much as possible the service of that day, by restricting the hours during which the offices are accessible to the public. The public interest and the claims of humanity seem to require that during some period of the Sabbath the telegraph be accessible. We ask that no man be needlessly employed on that day, and that the time of service to those on duty be as limited as possible.

Married.

On the 12th inst., at St. John's Church, Toledo, O., by the Rev. N. R. High, Rector, E. P. Wortman, Esq., operator of the Western Union Telegraph Company, to Miss M. J. Hazard, all of Toledo.

Opposition Lines.

Every now and again an interested inquirer drops in, who, after the opening civilities are over, introduces the subject of the telegraphic future, with an evident eye to the sanity or insanity of buying stock at current rates.

"Ain't this a good time to buy?" said an anxious-eyed man to us a few moments ago.

"Buy what?" was our innocent reply.

"Why, Western Union stock; don't you think it cheap at 36?"

"Yes, of course it is, it is really an investment drawing 11 per cent., and in a business which can scarcely fail to be permanent."

"But don't the opposition lines hurt you? They say they are doing a heavy business."

"Oh, bless you, no," we replied, blandly. "Opposition lines are useful things, they sweeten the temper of a great many people; they are a kind of safety valve for the grumblers, and act much like rough flannel on the skin in cold weather, they keep us alive, keep the blood up, you know."

"Ah, my friend," responded our less sanguine visitor, "but don't they bleed you badly? don't you think you ought to choke 'em off some way, and make a sure thing of it?"

"Tut, tut, tut," we replied paternally, "there is no need of choking; besides it is not orthodox, you know. The only way is to mind our business, get our tariffs all equalized, as we have been doing, grease the wires well, and, don't you see, our business increases every year?"

"Well," persisted our pertinacious visitor, "they must hurt you some any how, and I guess I'll wait and see before I buy."

"A very safe course, indeed," we replied, and which we commend to all doubters, "let every thing alone which is not like the moon, the only thing of the kind in the market. And don't forget, there's stars round the moon, and they may grow."

A little irritated at our frankness, our visitor drew up somewhat closer, and inquired very softly—

"Now, do you know what these fellows are doing, any how? If you do, tell me, won't you?"

"Certainly, certainly, here it is all plain as day, and we handed him the following statement, showing the receipts of the Atlantic and Pacific Telegraph Company to have been about 1½ per cent. of those of the Western Union Telegraph Company for 1868, and a balance, which, deducting dues, may be regarded as nil.

ATLANTIC AND PACIFIC TELEGRAPH COMPANY—REPORT FOR 1868.

RECEIPTS.

The amount of money received and due from all sources in the operating department, from January 1, 1868, to same date 1869, is..... \$106,891.20

EXPENSES.

Paid other lines.....	14,442.25
Office rents, salaries of operators, messengers, lights, fuel, etc.....	55,482.81
Construction (loss, etc.).....	4,225.69
Extra instruments, stationery and equipments.....	3,691.22
Salary of inspectors and expenses.....	2,324.47
Changing location, reconstruction and repairs.....	9,057.83
Extra battery.....	1,801.15
Bonus on rents.....	735.94
Taxes.....	2,167.38
General office expenses.....	5,242.41
Division superintendents and their line expenses.....	3,383.56
Office furniture and fixtures.....	1,859.92
Profit and loss.....	213.90
	\$104,628.53

Balance on hand..... \$1,262.67

"That looks as if they hadn't made much, eh?"

"Not very."

"Well, I reckon I'll buy 100 shares, any how," said our departing guest, and away he posted to Wall street to get his 100 shares, and is very gratified to see Western Union on the rise.

China Advancing.

The news from China shows that the old exclusive empire is advancing with the age. The Burlingame mission and the manner in which it has been received are producing the best effects upon the Chinese Government and people. Steam and the telegraph will do much more. It is surprising to see how the former exclusive regulations and intercourse with regard to foreigners are breaking down one by one. The Yang Chow affair has been settled satisfactorily, and the Chinese Government, under the liberal policy of Prince Kung, has proclaimed freedom of action and protection to foreign religious establishments, missionaries and travelers. Americans are working at the Chefoo gold mines as freely and as safely as they could in their own country. Evidently an extraordinary revolution is going on in China. Now is the time for our enterprising citizens to extend their inventions and trade with the empire, and for the East India Telegraph Company and the Pacific Telegraph Company to lay their cables to China and along its coasts. Looking at the liberal disposition of the Chinese Government, there appears no reason to doubt that concessions would be made for telegraphs in the interior if the concession already granted for a line along the coast to connect the principal cities and seaports were carried out. Now is the time for American enterprise to get a strong foothold in that rich and populous empire.

The aids asked to carry out the extension of the telegraph from our Pacific coast to India we hope will be speedily granted. We shall be glad if the year 1870 finds Asia and America bound by the same ligaments which now unite us to Europe. It would be a wondrous epoch in the world's history if on the 4th of July, 1870, or even 1871, Gov. Curtin should repeat his banquet oration in Yeddo, and in long isolated Japan tie the knot which would complete the girdling of the world.

Telegraph Beggars.

We have already noticed the project of Hall & Co., a firm hailing, we think, from Boston, to build a line of iron poles from Boston to Washington on which to erect a cable with numerous conductors, to enable them to do which they asked special governmental privileges. But we did not know until we read the following brief announcement that this modest firm had asked the favor of getting their material from Europe free, after getting foreign manufacturers to make their cables and machinery and supply them with all they needed, to the neglect and injury of our own workmen. To be sure nothing can be got without asking for it, and Hall & Co. may think that their virtuous enterprise may induce a suspension of the tariff in their favor, perhaps, even, that a national ship may be detached to transport their European poles and cables; but we think Major Tillotson, now that he has got through with the great Erie ball at Turner's, and seen all his fair guests—those "angels dropt from the sky" of which a juvenile Jenkins writes—safely home, will scarcely permit this to be done without a stout remonstrance. We beg to inform Messrs Hall & Co. that Major Tillotson is a man of many inches, and don't sleep long when the enemy is around. Yet we have no idea that any such absurd permit will be given for any such purpose.

"TELEGRAPHIC MATERIALS."

"Mr. Brooks presented a petition of Messrs. Tillotson & Co. against the petition of certain telegraph companies to import duty free all the materials necessary for the construction of telegraphs."

While we are thus speaking of Mr. Tillotson we can not avoid scissoring a paragraph out of the *Sun*, in which the aforementioned Jenkins describes with the most sublime enthusiasm the recent "Erie" banquet at Turner's Station:

"Among the gentlemen present, Mr. L. G. Tillotson figured most prominent. He was one of the prime movers of the affair, and was in his glory at the success of the entertainment. He was here, there and everywhere; now entertaining some beautiful partner with his peculiar grace; then entertaining a circle of 'auld acquaintances' whom he discovered present."

The December Statement.

We are sorry to be obliged to omit the usual official monthly statement of the business of the Western Union Telegraph Company, the accounts from some distant offices not having been received by the Auditor at the time we go to press, so as to permit its completion. We shall give it in our next. Meanwhile, we may say that the business was as good as the average of the previous months, indicating a healthy state of activity throughout the country.

Telegraphers' Mutual Life Insurance Association.

The following assessments reached us too late for acknowledgment in our last issue. We are glad to inform the association that the response to the last call has been prompt and general, only twelve of the whole number having failed to remit. Of these twelve, some have gone to distant parts of the country and could not be notified, while a very small number have defaulted without some good reason.

The association is to-day on a better basis than ever, and it is expected that upwards of a hundred new names will shortly be added, which will make its membership about 500:

W. J. Purdon,	D. H. Fitch,
Fred. C. Gay,	Geo. W. Lee,
Josiah A. Cure,	James A. Allan,
John H. Cochran,	John C. Sullivan,
H. L. Smith,	J. C. Hamley,
W. H. Allen,	N. H. Browne.

A Timely Book.

We are not a little pleased to know that in about one month from this date, a book, entitled "The Modern Practice of the Electric Telegraph," will be published. The author is Frank L. Pope, widely known as a clear-headed, practical, educated expert. He has devoted to the work great labor, has illustrated all his topics which were susceptible of it, by elegantly executed engravings or cuts, and has followed exhaustively, in his usually clear and succinct style, the whole of the practical telegraphic operations—the machinery, building, modes of testing and discovering faults, the care and use of batteries, and every practical point connected with the business which an operator or amateur desires or needs to know. We do not say too much when we claim an obviously existing necessity for just such a book, and we think we do not err in claiming for Mr. Pope abundant fitness for the task he has undertaken, a part of which has been placed for inspection in our hands.

The evident need of a manual so clear in its directions for the performance of telegraphic service, has induced the determination to issue, at once, a large edition, no doubt being entertained of a prompt and large demand. It should be in the hands of every operator, and no manager can afford to do without it. Its treatment of the modes of locating obstructions alone is worth more than the price of the book. Lines are now to be under more vigorous inspection than ever. The English regulations for testing are being applied here, and valuable machinery has been imported for carrying out a thorough use of the best modes for rendering our wires of maximum efficiency. This book will be a most valuable companion and guide, and has our cordial wishes for its success.

The price of the book will probably be \$1 25, and which we will furnish to all who desire it. To aid its circulation, we offer to send for five new subscribers, and a remittance of \$5, a copy of the "Modern Practice" free. As a digest of existing knowledge of the telegraph system, free from all technical mysteriousness, we urge an immediate order for so useful a book.

We are requested to direct the attention of every office to the Tariff Circulars issued semi-monthly, and to request that immediately on the reception of the JOURNAL the proper entries be made. There can be no uniformity unless this is faithfully and regularly done.

YOUNG AMERICA.—Who will not sympathise with the young gentleman of three years, "a child of freedom, whose home is with the setting sun!" His mother writes that mosquitoes and sand-burs are many in number and copious in size in her locality. One day her little man, while rambling out of doors, managed to get one of the before-mentioned burs inside the rear portion of his little pants. Running into the house, and holding the minute unmentionables as far as possible from the person, he cried out: "Oh, mamma, I's dot a skeetie bite in my—my—back room!"

Journal of the Telegraph.

The Electric Ball.

The telegraphers of this city gave their annual ball at Ferrero's Apollo Hall last evening. The ballroom was crowded with a most fashionable and select party. The electric ball is always one of the best given in this metropolis, and those who attend it never go away unsatisfied. All the directors, presidents, superintendents, operators, clerks and not a few of the old messenger boys were present enjoying themselves. The music was by Wallace, and consequently Offenbach had a good show in the dancing. Mr. William Orton, Dr. Green, Mr. McAlpine, Judge Palmer, General Lefferts, Mr. G. B. Prescott, Mr. John Horner, Mr. William Hunter, R. H. Rochester and a number of other leading telegraph men were present. Many of these gentlemen had their families with them and the whole arrangement was a happy and successful one; perhaps, the most enjoyable of any yet given. The party broke up at a seasonable hour, and next morning every man was at his post sober.

The following were the Committees:

RECEPTION COMMITTEE.

M. H. Redding, Chairman.

Waldo H. Collins,	John C. Stewart,
Walter O. Lewis,	M. S. Roberts,
Joseph L. Edwards,	Thomas T. Dennis,
Alfred S. Downer,	William H. Clarke,

Robert M. Mattocks.

FLOOR COMMITTEE.

John B. Oltman, Director.

Martin K. Tompson,	A. H. Watson,
Horace C. Fardon,	Jos. W. Burnham,
W. C. Chapman,	Edward Gordon,
Geo. W. Roberts,	Harry P. Jones,
Geo. K. Walcott,	Jere. G. Case,
Thomas Brennan,	John McKeachie,

Frederick C. Gay.

MANAGERS.

Waldo H. Collins,	M. H. Redding,
John B. Oltman,	Martin K. Tompson,
	John C. Stewart.

Delaware Asserts Her Authority over Telegraph Cables Landed on Her Shores.

WILMINGTON, Jan. 27, 1869.

The State Legislature has adopted a joint resolution declaring the authority of the State over the landing of ocean telegraph cables on its shores, alleging that the Atlantic coast of Delaware is peculiarly favorable for the landing of the French cable, and appointing J. P. Comegys a commissioner to confer with the company forming that enterprise.

The Postal Committee has notified parties interested pro and con that all debate on the Postal Telegraph must end on Tuesday next, when the Committee will give it a final hearing.

The French Cable.

WASHINGTON, Jan. 28, 1869.

The French trans-Atlantic Cable Company will ask to be heard to-day through counsel against the adoption by the Senate Committee on Foreign Relations of the resolution referred to that Committee, which requires the consent of Congress before any foreign sub-marine cable can be landed in the United States.

They propose to lay their cable the coming summer, and declare that the present resolution is in the interest of the Newfoundland and Valencia line.

The first instalment of the French cable—125 miles in length—which will be stowed in the fore tank of the Great Eastern, has arrived at Sheerness in the hulk Iris. The testing-room for the use of the electricians is to be placed on the upper deck, and its construction is in a forward state. A sufficient length of the core of the cable (to be used for testing purposes) has been supplied on board, and workmen are busily engaged fixing it ready for connection with the instruments.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York.
FEBRUARY 1, 1869.

To all Offices on W. U. Lines:

The following changes have occurred since January 15, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Carroll, O., tariff same as Columbus, O.
Canal Winchester, O., tariff same as Columbus, O.
Sandy Hook, Md., tariff same as Harper's Ferry, W. Va.
West Point, Ark., tariff same as Augusta, Ark.

Clearfield, Pa., }
Phillipsburg, Pa., } Tariff as follows: Offices between Erie and Scranton on the Philadelphia and Erie, and Lackawanna and Bloomsburg Railroads will add 40c. to their rate to Lock Haven, Pa. Offices between Pittsburgh and Philadelphia on Pennsylvania Railroad same as to Bellefonte, Pa. All other offices will add 50 cents to their rate to Harrisburgh and Pittsburgh, or 60 cents to their rate to Philadelphia—taking the lowest rate. Offices having "Special Sheet A" will use reduced rate to Harrisburgh, Pittsburgh and Philadelphia in computing rate to Clearfield and Phillipsburg, Pa.

OFFICES CLOSED.

Berlin, Md., Harper's Ferry, W. Va. Business for Harper's Ferry will hereafter be checked to and delivered from Sandy Hook, Md.

GENERAL INFORMATION.

On and after February 1, the charge from London to Spain will be (20 words) - - - - - \$1 75
Portugal and Italy, (20 words) - - - - - 2 00
For each 10 or fraction of 10 words beyond the first 20,
- - - - - One-half rate.

Explanation has been asked as to what is meant by "sending by cheapest route," or "taking lowest rate."

We explain by taking, for example, the directions given above for finding tariff to Clearfield and Phillipsburg, Pa., and supposing your rate to Harrisburgh to be 50 cents, to Pittsburgh 40 cents and Philadelphia 60 cents. The rates given for Clearfield and Phillipsburg are 50 from Harrisburgh, 50 from Pittsburgh and 60 from Philadelphia. Adding these to your rates we have 90 cents via Pittsburgh, 100 via Harrisburgh and 120 via Philadelphia. The rate taken will be 90 cents, it being the "lowest rate" or the rate showing "cheapest route."

The tariff to Madison, Wis., is given in JOURNAL of October 1, 1868, as 50 and 3 from Milwaukee; it should be 40 and 3.

Becancour, Ont., in list of Montreal line offices in JOURNAL of January 1, should read Becancour, Que., and Willeley, Mass., in same JOURNAL, Wellealey. Phillips, Mo., in JOURNAL of January 1, should read Phelps, Mo., and Alden Creek, N. Y., in last JOURNAL should read Alder Creek, N. Y.

WILLIAM ORTON, President.

Banquet Letters.

OMITTED IN OUR LAST NUMBER.

2 PARK STREET, Boston, Dec. 24, 1868.

Messrs. C. W. FIELD and WM. ORTON:

GENTLEMEN—I have had the honor to receive your invitation to be present at a banquet to be given to Prof. S. F. B. Morse, LL.D., on Tuesday evening the 29th inst., and I deeply regret that my engagements make it absolutely impossible for me to enjoy the pleasure of being present on so interesting an occasion.

It will be impossible for me to say any thing new on the great subject of telegraphy—the leading marvel in an age of marvels, and I shall not attempt to do so. Certainly it is conspicuous among those great agencies and institutions of our times which have so contributed to the advancement of humanity, and which have rendered Republican Government on a wide scale, not only perfectly easy and simple in its workings, but almost indispensable to highly civilized states in the future.

Nothing would give me greater pleasure than to assist in doing honor to one who has been so foremost and distinguished in this great science as Professor Morse, and I must, therefore, beg you to accept the expressions of the deep regret which I feel at my inability to attend, and of my sincere thanks for the honor of your invitation.

With great regard and respect,

Pray believe me very truly yours.

J. L. MORSE.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 4, 1868.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES.

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER.

by the use of this Instrument, is rendered practically self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE.

so that a duplicate of any portion can be furnished at any time. The ordinary resistance of this Relay is equal to about Twenty five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

Mr. Gerrit Smith, chief operator on the Eastern wires in the Western Union office, 145 Broadway, New York City, makes the following statement in regard to this instrument:

"As far as I have been able to notice the working of Mr. Charles Durant's Relay, which has been experimented with in this office for several weeks past, I have no hesitation in pronouncing it every respect fully equal to the claims of its inventor. 'A Self-adjuster.'"

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Dec. 16, 1868. Address all orders to

CHARLES DURANT,
Office and Factory 36 Nassau Street,
New York City.

Telegraph Lines.

BY R. W. O'BRIEN.

You may talk of discoveries new,
Improvements, inventions and skill,
How potent a compound is formed
Of number one brains and a will;
Of your steamers, abounding in life—
Resisting both tempest and squall—
Of your railroads—and other roads, too—
But the telegraph masters them all!

What though your prow cuts the waves,
Unaided by oar or by sails;
What though the iron horse flies,
With an arrow-like speed o'er the rails;
The monarch of steam is surpassed—
Is distanced in all his designs—
And even the iron horse, too,
Is checked by the magical lines!

They stretch over Asia's dominions,
O'er Africa's desolate sands,
And Europe has "line upon line"
Throughout all her populous lands;
From the rock-tow'ring cliffs of Gibraltar
To the shore where the Arctic surge rolls—
Not even the Czar can prohibit
This continual rising of poles!

How the cynical scoffed at the cable,
And thought it a joke mighty rare,
To call it a Yankee contrivance
Because 'twas AN OCEAN affair;
But now, with the continents talking
'Neath miles of tempestuous brine,
We'll tell them this great correspondence,
Resulted from "dropping a line!"

Then success to the knights of the magnet,
The heroes of spark and of click,
The only known persons who prosper
Transacting a business "on tick!"
Here's the motto inscribed on their banner,
Which now to the air is unfurled:
"Our lines have gone out through the earth
And our words to the ends of the world!"

Sound Telegraphs.

EDITOR JOURNAL OF THE TELEGRAPH:

JANUARY 22, 1869.

The article entitled "Still another Telegraph," in your number of the 15th inst., reminds me of an old idea of mine, regarding the manner in which speaking tubes may be very much improved, as their genuine merit deserves they should be. In the present way of arranging the tubes, it is seldom that more than two openings or mouthpieces are placed on the same length of pipe; and this is necessarily so, for if there were more, the puff which proceeds from the sending station would sound the whistle, and thus draw the attention of all of the other stations to what concerns but one. To be sure, this is avoided by agreeing upon a code of whistles, but the additional skill and harsh noises thus necessitated are by no means desirable in any place, and decidedly objectionable in counting houses, salesrooms and the like.

I would propose a single main tube running perpendicularly from the principal station to the top of the building, each floor having a branch tube entering through the rooms, with mouthpieces attached as desired. At each speaking place, answering in *lingua telegraphica*, to "office," to be placed an ordinary Morse sounder; or in situations where greater elegance of tone is desirable, a small electro-magnet gong. The instruments to be connected by wire and worked by the proper amount of battery; their use would be, to call the attention of the party needed, and do away with the horrible shrieks of the whistles, while in being unlimited in number, they would possess a sterling advantage over the whistles; which can not be multiplied indefinitely, or even indeed to any considerable extent.

By an arrangement of valves, which will at once indicate itself to the reader, the party who is called,

knowing who wants to speak to him, may close all the various openings in the tube between them, forming, as it were, but a single tube, and leaving all the rest of the unoccupied pipe to be used if needed by other stations beyond; while at the same time he shortens the tube, and renders the talking easier and plainer.

To those who have never thought of the matter, a proposition such as this may seem of small importance, but having seen evidences of the difficulties experienced and expenses attendant upon attempts to secure efficient communication between the various parts of large buildings, I am by no means willing to so admit it. I have in my mind one of the largest mechanical establishments in the country, where it was endeavored to connect the headquarters of the different foremen with the drawing office, by means of an electric telegraph, using the Morse register; and I have also in my mind the disastrous and expensive failure which a little thought might have predicted. The advantage of tubes for rapid and efficient communication are too plain to need demonstration, but the difficulties of connecting properly the extreme portions of an extensive edifice, without an undue multiplication of tubes, have been unsurmountable. With the system proposed, I am vain enough to think, these difficulties vanish; and as no trouble whatever may be expected from distances (Biot having found it possible to converse in a low voice, with a friend 3,120 feet distant, through empty water pipes in Paris), I have hopes of its adoption, and should be happy to elaborate my plan to any one desiring it.

I am quite sure, however, that no danger to the electric telegraph may be expected from the sound telegraph of Mr. Vaughan of London, which, indeed, unless it be arranged very differently from the manner stated, will meet with no success at all. "Wires free from insulation, whether conveyed beneath the earth or under water," will not transmit sound to any distance, for the precise reason that an electric wire would fail in such cases, the leaking of the vibrations from the conductor. Sound is nothing but a series of pulsations or waves which make themselves sensible to us by their impact upon the tympanic membrane of the ear, and then by an exquisitely beautiful arrangement to the brain. The waves having to traverse greater or less distances, according to the density of the medium through which they proceed, we are prepared to understand that sound will travel fastest in densest bodies, and that its velocity in water is four times, and in iron about seventeen times its velocity in air. Although the sound to be transmitted though the wires would lose but little of its intensity, by escape to the rarer atmosphere, it would be altogether lost, in a comparatively short space, if the earth or water be substituted; while the same thing would result through the supports or poles, if strung through the air like our ordinary lines.

The transference of sound, and its reappearance at a distance, was illustrated by Sir Chas. Wheatstone, by what is probably the most beautiful illustration at the means of the lecturer on this part of science. Resting upon the sound board of a piano, placed in a room beneath that in which the lecture was delivered, was a wooden rod or pole, which, passing through without touching the floor, had on its upper end a thin wooden board or frame, similar in design to the sound board of the piano. Upon the piano being played by an operator, the sound, traveling through the rod, distributes itself to the thin board on its upper extremity, whose delicacy and larger surface enables it to transmit the musical notes to the air; and in this manner the most difficult and beautiful pieces of music may be made to sound from a wooden board. The effect being enhanced by the removal of the board, when the music ceases, to be renewed when the board is replaced. The cause of the cessation being the inadequacy of the rod, because of its small surface, to

set the air in motion. But, beside the escape, a sound can never compete with an electric telegraph, for the reason that sound moves too slowly. Through the air sound is propagated, the temperature of the air being 32° Fahr., but 1,092 feet per second; through iron wire at 68° Fahr., 16,130 feet; and through copper wire, at the same temperature, but 11,666 feet, while galvanic electricity is speeded with a velocity of from, probably, 30,000 to 50,000 miles in the same time. To send a single sound from New York to Philadelphia, would thus require half a minute, and proportionately with greater distances, electricity being, to all practical purposes, instantaneous.

It is impossible to substitute for electricity any other physical force than light, which being probably but a different sort of motion in the ether than electricity, is the only one save gravity comparable with it in velocity.

Respectfully,

A TELEGRAPHER.

Self-Closing Key.

Here is another device for insuring the closing of keys, which is worthy of attention. The use of the foot is natural and easy, while the hand is left at entire liberty. It came to us accompanied by the following note:

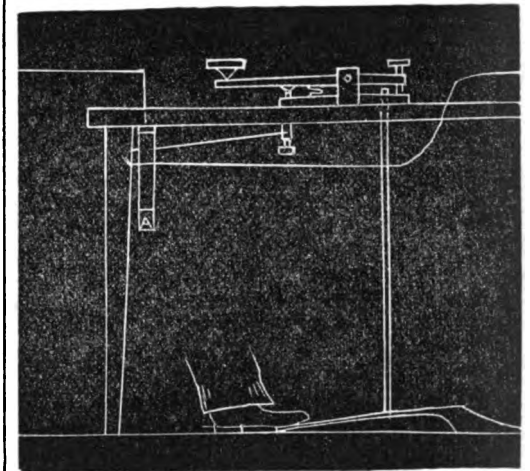
HUNTINGDON, Carroll County, Tenn.

DEAR SIR—I enclose you a rough sketch of key-closer which I have used for some time and find to answer the purpose very well. Also, a ground wire which has never given me any trouble. The cost of the attachment is nothing but the time and trouble, as any operator with an ordinary amount of ingenuity can put it in himself in a few minutes.

I do not write under the impression that I have discovered the "North Pole" or a "Mare's Nest," but because requested by several old operators who expressed themselves pleased with its working qualities.

Yours, respectfully,

F. O. HARRIS.



The sketch needs no description. A rod is connected with a spring treadle, which, when depressed by the foot, keeps the key open. When the foot is removed the rod bears against the back end of the key and closes it. Nothing can be simpler. The device for a ground wire we are not so sure of. A is a drop covered with tin, hinged at the top and the wire made to pass on either side. To this a ground wire is attached and connection is made by the pressure of the knee. This part of the device looks like an aid to laziness. The other is good.

A music dealer in Nashville, Tenn., transmits music from the top floor of his new building to his store by means of wire—music by telegraph. He expects to locate a string band in his store, and, by telegraphic means, play there for the accommodation of balls which may take place in any of the country towns. What won't people try to do by telegraph?

The Cooper Union—Telegraph School for Women.**RULES AND REGULATIONS FOR ITS GOVERNMENT.**

The term commences on the 15th day of February and ends on the 1st day of July, 1869.

Applications will be received during the month of February, and must be made in the handwriting of the applicant. Examinations for admission will take place on Fridays only at 11 A. M.

Applicants must be at least 17 years old, and not over 24. Satisfactory reference as to character is required before they can be admitted as pupils.

Any pupil absent three times without satisfactory excuse, forfeits her position in the school. Pupils absent from sufficient cause, and who wish to retain their position, should make such declaration in writing to the Manager, before three absences are recorded against them.

Pupils are not permitted to leave the school when in session, except by permission of the Manager.

Visitors to pupils will not be admitted except by special permission of the Manager. Visitors to the Institution will be admitted with a ticket from the Curator, on Fridays.

The school hours are from 9:30 A. M. to 3:30 P. M. Pupils must be particular to arrive on time, as they will not be admitted after the opening hour, except in special cases by permission of the Manager, who will report the circumstances.

Pupils wanting in diligence, or whose deportment is exceptional, or who are proved not to be adapted for the business, will not be retained in the School.

Pupils are not required to pay any entrance fee, and the instruction is gratuitous.

As only a limited number of pupils can be admitted to the school, preference will be given to those who by education and physical ability appear best qualified for the business.

Only pupils who are prepared to accept situations out of the City of New York as soon as they are qualified, can be admitted to the school.

ABRAM S. HEWITT, Secretary.

VINCENT COLYER, Curator.

WHITE HALL, Ill., December 20, 1868.

EDITOR JOURNAL OF THE TELEGRAPH:

Having a desire to know if a telegraph line extending round the world in one solid line without any ground connections will work with a single wire. A friend operator contends that it will work same as two wires as the circuit combined makes the circuit. I contend it is no more than one wire, and will not work unless connected with the earth. Please answer through the JOURNAL and omit my name.

Yours, OPERATOR.

NOTE.—We fear the enquiry above may afford some amusement among old heads, but we are too ignorant of many things ourselves to treat it with the least disrespect. We would ask our Whitehall friend what is the difference between a wire going to the outskirts of Whitehall and back again, and one going round the whole village? The world is only a large Whitehall, and a wire passing round it continuously will work just as well if the wire is large enough, and all the conditions of insulation and battery be given suitable for such a circuit, as if it went half round and returned by a second wire on the same poles.

Born.

At Boston, on the 12th inst., a daughter to H. S. Martin, Esq., night manager of the office of the Western Union Telegraph Co.

THE Senate Postal Committee will recommend some features of the Hubbard Postal Telegraph Bill, and the Committee of the House will report against them all.

New Lines to New Gold Regions.

We have received the following message dated
JACOB'S WELL, Nevada, February 8, 1869.

JOHN HORNER, New York:

Dispatches for Hamilton and Treasure City, White Pine District, direct via Jacob's Well. Tariff same as San Francisco. We will have lines completed in about six weeks. Meanwhile dispatches go by stage daily in about twelve hours. Mining excitement very great. Twenty or thirty thousand people will go there in the spring.

JAMES GAMBLE, Superintendent.

Telegraphers' Mutual Life Insurance Association.**ASSESSMENTS RECEIVED.**

W. H. Stanton, C. E. Higdon,
J. H. Purnell.

MR. POPE's book on "Modern Telegraphy" will be ready early in March.

SPECIAL NOTICE.

L. G. TILLOTSON & CO.,
11 DEY STREET, NEW YORK.

AND

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK.

General Agents for the sale of any articles manufactured by them
FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York. The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their:

SUBMARINE TELEGRAPH CABLES

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,
(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES.

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

BENEDIOT BROTHERS.

NO. 691 BROADWAY,

BETWEEN AMITY AND FOURTH STREETS,

JEWELERS,

KEEPERS OF THE CITY TIME,

FINE WATCHES, CHAINS, DIAMONDS.

AND

SOLID SILVER WARE.

AGENTS FOR THE AMERICAN WALTHAM WATCH.

Watches Repaired in the most thorough manner, and Warranted.

SPECIAL NOTICE.

Since the 1st of September a new and valuable improvement has been attached to all the Watches made by the American Waltham Watch Company, namely: Fogg's Patent Pinion, and also the Sprung Over Regulator.

We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

BENEDIOT BROTHERS,

Agents for the American Waltham Watch,
691 Broadway.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 8, 1868.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the platina point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

The following is an extract from a letter from Mr. Clarence Rathbone, operating city line Albany, N. Y. Referring to the "Nonpareil Relay," he says:

"The only opportunity I have had of trying your relay is on a short line in this city having twelve or thirteen offices. In wet weather with an ordinary instrument it is necessary to change adjustment for each office, but with your relay I have found it always adjusted."

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Dec. 15, 1868.

Goods sent to all parts of the Continent with bill C. O. D.

Parties remitting in advance by certified check, payable in New York, or by Post Office order, will save the expense of returning funds by express.

Address all orders to

CHARLES DURANT,
Office and Factory 86 Nassau Street,
New York City.

THE Emperor of Russia contemplates building a railroad from China across Asia to the capital of Russia, his purpose being to prevent the United States, with its railroads and steamers, from monopolizing the whole China trade. Agents of the Russian Emperor are now in the United States engaged in studying our railway system.

CHESTER, PARTRICK & CO.,

TELEGRAPHIC & ELECTRICAL ENGINEERS,

CONTRACTORS, &c.,

38 SOUTH FIFTH STREET,

PHILADELPHIA.

Manufacturers and Merchants of every variety of

TELEGRAPHIC, ELECTRIC AND PHILOSOPHICAL AP-

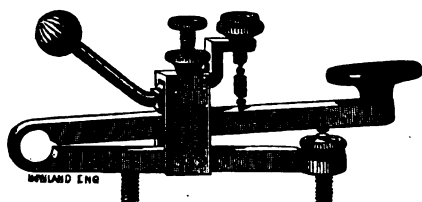
PARATUS, BATTERIES, WIRE, ACIDS, INSU-

LATORS, MEDICAL INSTRUMENTS,

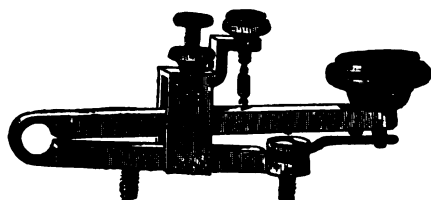
AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph, or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closer.



2.—Patent Self-closing anti-trunion Key.

3.—Kerite or (horn covered) copper or compound wire or cables.

4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

CHARLES WILLIAMS, JR.,

109 Court Street,

BOSTON, MASS.,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

BATTERIES,

AND MATERIALS OF ALL KINDS.

WM. KIDD,
A. BOODY.

C. H. PRIBOR,
C. S. OTIS.

KIDD, PRIBOR & Co.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,

NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission

S. S. STAFFORD'S

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WRITING AND COPYING FLUID,

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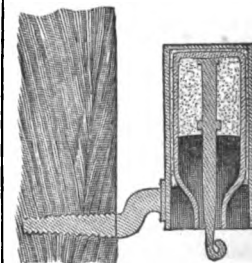
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20 cents	2 cents	265 cents	18 cents	520 cents	35 cents	775 cents	52 cents
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30 "		275 "		530 "		785 "	
35 "		280 "		535 "		790 "	
40 "	3 "	285 "	19 "	540 "	36 "	795 "	53 "
45 "		290 "		545 "		800 "	
50 "		295 "		550 "		805 "	
55 "		300 "		555 "		810 "	
60 "	4 "	305 "	20 "	560 "	37 "	815 "	54 "
65 "		310 "		565 "		820 "	
70 "		315 "		570 "		825 "	
75 "		320 "		575 "		830 "	
80 "	5 "	325 "	21 "	580 "	38 "	835 "	55 "
85 "		330 "		585 "		840 "	
90 "		335 "		590 "		845 "	
95 "		340 "		595 "		850 "	
100 "	6 "	345 "	22 "	600 "	39 "	855 "	56 "
105 "		350 "		605 "		860 "	
110 "		355 "		610 "		865 "	
115 "		360 "		615 "		870 "	
120 "	7 "	365 "	23 "	620 "	40 "	875 "	57 "
125 "		370 "		625 "		880 "	
130 "		375 "		630 "		885 "	
135 "		380 "		635 "		890 "	
140 "	8 "	385 "	24 "	640 "	41 "	895 "	58 "
145 "		390 "		645 "		900 "	
150 "		395 "		650 "		905 "	
155 "		400 "		655 "		910 "	
160 "	9 "	405 "	25 "	660 "	42 "	915 "	59 "
165 "		410 "		665 "		920 "	
170 "		415 "		670 "		925 "	
175 "		420 "		675 "		930 "	
180 "	10 "	425 "	26 "	680 "	43 "	935 "	60 "
185 "		430 "		685 "		940 "	
190 "		435 "		690 "		945 "	
195 "		440 "		695 "		950 "	
200 "	11 "	445 "	27 "	700 "	44 "	955 "	61 "
205 "		450 "		705 "		960 "	
210 "		455 "		710 "		965 "	
215 "		460 "		715 "		970 "	
220 "	12 "	465 "	28 "	720 "	45 "	975 "	62 "
225 "		470 "		725 "		980 "	
230 "		475 "		730 "		985 "	
235 "		480 "		735 "		990 "	
240 "	13 "	485 "	29 "	740 "	46 "	995 "	63 "
245 "		490 "		745 "		1000 "	
250 "		495 "		750 "			
255 "		500 "		755 "			
260 "	14 "	505 "	30 "	760 "	47 "		64 "
		510 "		765 "			
		515 "		770 "			
	15 "		31 "		48 "		65 "
	16 "		32 "		49 "		66 "
	17 "		33 "		50 "		67 "

WILLIAM ORTON, President.

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VOL. II, NO. 8.

NEW YORK, MARCH 15, 1869.

WHOLE NO. 33.

Schnitzerl's Philosope.

Herr Schnitzerl make a philosope
 Von of de newest kind ;
 It vent mitout a veel in front,
 And hadn't none behind,
 Von vheel was in de mittel, dough,
 And it vent as sure as ecks,
 For he shtraddled on de axel dree
 Mit der vheel petween his lecks.
 Und ven he vent to shtart id off
 He paddlet mit his veet,
 Und soon he cot to go so vast
 Dat avery dings he peat.
 He run her out on Broader shtreet,
 He shkeeted like de vind,
 Heil! how he bassed de vancy craps,
 And lef dem all pehind!

De vellers mit de trotting nags
 Pooled oop to see him bass ;
 De Deutchers all erstaunished saidt ;
 "Potztausend! Was ist das?"
 Boot vaster shtill der Schnitzerl flewed
 On—mit a gasthly smile.
 He tidn't tooch de dirt, py shings!
 Not vonce in half a mile.

Oh, vot ish all dis eartly plies?
 Oh, vot ish man's soockases?
 Oh, vot ish various kinds of dings?
 Und vot ish habbiness?
 Ve find a pank note in de shtreedt,
 Next dings der pank ish preak :
 Ve folle, und knocks our outsidies in,
 Ven ve a ten shtrike make.

So vas it mit der Schnitzerlein
 On his philosope ;
 His feet both shlippped outsideward shoost
 Vhen at his extra shpede,
 He felled oopon der vheel of coorse ;
 De vheel like blitzen flew ;
 Und Schnitzerl he vos schnits in vact
 For id shlished him grod in two.

Und as for his philosope,
 Id cot so shkared, men say,
 It pounded onward till it vent
 Ganz teufelwards afay.
 Boot where ish now der Schnitzerl's soul?
 Where does his shpiritt pide?
 In Himmel troo de endless plue,
 It takes a medeor ride.

CHAR. G. LELAND.

The Velocipede—The Telegraph.

While our papers are full of "velocipede notes," extolling and illustrating the new locomotive, we propose to have our "note" also. In a business where the highest speed is the highest object, every thing which has to do with motion, celerity of progress, dispatch, ubiquity, is of interest to us. We have not yet arrived at the point where the flash of the electric spark has its counterpart either in the operations of receiving or delivering dispatches. A slow porter or an indifferent boy is intrusted to take a message to an office, and both have to do an amount of window gazing or acrobacy on their way, which consumes as much time as might have transmitted a treaty of peace from Washington to London. And even in the hands of the telegraph company, a dispatch for delivery two miles from the central office has to run its chances of

a boy's fidelity and a boy's love of fun and dog fights, or the irregular promptitude of city wires, before it reaches its destination.

We do not say a word against the boys, for with them we have ever had a deep and friendly interest ; nor against city lines, for they are under the best executive management. The messengers of a company perform a most important part of the telegraphic service. Their service demands a high degree of fidelity, sagacity, determination, besides the mere swiftness of foot necessary to perform their duty acceptably. But there is more practical skill and more persistent watchfulness needed to reduce the time

THE TELEGRAPH MESSENGER.



CITY DELIVERY LIGHTNING LINE.

which is even now expended between the reception of a message by the wire and its delivery into the hands of the party addressed, than in all the other parts of its progress. Anything which will reduce the time thus consumed, which will prevent the consumption of an hour or more to deliver a dispatch two miles from a central office which came a thousand miles over the wires in two minutes, must be hailed as an acquisition, and, if possible, made available.

But don't your city wires accomplish all that is desirable in that direction? With fifty auxilliary offices in a city like New York, why should delivery be slow? Alas! the use—the prompt use—of city wires is a matter of uncertainty, and of frequent necessary delay and irritation. City wires cannot be arranged in distinct routes, as in lines going over the country, although

direct wires are erected for many special points. To our principal hotels messages are sent prompt enough. But when a message has to be delivered to a private house distant from the central office, it has to be sent to some one of the offices where boys are allowed, and where their number is of necessity limited, sometimes arriving there when all of them are out on distant errands, to await its turn. In this case the same operation of transmission, filing, entry, which was necessary in its first journey, with the risks of repetition through hands often less experienced, has to be undergone. These necessarily involve time, care, risk, delay. Yet we believe this service is, on the whole, done with creditable accuracy and promptitude. The only hindrances are those inseparable to such arrangements, and in the use of means which require the highest style of fidelity, but which, even in the most efficient hands, sometimes baffle the most earnest endeavors.

Has this new vehicle any mission to perform in relieving this difficulty? It has all the elements of excitement which would suit and captivate a spirited boy—a boy of pluck and metal. There would be no windows for him to gaze at—the gaze would be at him. He would glory in showing to admiring crowds how he could spin along on his mission, blowing his whistle at the crossings, and would claim "good time" on his return. We think we see one now, with a suitable dress on, a jockey cap on his head, a leather wallet strapped on his back, with his boots shooting out in gay spanking style, his eye sparkling with excitement, making ten miles an hour up Broadway or down the Bowery, or along Wabash avenue in Chicago, or Chestnut street, Philadelphia, hi-hi-ing to the lazy omnibuses that impeded his way! Don't you think that boy is happy? Even if he does now and then upset an elderly gentleman, or pitch through the bowels of an apple stand, or cut a dog in two, these are only green spots in his memory when he recounts the days' experience, and he enjoys his grub with a more glorious relish as he remembers how the apples scattered, or the divided dog's eyes bade good-by to the astonished and departed tail! Don't

he though? "You bet."

Well, "we shall see what we shall see" by-and-by. We would like to see the experiment tried. Ponies were once tried in St. Louis, with what success we do not know. We want to see a good boy straddled across a velocipede and put on his honor and metal. We think there would be some quick time made. Trot him out and try him.

A PARISIAN has invented an electric cane, which is intended as a defense against highwaymen and burglars. It consists of a horn inserted in the end of a cane, which horn contains an electric battery and a lamp with two powerful reflectors. The intensity of this light temporarily blinds any person at whom it is pointed. The lamp is kindled at will by pressing a small knob at the other end of the cane, which knob communicates with an electric wire.

Proposed Government Telegraph System.

[Although it is certain that for the present, at least, all the schemes proposed to Government to incorporate the telegraph into its machinery will be rejected, yet we cannot err in placing on record the thoughtful and careful opinions expressed by the press in relation to these attempts to wrest from the people the control of their proper enterprises. We, therefore, consider no apology necessary in publishing the following clear and pungent article from the *Financial Chronicle*, to which we ask the attentive perusal of our readers. It was crowded out of our former issues.—Ed.]

[From the *Financial Chronicle*, January 16.]

There appears to be a determined effort in Congress to place the telegraph system of the country under Government control. Last year, Mr. Washburne took the initiative by introducing into the House a bill providing for the building of a Government line from Washington to New York, to be worked in connection with the post office, the enterprise being designed as an experimental step toward the ultimate monopoly of the whole business of telegraphy by the Government. Some doubts of the ability of such a line to compete with private companies appear to have been entertained, and that scheme may, perhaps, be considered as having little chance of adoption. The Postmaster General, however, profiting by the experience of his predecessors in the movement, now comes forward with a scheme for blending a telegraph service with the post office, not through the Government building or purchasing lines, but by the organization of a company which shall contract with the Government to transmit messages at fixed low rates. He proposes that the company be authorized to construct lines on the post roads and routes; that its capital be fixed at \$200 for each mile of wire; and that its wires be multiplied or extended at the will of the Postmaster General. Offices are to be established in connection with the post offices in every city and village of 5,000 inhabitants and over, at railroad stations, and at such other places on the line of the wires as the business of the country may require. The maximum rate to be charged by the company for the transmission of messages is fixed at 20 cents for twenty words, for each 500 miles or part thereof, to which is to be added five cents for postage and delivery. Provision is also made for the prompt delivery of messages and for the remittance of money by telegraph, as now through the money order office. This scheme has been suggested to the Postmaster General by parties at Boston, and apparently in connection with an offer to organize a company upon the terms suggested. It is not proposed, however, to contract with the new company if any other should offer to do the business upon better terms.

There is a certain seductiveness about Mr. Randall's scheme which is quite likely to secure its favorable consideration. He very adroitly evades some of the more prominent objections against the Government meddling with public enterprises. His scheme, it may appear, involves no outlay in lines, and little risk by the Government, both being thrown upon the company with which the Postmaster General may contract; nor does it grant exclusive privileges to either the Government or the company, while it proposes to furnish telegraphic facilities at very much cheaper rates than are now charged by private companies.

Much reliance appears to be placed upon the assumption that a large economy in the management of the business would be effected, as compared with that of the existing companies. Is it safe to take this very important item in the calculation for granted? There is, perhaps, no branch of corporate business conducted with greater economy than telegraphing, so far as respects appearances and accommodation. Compared with our banks, insurance offices and railroad depots,

the telegraph offices are unpretending and crowded, an immense business being frequently done in basements or in secluded corners rented in private stores or offices. We do not believe it will be pretended in any quarter that there is extravagance, or more, that there is not the strictest economy, in the management; which, of course, necessitates a corresponding conservatism in the control of competing companies.

Now it is most important that the Postmaster General should have shown wherein the economy in the post office management of this business would exceed that of the present companies; but on this very essential point we have not a word of explanation. So far as respects offices, it may be assumed that, in the smaller towns and villages, the existing post office buildings would in many cases afford scope for the added telegraph business. But this is far from being true of the larger cities, where the bulk of telegraphing is done. The mail business has, in most instances, outgrown the old buildings in which it is transacted, and mailing operations suffer from lack of adequate accommodation; a fact to which the Postmaster General's annual reports bear ample testimony. Does Mr. Randall suppose that the crowded quarters in Nassau street, or the new office to be some day erected elsewhere, will afford accommodation equal to that given by the present 74 telegraph offices, in this city, with their 375 employees? With 35 offices in Philadelphia and 211 employees; 24 in Boston and 156 employees; 22 in Chicago and 86 employees; 21 in Cincinnati and 93 employees; and with other cities in like proportion, the Government would evidently find it necessary to lay out large sums in extending its post offices and building new ones and furnishing them, which would no doubt be profitable to politicians, but would be poor economy to the public funds. In addition, therefore, to the capital to be laid out by the proposed company, in new wires, the public would be taxed to provide capital for the requisite accommodations in the Postal Department. This certainly is not the sort of response the public expect to their earnest demand for public economy.

Nor is it any clearer how any economy is to be effected with respect to employees. If the Post Office Department is properly managed, the hands in the offices of all towns or cities of 5,000 inhabitants and over (to which it is proposed to extend the system) are already fully employed; none of the employees of the post offices, excepting the carriers, would be available for the new business, and a wholly additional staff would, therefore, have to be employed. Nor would there be any economy to the public in the carriers being available for the delivery of messages, inasmuch as it is proposed to charge five cents each message for delivery, which is probably more than the present cost of delivery to the private companies. The effect of the proposed arrangement, therefore, would be to increase largely the capital and labor employed in telegraphing, without correspondingly augmenting the business done. This certainly is not economy. We can easily understand how the proposed company should undertake to send dispatches at much lower rates than are charged by private companies, when the Government undertakes to provide buildings, furniture and stationery, and to meet expenses of repair, lighting, &c.; but it would be a great mistake to suppose that, under such an arrangement, the public had paid in full for their messages when they had bought the stamped paper on which they were written; a large balance would remain to be paid in taxation to defray the expenses of the new department. It is singular that Mr. Randall, in urging the argument of economy, should have failed to show what would be the probable outlay and the annual cost to the Government of his scheme. We presume there are good reasons for his reticence.

But even after this large outlay on the part of the

Government, it does not by any means follow, because there are parties now ready to organize a company and to make a contract, as the Postmaster General proposes, that they would long continue to send telegrams at the reduced rates offered in this scheme. Suppose that the contractors, after a convenient period should announce their inability to do the business at the rates agreed upon, what would the Government do? No other company would be likely to take up the contract, for the failure of the new organization would deter them. The Government would therefore have the choice of taking the whole affair into their hands or of submitting to a higher tariff. The latter course would be an acknowledgment of the failure of the scheme; and the former would be, in every sense, an unmitigated evil, an abuse of the functions of Government, a substitution of political management for business enterprise and an extension of the political corruption connected with bureaucracy. The company which Mr. Randall proposes to associate with the post office would thus virtually hold the Government at its mercy; and having the same motives to exact the highest possible rates as influence other companies, we have no sort of assurance that the corporation would not, after having used the Government to bring it into existence and given it prestige, yield to inducements from private companies and demand an advance upon the proposed schedule. This view will commend itself, we think, forcibly to all acquainted with the management of corporate interests.

In addition to these objections to Mr. Randall's scheme specifically, there are others against any and every form of Government interference with the business of telegraphing. It is essential to the protection of the public that the parties who do its telegraphing should be responsible for delays, errors, neglect or the divulgence of secrets. Without such a stimulus, the best managed companies would be apt to transact their business carelessly and the public would suffer inconvenience and loss. The Government would be exempt from all such liabilities; and in the absence of this motive to care and energy its business would be less efficiently transacted than that of private corporations. The history of telegraphing proves that its progress depends entirely upon scientific research and experiment, and the promptness of competing companies to avail themselves of each successive improvement in processes and instruments. State bureaus are notoriously slow to recognize the results of invention. Officials too frequently refuse to move in the adoption of improvements until won over by a *douceur*; and provided such an inducement be offered, they are apt to recommend or adopt inventions irrespective of their merits, always ready to make the interests of their department subordinate to perquisites. The Government is in no position to command the services of the most efficient agents. Of necessity, it pays a fixed salary to its officers, which is less than really talented experts can command at the hands of corporations; and it is thus of necessity distanced in enterprise by private parties. Any governmental system of telegraph would pay less regard to public convenience than is afforded by the existing companies. The present companies carry their wires into the hotels, railway and other corporation offices, and in this city to the stock boards, gold room, produce exchange, and every place where an important amount of telegraphing is transacted, thereby effecting a most material economy of time and expense in the conveying of messages. The Government scheme proposes to do nothing of the kind; and from this very neglect Mr. Randall's telegraph would fail to draw from the existing companies the most material part of their business. These are but a few of the many weighty objections that might be urged against the Government attempting this form of interference with private enterprise.

LONGITUDE OF THE PACIFIC COAST.

The Telegraph Lines Brought into Requisition to Settle the Point.

INTERESTING EXPERIMENTS.

[From the Chicago Tribune.]

Some of the simplest and most practical details of common life go hand-in-hand with the most abstruse scientific facts. The farmer who sneers at "book learning" is indebted to the savor for the plainest and most effective helpers to his labor, though not always ready to acknowledge his debt. Jack Tar, on the contrary, is always willing to give science her due, for he knows his dependence upon the patiently wrought results of the astronomer and the mathematician. No safe navigation in the open sea without the chart, and no value to the chart unless entire accuracy pertains to its details. A rock or a shoal encountered several leagues out of reckoning are severe reminders of the vital necessity of skill in chart makers. The work of the coast survey began many years ago to engage the attention of maritime nations, and the work of determining longitudes has moved slowly toward perfection through slow gradations. The efforts were early directed to the improvement of time-keepers. Obviously, if strictly accurate chronometers were in the hands of parties ever so far distant, and both making the transit of the same heavenly body upon any established meridian, the merest tyro in this branch of science can discover the ease of reaching the result, for the exact difference in time between the two reduced to degrees would give the longitude with equal exactness. But "to err is human," and watches are of human workmanship, and infinitesimal measures of time are of importance when the fraction of a second on the watch-face becomes a variation of degrees on the dial of the universe.

The overland telegraph has opened the way to a more careful determination of longitudes on the Pacific coast than any care in the construction of chronometers could bring, because it gives the actual alliance of clock-beats through the wire. Several times within the past week or two the *habitués* of the telegraph offices in this city, have been at times listening to the ticking of two clocks, one in San Francisco and the other at the Cambridge Observatory, in Massachusetts.

An instrument at one end of the table was the representative of the Cambridge time-piece, while an instrument at the other end of the table performed a like service for the one in San Francisco. The armatures of the respective instruments were connected with a piece of metal, so that their working, which exactly corresponded to the oscillations of the pendulums to which they were connected, produced a sound which was an exact imitation of the ticking of a large clock. The illusion was perfect, and the operation of the electric current being practically instantaneous, time and space seemed annihilated, and the listener was within ear-shot of points four thousand miles distant.

These interesting processes were carrying out a plan finished on Monday night, to determine, by the use of the overland telegraph, the difference in longitude between the observatory at Harvard University and one of the coast survey stations on the Pacific coast, the point selected being San Francisco. Other important determinations were to be made at intermediate points, the latter, however, to be subordinate to the first. The intermediate points selected were Omaha and Salt Lake City. The observations at Cambridge were put in charge of sub-assistant A. T. Mosman, aided by F. Blake, Jr., of the coast survey department; at Omaha, assistant Edward Goodfellow, aided by Mr. S. C. Chandler; at Salt Lake City, assistant Geo. W. Dean, aided by F. H. Agnew; at San Francisco, assistant

George Davison. The observations were commenced about three weeks ago, the Western Union Telegraph Company having tendered the Government the use of their lines for the purpose.

The following dispatch received here on the 28th ult., is the best explanation of the proceeding which was throughout one of great value to science.

SUPERINTENDENT DEANE'S DISPATCH.

SALT LAKE, Feb. 28.

To Gen. Stager, Chicago, and Prof. Winlock, Cambridge, Mass:

The following is the programme for measuring the time of transmission of clock signals between Cambridge and San Francisco.

I propose the following plan for measuring as accurately as possible, the time of transmission of clock signals, between Cambridge and San Francisco.

1. The wires between San Francisco and Cambridge to be arranged in seven (7) circuits, with six (6) repeaters, and in the same manner as has been required for making our longitude determinations across the Continent.

2. At Boston or Cambridge a repeater will be required to return the San Francisco clock signals through a second circuit, requiring six additional repeaters, thus making thirteen repeaters and fourteen circuits.

3. As soon as the telegraph circuit shall be arranged, with a careful operator in charge of each repeater, the clocks at San Francisco, Salt Lake City and Cambridge should be placed in the circuit.

4. The clock at San Francisco is arranged for sending signals every two (2) seconds. This should be done for five (5) minutes, which will give each operator sufficient time to adjust his repeaters, and thereby insure the successful return of the clock signals to San Francisco at least one (1) minute in five (5).

5. Should, however, this experiment from any cause fail of success, Cambridge will send clock signals for five (5) minutes, which will be recorded at Salt Lake City and San Francisco.

6. If practicable, the two circuits will then be connected at Buffalo, thus placing eleven (11) repeaters in the circuit. San Francisco will again send clock signals every two (2) seconds for five minutes, as in the former experiment.

7. The circuits, if practicable, should next be connected at Chicago, and with nine (9) repeaters in the circuit, San Francisco will send signals for five (5) minutes as before.

8. The circuits should next be joined at Omaha and the San Francisco clock signals repeated for five (5) minutes, as before, but through seven (7) repeaters only.

9. The circuits should next be joined at Cheyenne and clock signals sent through five (5) repeaters; meet at Salt Lake City through three repeaters; and finally at Virginia City, through a single repeater.

10. It is desirable that we be informed in regard to the kind of battery, the number of cells and the kind of repeater used at each station in making these experiments.

GEORGE W. DEANE,

Asst. Supt. U. S. Coast Survey.

THE PRELIMINARIES.

The first proceeding was to make the necessary comparisons of time-keepers at the different points, for which purpose the electrical connections with the pendulums, already referred to, were made. At a given point in the oscillation of the respective pendulums the electric circuit is broken, and a notification is instantaneously communicated to the different connections upon the circuit, by the click or ticking of the armatures. These observations are based upon the assumption that the passage of the electric current is instantaneous. While this may not be true theo-

retically, when it is recollected that the commonly received estimates of the rate of speed at which electricity travels, is over 100,000 miles per second of time, it is practically so. There is also another imperceptible loss of time in the transmission of signals between these remote points. Owing to the great length of the lines, nearly 4,000 miles in round numbers, the insulation of air lines always being imperfect, it is necessary to use "repeaters," each of which, in the performance of its functions, must occupy an infinitesimal portion of time. However, the adjustment of the clocks to within tenths of a second is considered sufficiently accurate, and as these unmeasurable losses do not amount, in the aggregate, to nearly that fraction, they are unimportant.

To ascertain the variation of the clocks at San Francisco, and the intermediate points named, the standard being mean time at Cambridge, a series of comparisons on six favorable nights were to be made. This much has already been accomplished, and the variation of the San Francisco clock is found to be three-tenths of a second, it being that much slow. Insignificant as that variation seems, it will be found by a simple mathematical calculation, that in determining the longitude of a given point within a few feet, it is important, as, reduced to distance, it equals nearly one-tenth of a mile.

Having adjusted the clocks, or ascertained their exact variation, the remainder of the process is quite simple, though instruments are called into requisition which are marvels of mechanical perfection and ingenuity. These are the transit instrument and chronograph. The former is a telescope attached to an axis pointing to the east and west points of the horizon, being susceptible of a vertical motion in the meridian upon which it is placed. A wire is drawn across the center of the instrument so that the transit of the star toward which it is directed can be instantaneously and accurately noted. The chronograph is a very ingeniously constructed instrument, which, by means of an electrical connection, instantaneously records the precise moment of the transit, to the smallest fraction of a second. The comparison of the clocks being completed, and the instruments in readiness, all that is necessary to complete the observations are a few favorable nights. A certain circum-polar star is agreed upon for observation, and the operator at Cambridge observes, by means of his transit instrument, the precise moment of its transit or passage past that meridian, touches a key, and the time is faithfully recorded upon the chronograph. The operators at San Francisco and the intermediate points, are signaled, and in about an hour the revolution of the earth from east to west has brought the star in a vertical position to the observer at Omaha; its transit at that meridian is noticed and recorded, as at Cambridge. Two hours and a half later, the star, having performed the same office for the observer at Salt Lake, has reached a vertical position to the operator at San Francisco. These operations are repeated a sufficient number of times to insure their accuracy and a reduction of the difference in time between the different points to degrees gives the exact difference in longitude.

The last test was made upon Sunday night, the 28th ult.; and then was accomplished the most remarkable telegraphic feat upon record. The working of a continuous wire from Boston to San Francisco is a wonderful achievement; but for the purpose of getting the exact time occupied in the passage of a signal, from one point to the other, a double wire was connected through, from San Francisco to Cambridge and back, thus making a circuit of 7,000 miles. San Francisco sent his signals east upon one wire and they returned to him upon the other, after a trip across the continent and back—the time of the signals, departure and arrival being accurately indicated upon a chronograph.

In making up this immense circuit thirteen repeaters and as many more intermediate galvanic batteries were used, so that the impulse, when once started upon its long journey, never grew faint, but found a fresh impetus given it every few hundred miles. The operation of the wires and instruments was watched with the utmost care by experienced telegraphers throughout the entire distance. The route of the circuit was from Boston, via Albany, Buffalo, Detroit, Chicago, Omaha and Salt Lake City. That the experiments were successful, and the performance of the telegraph of its duties were appreciated by the eminent professors who had charge of them, is shown by the following telegram:

SALT LAKE CITY, March 1.

Gen. Anson Stager, General Superintendent, Chicago:

The coast survey experiments last night for measuring the time of transmission of clock signals through a complete telegraph circuit of 7,000 miles was a brilliant success, and every gentleman who took part in the experiment is deserving of the highest commendation for prompt attention to business.

GEORGE W. DEANE,

United States Coast Survey.

The following, from Superintendent Davidson at San Francisco, gives the result of the experiments:

SUPERINTENDENT DAVIDSON'S REPORT.

SAN FRANCISCO, March 1.

To Gen. Stager, Chicago, and Gen. Eckert, New York:

"My hearty thanks for the use of the two through lines; they worked splendidly, and my experiments for the time of transmission of signals from San Francisco to Cambridge and back, according to the plan devised, were a decided success. The time occupied for a signal to pass through seven thousand miles of wire, thirteen repeaters, etc., was about eight-tenths of a second.

GEORGE DAVIDSON, U. S. C. S.

The Telegraph.

THE TELEGRAPHIC SYSTEM IN THE UNITED STATES COMPARED TO THAT OF GREAT BRITAIN—OUGHT THE TELEGRAPH SERVICE TO BE MANAGED BY THE GOVERNMENT?

[From the London Times, February 9.]

It may, perhaps, be forgotten by the public, and it does not seem to be remembered by the government, that an act was passed last session for taking over the various telegraph lines in the kingdom and placing them under the administration of the post office. The proposal provoked some sharp debates in Parliament, and was encountered, as cannot be denied, by arguments of considerable force. We ourselves never attempted to disguise the objections to which the measure was exposed, though they derived, perhaps, their chief cogency from its premature and unseasonable production. Whatever might be said for the scheme, it was certainly not a project of such incontestable advantage or immediate urgency as to justify the action of a government maintained in power for one purpose only. The business of Mr. Disraeli's administration was to pass the Reform Bill, and so allow of an appeal to the new constituencies on the question of the Irish Church. To this object its duties were limited, and though no opposition would have been offered to any piece of legislation at once necessary and expedient, it was impossible to allege such a justification for the Telegraph bill as first introduced. In point of fact, the objections to it, though somewhat partial or conditional in character, were echoed from all quarters. The measure might be a judicious measure—probably was so; but the way to it could not be clearly seen, and many points required both elucidation and reflection. However, though the late Minis-

try might as well, perhaps, have left the matter for their successors, they chose to persevere, and after due inquiry, debate and arrangement, the act was passed. It is now asked what has become of it, and whether it is to be put in force or suspended for a reopening of the whole question.

Just at this moment, as will be seen from our American correspondence in another column, the very same question has been raised and discussed in the United States, and when we observe that the proposal has found no favor out there in the opinion of the public, it may be thought that the Americans, who certainly know more of the subject than we do, are setting us an instructive example. A little attention, however, will soon show the wide difference between the two cases. In America the telegraph, as worked by private companies, represents a most successful example of cheap and popular organization; while the post office, as worked by government, represents a business conducted at a loss. Naturally, therefore, when it is proposed to transfer to an unsuccessful department of State a branch of enterprise already managed to perfection by private hands, the suggestion finds little favor. But in England these conditions are directly reversed. It is the post office which is the model of successful administration, while the telegraph system is so managed as to lose half its usefulness. Our conclusion, therefore, would naturally be the reverse of that reached in America, and we should look with approval on the proposal for taking over the business of the several companies and vesting it in the authorities of the post office.

It would be unfair to disguise that this argument, though substantially valid, requires in one particular material qualification. The American post office does a losing business, not because it is ill managed, but because the service is necessarily expensive, and because it is conducted with great liberality and most judicious consideration for public interests. The department does more for the public and for the press than is done in this country, and the Americans get their money's worth for their money. We need not, therefore, disparage the American post office, but, on the other hand, it is impossible not to admire the American system of telegraphs, and to ask why we cannot be provided with a service as good. Without attempting to distribute the blame of the failure, we may simply say that hitherto our telegraph system has failed to become what it ought to be. It does not give us cheap, popular, and available means of communication. The wire is not nearly so much in use as it might be. A telegraphic message is a rare and exceptional thing. Telegraph offices are but thinly scattered over the country, and the charge made for the transmission of a few words is so high that, except on occasions of urgency, the money is grudged. Contrast with this our correspondent's description of the state of things in America, where the telegraph offices are upward of 4,000 in number, or one for every 7,000 of the population, and where "over 50,000 miles of line and 100,000 miles of wire, with 265 submarine cables," are incessantly at work for the accommodation of the public. Still more striking is the comparison in respect of charges. In the year 1867 one company alone delivered to the American press just about 300,000,000 words of news matter, at a cost of £100,000; whereas in Continental Europe a service of about the same extent cost no less than £2,300,000. Such contrasts are absolutely conclusive. It cannot be a matter of doubt that our telegraphic system requires complete reorganization and development to fit it for the needs of the age. The only question is, or rather was, how that reform should be accomplished.

It was alleged on behalf of the Ministerial proposal that the post office, by availing itself of its existing organization, could manage the telegraph service so

economically, and at the same time give it such effectual extension, as to insure the very results desired. The use of the wires could be materially cheapened, and means of such communication brought almost to every man's door. If we could not get a telegraph office in every town and village, as in America, we should get many more offices than we have at present, and every district without an office of its own would be placed in close connection with the office nearest to it. The concentration of management in the hands of a single department, instead of a group of companies, would of itself tend greatly to economy, and, in short, it was plainly said and freely admitted that if the control of the administration of the telegraph service were to be transferred from private hands to the State, the post office, and no other, was the department to be charged with the service. The objections were of two kinds—one involving a point of principle, the other only a matter of detail. We in this country are naturally and wholesomely jealous of government action so distinguished from private enterprise. We like to do our own work instead of letting the State do it for us, and it would be vain to deny that misgivings might be entertained of the result in the instance before us. Many persons thought, and, indeed, openly said, what people are now saying in America, that "the telegraph, if placed under government control, would soon become a mere political machine, devoted, not to transacting the business of the public, but to securing the ascendancy of party." That, perhaps, was an extreme view of the case, but suspicions of a similar kind were actually expressed by some of our most prominent statesmen; and, indeed, it would have been strange if the proposal had not brought such objections to light. On the other hand, in the mere way of detail, there was the obvious difficulty of bargaining with the companies on terms at once acceptable to them and not unjust to the public. On this point, as might be expected, there was a strong conflict of views, but in the end a conclusion was reached with which we have no desire to quarrel. We may trust, we hope, to the vigilance of opinion for the safety of public rights, and in the meantime we are promised a large development of telegraphic service on cheap and easy terms. That was the bargain, and we now expect to see it effectually carried out.

New System of Telegraphy.

The *Patrie* of Paris of the 19th ult., contains the following communication:—

This morning the Emperor Napoleon III. consented in the Tuileries to examine the new system of telegraphy invented by the late Mr. Bonelli, witnessing some practical and complete experiments. His Majesty declared himself satisfied on every point with the process and invited the operator to return at noon, in order that the Empress might be present. The advantages of the new process consist in the perfect and authentic exactness of the messages transmitted, the importance of which is too apparent to require comment. Furthermore, this system allows the transmission of three messages in the same space of time that is occupied by one in the ordinary manner in use at present.

His Majesty considers the advantages of this new system so important that he authorized Count de Vougy, general director of telegraphs, to offer the operator every facility necessary to render the use of his apparatus popular.

A message was received at Adrian, Mich., lately from one of the neighboring offices in the following very sick condition:

Adrian Of's

Wilt yov please gide me tpe laniff lo Polly Micpigan.

Orz.

A New Paper.

[From the Leavenworth Times and Conservative.]

"On the 23d of January the Directors of the Western Union Telegraph Company voted to establish a daily paper in New York City, to be called *The American Telegraph*.

"The matter had long been debated, but never assumed shape until the date we have mentioned. Mr. Orton, the President of the Company, had been in Washington since the first of December, fighting the Postal Telegraph. O. H. Palmer, Esq., the Secretary of the Company, well known as a leading lawyer in Rochester, N. Y., and as the Colonel of the 13th New York regiment, had been for a long time urging the starting of a newspaper by the Company. In this plan he had been seconded by Isaac Butts, Esq., who has had some twenty years of editorial experience, and by a brother of ours, Samuel Wilder, who is also a resident of Rochester, and who was a Director in the Russian Extension.

"The injunction of secrecy in regard to this matter, we presume, is removed. The facts will, in any event, soon be published, and may as well come from Kansas as from any other locality.

"The facilities possessed by the Western Union Telegraph Company for collecting news are, as all know, surpassed by no agency or combination whatever. They have twenty operators in New York city who can send news from every locality (we give the number at random and not from actual information), a large number in Boston, Philadelphia and other leading cities. A few years ago they had four or five in a city no larger than Rochester. In addition to this, they have an operator in almost every town in America. Wherever the telegraph goes this Company has a correspondent, and the new paper will have a special telegraphic agent in every locality."

We have always known that Mr. A. A. Wilder, of the *Leavenworth Conservative*, was a scholar and a gentleman, a master of several languages, and eligible for either the United States Congress or General Grant's cabinet, but we never suspected him to be a poet. Yet here we have him full of the "afflatus divine," in a flight of imagination inconceivable to an easy chair within reach of cold water and fresh air. Never did A. A. Wilder build a wilder conceit, or string together a wilder mess of unreal and unimagined things beneath so grave and reverend a style as in the article which we quote above. And yet it is said with so much particularity, and with such a sense of favored confidence in the value of a great secret to the *Conservative* confided, that we do not wonder to find it extensively copied and criticised. It has given fresh occasion to many little barkers who fret at all things larger than themselves to set up a new chorus on monopoly, and there will probably be a series of concerts with full orchestra round the entire circle until a denial comes or their wearied voices sink into indignant rest.

We need not say that the project thus announced is simple imagination and utterly without foundation. No such design has been entertained or even thought of by either of the gentlemen named, or by the Western Union Telegraph Company or any of its officers. There can be no doubt, however, that were it possible for a telegraph company having its wires, like those of the Western Union Company, connecting every town of the entire nation, with every operator a correspondent, to enter upon such a project, a paper of surpassing interest would be the result. Yet who can fail to admire the enterprise of the Metropolitan papers of our different States under their present arrangements, the number, the character, the vastly separated dates, the world-wide contribution to their mammoth columns! It is the marvel of our times. Nothing

proves so convincingly the spirit of the nation. The telegraph best fulfills its mission by serving the enterprise of such a press, rather than by seeking, in improper competition with it, success in a field it is not its mission to occupy.

The First Telegraph Line between New York and Philadelphia.

The following appears in the *Washington Intelligencer*:

37 EAST CAPITOL STREET, February 25, 1869.

Editors of the National Intelligencer:

GENTLEMEN: I observe in your paper of this morning a letter from Hon. Amos Kendall to W. W. Corcoran, Esq., complimenting him on being the first subscriber of \$1,000 to form a company, in May, 1845, to erect a line of telegraph between the cities of New York and Philadelphia, to be worked by Professor Morse's invention.

Mr. Kendall states that he had promised to send Mr. Corcoran the original list, but, on searching for it, he found that it was not in his possession.

I have a copy of the articles of agreement, with the names appended, and, as it may now be of some little interest to the public to know who were the original patrons of the enterprise, I append the names and amounts subscribed.

Respectfully, yours,

B. B. FRENCH.

Corcoran & Riggs.....	\$1,000	Charles G. Page.....	\$500
B. B. French.....	1,000	George Templeman.....	200
Eliphalet Case.....	1,000	Henry J. Rodgers.....	100
Charles Monroe.....	1,000	J. W. Murphy.....	100
Peter G. Washington.....	200	A. W. Paine.....	500
John J. Haley.....	1,500	Francis O. J. Smith.....	700
John E. Kendall.....	300	J. Black.....	200
James A. McLaughlin.....	350	T. L. & A. Thos. Smith.....	200
Amos Kendall.....	500	Keller & Greenough.....	500
Ezra Cornell.....	500	J. C. Brodhead.....	500
Daniel Gold.....	1,000	A. Thos. Smith.....	100
Simon Brown.....	500	John W. Norton.....	1,000
A. J. Glosbrenner.....	500		

If this list is published in honor of the men who commenced a great enterprise, we have a word or two to say also. They are entitled to all praise. We would not take a feather from one of them. To one of these gentlemen, however, we think it due to make special reference. Corcoran & Riggs were opulent bankers and could afford to risk \$1,000 in a scheme whose capacity had been demonstrated in their presence. All honor to them for their encouragement. It was different, however, with the second name. B. B. French was not rich, but not only gave his \$1,000, but added thereto the most enthusiastic labor, even when New York millionaires laughed the enterprise to scorn and not a dollar could be got in all this great city. Largely through him the first Congressional appropriation was secured; the first telegraph meeting was held at his office, he was the first President of the Magnetic Telegraph Company, gave the most enthusiastic support to Prof. Morse in all his conflicts, and still watches his career and the progress of the telegraph with all his early enthusiasm. No telegraph man will grudge Major B. B. French this just remembrance. It is all his early generosity has yielded him. God bless him!

Of Hon. Amos Kendall we need not speak now. His connection with the telegraph requires an article by itself as long as a volume. All know his agency and care in its early introduction. We shall have occasion to speak of him anon.

The name of the Hon. Ezra Cornell also appears in this first list of subscribers. To this subscription of \$500 dollars may be traced the existence of the Cornell University, which has excited the interest of the civilized world, and brought its ripest scholars to its service. It is a grand comment on the benign mission of the telegraph itself, thus fructifying in an institution which is already encircled in the kindest benedictions of the American people.

In the department of toil connected with the early introduction of the telegraph, the editor of this paper had a full share, but he, like many more of his co-laborers, find their honor in the quiet and unspoken pleasure of their connection with so grand an enterprise.

From our Paris Correspondent.

PARIS, February 25, 1869.

DEAR SIR: You must excuse my delay in writing you, but had I written you earlier my answers would not have been sufficiently precise.

You have asked me what was the system of batteries used in France?

They prefer in France the constant batteries, and would rather use a greater number of constant cups than a small number of intense cups.

I know in America you use the Grove platinum and carbon battery. In France they are not admitted, because they are not sufficiently constant.

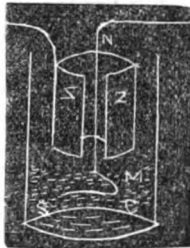
I give you a list of the batteries we use in France.

1. The Daniells battery, with copper in the porous cup and zinc in the glass cup.

2. The battery of M. Marie Davy. It is a carbon battery but without nitric acid. There is put into the porous cup with the carbon some bi-sulphates of mercury with water, and only pure water around the zinc. This is a very constant battery. In the central office, Paris, they have four thousand cups of this kind. They are constant for ten or twelve months. They only require the addition of a little water from time to time to supply loss by evaporation.

3. The "Pile a ballon" battery. This is a modification of the Daniells battery with which you are familiar, and which I saw in use in the United States.

4. The "Callaud" battery. Of this I give you a sketch.



Z. Zinc.

S.C. Sulphate of copper.

M. Sand for separation of sulphate of copper from dilute sulphuric acid.

N. Gutta percha covered wire connected with copper plate.

For the telegraphs near the sea, for the semaphoric service, they use the Dutch battery. It is a battery with carbon and zinc they put in the sea. It is both a very strong and a very constant battery. So much for batteries.

You have asked me what was our machinery in France. We use several systems.

1. The original Morse apparatus with indenting point.

2. The Morse apparatus with Digney's marking wheel instead of the indenting pen.

3. The John and Brequet modification of the Morse apparatus.

4. The Hughes printing apparatus.

5. The Caselli autographic system.

In the railroad stations they use the Brequet alphabetic system, or dial telegraph.

You ask me respecting operators' salaries. Operators receive 2,000 francs (or \$400) per annum. Engineers and inspectors from 10,000 to 12,000 francs.

Offices at large cities, as Paris, Bordeaux, Lyons, &c., are open day and night. Of the forty-six offices in Paris, twenty-four are open at all hours.

Minor offices are open from 8 A. M. to 8 P. M. I will be pleased to correspond with you and inform you of everything of interest.

Lately I have invented a magneto-electric relay for telegraphy. It is founded on a new system and can be worked with a very feeble current.

Your devoted friend, FRANCISQUE MICHEL.

A PROMINENT telegraphist of Oswego proposes to build a velocipede with flange wheel to run on one track, for the use of telegraph repairers in case of a break in the lines. He calculates he will be able to "go for it" at the rate of sixty miles an hour.

"WHERE is the East?" inquired a tutor one day of a little pupil. "Where the morning comes from," was the prompt and pleasant answer.

Telegraphers' Mutual Life Insurance Association.

ASSESSMENTS RECEIVED.

Benj. F. Ely,	L. E. Atwater,
W. H. Chivis,	C. D. Sprague,
Robert L. Deakera,	C. M. Clark,
Samuel H. Edwards,	C. W. Moore,
John H. Emerick,	*J. Murray,
Wm. Ferguson,	J. Bohanna,
Hattie H. Franklin,	C. L. De Forest,
Robert B. Lown,	H. O. Beckwith,
John K. Colvert,	E. D. Sanford,
†Mary E. Bell,	J. M. Bechtel,
John M. Peters,	Geo. Purdon,
Wm. N. White,	J. M. Worden,
Alfred W. Pearkes,	John Wenzel,
John B. Page,	Wm. Roche,
P. H. Shaugnessy,	James P. Cassidy,
Gilbert M. Simmons,	W. S. Lakin,
John B. Van Every,	A. S. Parmele,
J. A. Brenner,	C. H. Edwards,
S. P. Peabody,	C. Berry,
W. F. Schiebler,	James H. Prossley,
John H. Pearce,	A. G. Martin,
J. S. Hunter,	C. Beardsley,
A. S. Farwell,	J. Herrick,
Wm. T. Lindley,	W. A. Tinker,
W. J. Purdon,	Charles D. Camp,
W. H. Sawyer,	†C. L. Le Baron,
J. M. Crowley,	C. Alston Smith,
Henry Griffith,	F. A. M. Eyster,
William Arnoux,	S. Porter,
Jacob P. Bogar,	Byron A. Squires,
R. L. Guion,	Fred. Crouse,
John A. Casterlin,	F. C. Eckenberger,
R. H. Woodward,	Sam. Dunlap,
Henry Denver,	Geo. Farrell,
C. Oscar Blake,	J. J. Calahan,
F. H. Zimmerman,	B. Stephens,
M. D. O'Connor,	M. C. Bagley,
D. H. Fitch,	G. K. Wolcott,
Edwin F. Ludwig,	Daniel J. Ludwig.

* Remitted three dollars.

† Remitted five dollars.

‡ Remitted three and one-half dollars.

THE NEW POSTAGE STAMPS.—The new style of postage stamps will shortly come into use. The new two cent stamp is to have a mounted post boy at full speed, indicating that this stamp is mostly used for dispatched letters; the three cent stamp has a locomotive, surrounded by three lines of lightning, showing that letters so stamped are to travel as fast as possible; the five cent has a microscopical view of the painting representing the signing of the Declaration of Independence; the twelve cent stamp, mostly used for foreign postage, has a steamer at sea; and the thirty cent stamp has a painting of the surrender of Burgoyne, which will, no doubt, be a very pretty stamp in the eyes of the Britishers.

A New Method of Catching Mice.

A correspondent of the *Journal of Pharmacy* says: "Having on several occasions noticed mice in our seed barrels, I bethought me of some method how I might trap the little intruders, they having gained entrance by eating through the chime. To kill them with a stick was impracticable, as the little fellows would invariably escape as soon as the lid was raised to any height. I then thought of saturating a piece of cotton with chloroform and throwing it in, then closing the lid. On raising it again in a few minutes, I would find that life had almost or quite departed. Having on one occasion left the piece of cotton in the barrel, on again returning, found three mice with their heads in close contact with it, and dead. In the evening I saturated another piece, and placed it in the barrel, and on opening it next morning, to my surprise I found nine dead mice." We recommend our Chicago friends to try chloroform on their rats, and see what effect it will have.

Improvement of the Telegraph.

[From the American Railroad Journal.]

One of the great drawbacks heretofore in the efficiency of the telegraph has been defective insulation. To work a circuit that is free and clear of escape is always an agreeable and pleasant occupation, while operating one that is ever changing and requiring continued adjustment of magnets is one of the most annoying and patience trying. Many of our railroads have improved their telegraphs during the past season by the use of the Brooks Insulators. With this invention much of the time formerly spent in adjusting the magnet can be devoted to other, and clerical duties, besides the liability to error is infinitely lessened. The galvanometrical tests and measurements of the amount of leakage show not as much escape over a line of one hundred miles in length, where the Brooks Insulators are used, in a very wet day, as over one insulator of the ordinary kind, and that there is more leakage over the ordinary insulator in a clear frosty day than over the Brooks in the most humid weather.

The following is the letter to which we replied in our issue of March 1:

The Sabbath.

AUGUSTA, Ga.

EDITOR JOURNAL OF THE TELEGRAPH:

Your "note" to the article from the *Times*, published in your number of February 1st, entitled "A Day of Rest," calls forth hearty amens from all operators.

I desire a small space in your columns to present a few thoughts based upon it. The hours now used for Sunday work (from 7½ to 10 A. M., and 7 to 9 P. M., the principal offices being kept open all day), are such as manifestly destroy the rest of those whose turn brings them on duty Sundays. After an operator has been at his office during the hours above mentioned ('tis often much later before all is "square"), engaged principally with commercial messages, he has but little inclination and is often too late to attend divine service. Should he do so, his mind is in no condition to profit by and enjoy that quiet and devout meditation and physical "rest" which a due observance of the sacred day should engender. The night hours deprive him of all chance for attending church. Is it any wonder then that so many operators totally ignore church going and seek, as best they may, the physical enjoyment only of the few intervening hours?

Admitting your remarks, that "the public interest and the claims of humanity seem to require that during some period of the Sabbath the telegraph be accessible," I think two hours amply sufficient for such claims. Commercial business ought not to be received on Sundays; therefore, I would suggest from 12 to 2 P. M. as the best. The public would soon adapt itself to these hours. This would give all the opportunity to enjoy the benefits and profits of church worship, morning and evening. After service, operators "on duty" could go to the office and square up before their dinner hour. Then they would not feel, as I often do on Sunday mornings, that though designed by our kind Heavenly Father as a "day of rest" and to be "kept holy," 'tis not such to us—"office must be opened on time." AN OPERATOR.

SALT LAKE CITY, March 1, 1869.

Hon. WM. ORTON, President Western Union Telegraph:

The Coast Survey experiment last night, for measuring the time for transmission of clock signals through a complex telegraph circuit of 7,000 miles, was a brilliant success, and every gentleman who took part in the experiment is deserving of the highest commendation for prompt attention to business.

(Signed)

G. W. DEAN,
United States Coast Survey.

The Magnesium Light.

Great expectations were raised with reference to this light as soon as a method was discovered for the cheap preparation of the metal. When magnesium is burned it emits a light quite unendurable to the naked eye, and it only remains to consider the most economical manner in which the combustion can be carried on. When the pure metal is employed it gives rise to a voluminous white cloud of the oxide of magnesium, that obscures the reflectors and eventually fills the room where it is burned.

Various attempts have been made to absorb this vapor, and thus remedy the difficulty. By alloying the magnesium with zinc the quantity of light is not diminished, and the fumes are more readily removed. An alloy with the new metal, thallium, has been very successfully tried. A lamp has been patented for burning finely divided magnesium mixed with sand, and made to pass through an hour-glass arrangement on to a small flame. The mixed sand and metal are then fed regularly into the flame, and the light emitted is very intense. In other lamps the magnesium, in the form of wire or ribbon, is unrolled from a reel and fed into the flame.

In all cases there is the same objection of smoke, so that where the light has been used for photographing the interior of caves, it has become necessary to suspend operations after a short time, until the cloud could disperse. Notwithstanding all of these disadvantages the magnesium light is extensively employed in photography and in microscopic investigations. It has the great convenience of being independent of any battery or extensive gas-flame, as it can be ignited with a match, and will take care of itself.

Memorable Dates.

- 1180, Glass windows first used for light.
- 1246, Chimneys first put to houses.
- 1252, Lead pipes for carrying water.
- 1290, Tallow candles for light.
- 1299, Spectacles invented, by an Italian.
- 1302, Paper first made from linen.
- 1341, Woolen cloth first manufactured in England.
- 1410, Art of printing in oil.
- 1440, The art of printing from movable types.
- 1477, Watches first made in Germany.
- 1540, Variations in the compass first noticed.
- 1543, Pins first used in England.
- 1590, Telescopes invented, by Porta and Jansen.
- 1590, Jupiter's satellites discovered, by Jansen.
- 1601, Tea first brought to Europe from China.
- 1603, Theatre erected in England, by Shakespeare.
- 1610, Thermometer invented, by Sanctorius.
- 1619, Circulation of blood discovered, by Harvey.
- 1625, Bricks first made of any required size.
- 1626, Printing in colors invented.
- 1629, Newspaper first established.
- 1635, Wine made from grapes, in England.
- 1639, Pendulum clocks invented.
- 1641, Coffee brought to England.
- 1641, Sugar cane cultivated in the West Indies.
- 1643, Barometers invented, by Torricelli, in Italy.
- 1646, Air guns invented.
- 1749, Steam engines invented.

BRIGHAM YOUNG is said to have a telegraph wire leading to his office and connecting with every hamlet in Utah—a line of 500 miles long. Every settlement of half a dozen houses has a telegraph office with female Saint operators, and in charge of a Bishop of the Mormon church, who can report at any time all that takes place to Young. From his private office in Salt Lake City, like the watchman in the fire telegraph, Brigham may give an order, or ring an alarm from Idaho to New Mexico.

Telegraphers'

Mutual Life Insurance Association.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postage, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

The Swindle that was not Consummated.

Some rich and interesting developments in the management of fancy stock companies were concealed from the public, when the Atlantic and Pacific Telegraph Company abandoned its suits against Messrs. Daniel L. Harris, Gurdon Bill, James D. Brewer and George M. Atwater of this city. The suits were brought in the name of Richard J. Thorne, trustee, to compel those gentlemen to pay an assessment of 95 per cent. on their subscriptions to its stock, amounting in each case to \$950. Soon after agreeing to take the stock they learned facts which led them to suspect that the scheme was a stock-gamblers' swindle, and on this ground refused to pay any of the assessments, and on the same ground prepared to defend their cases in courts. In their answer to the allegations of the Company, filed with the clerk of the courts, they admit that they signed the contract to take stock, but declare that they were induced to do so by false and fraudulent representations. They were assured that the telegraph company was building and had the right to build a telegraph line from Boston to St. Louis, and that it had made a very advantageous contract with Elbert H. Van Kleeck (a synopsis of which was presented to them) to build a line from New York to Chicago for \$200,000. They deny most positively that these assurances were true, and say that the property of the Atlantic and Pacific Telegraph Company, if there is any such concern legally in existence, is not equal in value to the capital stock, but that the capital stock represents a value many times in excess of the reasonable cost of construction. They also declare that the synopsis of the contract with Van Kleeck was designedly intended to deceive, and that the company had contracted with him to construct the line at a price greatly in excess of its fair and reasonable cost. Here is another of their allegations, minus some of its legal verbiage:

"One E. H. Van Kleeck, the party in interest in this suit, confederating with Harrison D. Hunt, Edwin Thompson and Joseph Tuppert, Jr., to defraud the public, caused the corporation to be organized, and when so organized, entered into a contract with E. H. Van Kleeck, whereby, for the pretended consideration of his agreement to construct and furnish 3,000 miles of telegraphic lines, they agreed to transfer to him 50,000 shares of the capital stock of the corporation, the same being all the stock of the corporation; and Van Kleeck proceeded to obtain subscriptions for the stock, as if for the use and benefit of the company, whereas all the subscriptions and all the money received therefrom was received for the benefit of Van Kleeck and his associates, and not the corporation. And the organization of the corporation and all the acts done under it were done with the intent to enable Van Kleeck, for his own and his confederates' benefit, fraudulently to sell the stock, under pretense of acting for the corporation, at a price greatly in excess of any equivalent furnished by him to the corporation."

Grave charges, surely, but Messrs. Harris, Bill, Brown and Atwater went into court fully prepared to prove them. Such audacity was quite unexpected by the New York "wild cats," who evidently supposed that to threaten a suit at law would be to extort the money they wanted. But they counted without their host; and, not fancying the expose which they were fully aware would come out if the cases went to trial, they wisely abandoned them. A record of the fact was made, and the New Yorkers were thus prevented from ever renewing the suits. If every man who is deceived by the misrepresentations of stock-jobbers would be equally tenacious in holding on to his money, and equally earnest in fighting the men who would like to bleed him, there would be a large falling off in the amount of this peculiar style of swindling.—*Springfield Daily Republican*.

BATAVIA, N. Y., March 1, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

We send you enclosed death of another of our number, Harvey J. Moore, late operator of the Western Union Telegraph Company, at Niagara Falls, N. Y. He was a good operator, a young man of excellent habits, beloved by all who knew him, and leaves many friends to mourn his death. He has been employed by the Western Union Telegraph Company about four years.

Yours, respectfully,

E. G. T. ADAMS,

Operator W. U. Tel. Office.

JAMES D. YOUNG,

Operator Erie Railway Office.

Another Happy Man.

PRESENTATION.

On Saturday evening Mr. Read, who is manager of the telegraph office at Rutland, Vt., was made the recipient of a most elegant silver service, consisting of an ice pitcher, salver and two goblets, from his numerous telegraphic friends whose names appear below. The articles were from the establishment of Messrs. Giddings & Adams, and were elaborately chased. The inscription upon the pitcher was as follows:

"L. READ"

"73"

1 N. 1 & 3 S.

Feb'y, 1869.

The figures "73," in telegraphic parlance, means "compliments of," while the "1 N. 1 & 3 S." indicate the wires over which the operators who made the present preside. The goblets and salver were also each marked with the letter "R." The service was presented, in behalf of his friends, by Mr. I. W. Cope-land, of Brandon, in the following happy speech:

MR. L. READ, Manager Rutland Office—Dear Sir: We desire to express our appreciation of the many favors received at your hands, by the presentation of this service, as a token of our respect, believing that the current flowing from this fountain will always be steady, hoping your lines in life will seldom get crossed, that your error sheets can be settled without stamps, that we shall always be able to taste your battery, and as your line lengthens we trust that you will conclude to make use of a repeater, that the repeater will keep you well insulated, and the time be far distant when you will be grounded. With great respect, etc.

J. N. Hills,
E. T. Page,
B. H. Lee,
F. M. Meed,
M. E. Johns,
J. S. Hickok,
C. Smith,
G. Marshall,
I. W. Cope-land,
A. D. Tiffany,
W. G. Jamieson,
C. F. Spaulding,
J. H. Goulding,
J. Leamy,
A. Clark,
M. Wilbur,
W. W. Parks,
E. Rich,
F. N. Blanchard,

W. B. Eddy,
J. T. Shurtleff,
E. D. Bennett,
H. W. Spafford,
G. C. Kendall,
L. C. Orvis,
S. Grout,
E. B. Bond,
I. A. Pooler,
E. G. Mason,
J. A. Spafford,
C. T. Hawley,
J. W. Elkins,
J. E. Austin,
L. Johnson,
J. H. Reynolds,
D. G. Morgan,
B. G. Rice,
C. E. Murray.

Mr. Read, although taken unawares by his friends, thanked them most cordially for this most elegant testimonial of their regard, and said he should value it most highly, not for its intrinsic value, but as coming from the source it did and in such a manner.

For every evil under the sun,
There is a remedy, or there's none.
If there is one, try and find it,
If there is none, never mind it.

THE PNEUMATIC DISPATCH.—"It appears," says the N. Y. World, "that the human tides of Broadway are, and for the last three weeks have been, surging along, unconscious of a hollow gulf beneath them, other than the iron gasmain and the swashing, central sewer. An underground march has been stolen beneath the great thoroughfare by a corporation called the 'Pneumatic Dispatch Company,' which obtained its charter at the last session of the Legislature, and of which Moses Beach is President. Starting from the cellar under Devlin & Co.'s clothing store, at the corner of Broadway and Murray street, the company's miners penetrated to the centre of Broadway, and are now opening a tunnel from there down town at the rate, it is said, of about ten inches per day. The lower section of the tunnel is to terminate at the New York Post office; though when it will reach that destination the mysterious directors of this burrowing enterprise do not announce."

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, MARCH 15, 1869.

The Delivery of Dispatches.

There is no department of the telegraphic service so important as that which has to do with the delivery of messages after their telegraphic reception. The manipulation of a message over the wires, seemingly the most important part of the process, is simple, easy, and, of necessity, rapid. There grows no grass beneath the feet of Mercury when let out upon his aerial mission. Quick, sharp, exact, every impulse is synchronous, so that *sending* and *sent* become synonymous. One thousand or ten thousand miles, the electric current loses nothing of its fleetness, but, obedient to the finger of the operator, instantly responds across a continent, or in other continents, "Here am I." But, when the message has arrived at its telegraphic terminus, there begins a process of detention which requires the most faithful and sleepless management to limit to the barest necessity, and a series of tricks which the ingenuity of messenger boys only can invent. Here may be found nine-tenths of the trouble of telegraph companies, and the annoyances of those who use the lines.

Without entering fully into all the sources of anxiety connected with the employment of messenger boys to deliver dispatches, we, at present, refer to one only. Here, for example, is a gentleman in St. Louis, who, designing to go up in the evening train to Alton, or elsewhere, to visit some friends, telegraphs them that he hopes to be with them to tea. This he continues to do at different times, always notifying his friends of his designs, and paying, as he must, for his dispatches. One evening, as he and the young ladies, who are the sweet occasion of these frequent visits, sit on the balcony, conversing on divers matters in which the telegraph has its appropriate place, he is extremely annoyed to hear one of those troublesome brats who are always interfering with young ladies' secrets, sing out: "Yes, Mary has to pay fifteen cents for every message you send her; that telegraph boy makes heaps o' money, I bet." The gentleman inquires, alarmedly, what the boy means, and learns, after many blushing apologies, that it is even so, although the home of the family is but a few squares from the telegraph office, and has a messenger hired for the purpose of free delivery. Of course the gentleman becomes angry, just as we did when we were similarly used in a village not far from New York, and finds, on making complaint at the office, that the fifteen cents charged is a financial operation of the boy, which, it turns out, he has carried on for some time with impunity. Now caught and dismissed, he serves to illustrate one of the most mischievous practices which infest the system, and for which there must be found some mode of relief. When a dispatch has been paid for, the sender must have the assurance that the message will be delivered without further charge, or, it is clear, thousands of messages will be unsent because of dread of such an impost.

It should be understood that the Telegraph Company never make the delivery of messages a source of revenue, and that when a charge is made at all for such a service it is either a fraud, or because the distance of service from the delivering office renders such a charge just, or because upon the condition of paying such charges an office, such as are found at railroad stations, has been opened to the public. The general rule is to deliver all messages free within a reasonable radius of an office, and always so within the boundaries of towns and cities whose radius

does not exceed a mile, and the amount of whose business justifies the employment of a messenger. Our own impression is, that no message, except those distinctly understood to be payable on delivery, known as "collect" messages, should ever be allowed to bear charges for delivery. Until that becomes the universal rule, the business must be greatly hindered and made so far repugnant.

To do this universally, will, of course, require a wider and better knowledge of the conditions of delivery service, books of instructions adapted thereto, and distinct understanding with the parties sending as to location, &c. Yet we deem the subject one of the deepest importance, and now that the tariff is undergoing a searching examination, so as to establish it on a fair basis and within equitable limits, this kindred subject of the prepayment of delivery in every case, except on "collect" messages, may properly engage attention. Meanwhile it is due to the public that each telegraph office be instructed as to its duty in this matter, clearly defining the radius of free delivery and making the public acquainted therewith, so as to allow no opportunity for fraud and no excuse for misapprehension.

The great difficulty in the way of a universal free delivery is with the public. It is the result of experience that comparatively few people will state truly the distance of a dwelling from an office to which a message has been directed, and many will asseverate a residence to be only a square or two from an office which is in reality beyond the limits of the town. Were the public truthful, a system could be inaugurated with comparative ease which would remove the cause of many complaints, and induce a much larger use of the telegraph than now. It is our impression also that were all messages prepaid, and the losses and annoyances growing out of "collect" messages prevented, the telegraph companies would be able to inaugurate a universal free delivery.

We do not wish to be understood as speaking against the messenger boys. Far from it. We think of them as entitled to the utmost consideration and kindness. Their service is toilsome and important. But bad boys will find their way into the service, and some managers are not above collusion with them. A universal free delivery would remove much temptation and clear a very obstructed road for the increase of business.

The Cuba Telegraph Cables.

In our last edition we were in error in stating the quality of the cable recently laid for the International Ocean Telegraph Company between Florida and Cuba as second only to that of the Atlantic cable, whereas both the Cuban cables are superior to it, and the last 25 per cent. better than the first. The published tables of the insulating power of resistance of these cables is as follows:

Atlantic cable of 1865.....	349
First Cuba cable.....	464
Second Cuba cable.....	580

This correction we are very happy to make.

The superior quality of this last cable must be a comfortable atonement for the difficulties connected with its laying. The narrative of the work of its recovery and final connection, as communicated to the Company by Sir Charles Bright, is before us, and is evidence of the patience and toil and exposure connected therewith, and for the details of which we will endeavor to make room. Cuba held fast to the United States by two stout cables should now be regarded as annexed.

The Governments of the following islands of the Antilles have voted subsidies for telegraphic connection by way of Cuba with the United States, as follows:

St. Thomas.....	\$5,000 per annum in gold
St. Christopher.....	6,000 " "
Guadaloupe.....	10,000 " "
Martinique.....	10,000 " "
Barbadoes.....	12,500 " "
Trinidad.....	12,500 " "
British Guinea.....	15,000 " "

And the Government of Surinam is discussing the provision of a subsidy of \$15,000 per annum in gold, which will no doubt be granted. The exports and imports of these islands amount to over \$160,000,000 per annum.

Thus an annual subsidy of about \$87,500 in gold is provided for the extension of the telegraph to these islands, by which they will be placed side by side with the markets and civilization of America and Europe.

It cannot be long before the two coasts of South America will be in immediate connection with the net work of wires which cover the North American continent, and may be a large stride toward the pacification of the hostile republics by the introduction of so important an element of union and intelligence. The value of all these connections to the Cuba Cable Company need not be stated. It ought to become one of the best paying investments of the entire telegraphic field, especially so if it should happen that the Spanish cable project, by which Spain and Cuba is to be connected, should be consummated. We are informed that the affairs of the International Ocean Company are in a gratifying condition, which the bland and comfortable appearance of its valiant President sufficiently denote.

The Coast Survey Experiments.

The recent experiments by the United States Coast Survey to determine the longitude of the Pacific Coast by the telegraph wires, were of a most remarkable character, and brilliant above anything of the kind yet attempted. We have not space to allude to them at present further than to express our gratification at the result. Let any one imagine himself standing in a telegraph office between two wires—one going west to the Pacific and east to Cambridge, Mass., a distance of 4,000 miles, while the other, separated from it by a few feet, of equal length, connecting the same points, and attached to the other wire at its extreme end, thus making a circle of between 7,000 and 8,000 miles. All is quiet. Here is a small brass key, four inches long, at your right side. Lift it. What was that sound at your left—that clear, sharp click, indicating interference? Can you comprehend that you, in lifting that short lever the thirty-second part of an inch, robbed over 7,000 miles of wire of its electric life, and that in eight-tenths of a second it had told the story to fourteen States, had gone to the Pacific and back, twice the breadth of the Continent, and returned to you in less time than you can wink your eye? Touch it again as lightly as you please, and round this immense circle, from Boston harbor to the Golden Gate, the electric fire has returned as quickly as it went! Does it not stir the blood and stimulate the brain to stand in the circle of such suggestive wonders?

By the politeness of a friend in Chicago we are put in possession of copies of the Chicago *Republican* and *Times*, both of whom have excellent notices of these admirable experiments so far as they were known up to the time of their writing, one of which we publish for preservation.

The writer communicates the following additional particulars:

"The time occupied in a signal passing from Cambridge, Mass., to Buffalo and return, was one-tenth of a second; to Chicago, Ill., and return, two-tenths; to Omaha, Neb., and return, three-tenths; to Salt Lake City and return, six-tenths; to Virginia City and return, seven-tenths of a second; and to San Francisco and return, eight-tenths of a second."

What adds value to this whole interesting experiment is the fact that thirteen instruments had to repeat the act of depressing the key by the original actor, and yet all was performed in this mere fraction of a moment! Could a single unbroken wire have performed the service, and we believe it can, it would be found that the thrill of contact was instantaneous, and that the loss of time was caused wholly by the automatic machinery.

We expect to publish in our next number an interesting description of the process and the results arrived at, by an intelligent and competent hand.

These experiments illustrate another fact which thoughtful men have never doubted—the value of an organization whose wires reach the extremes of commerce and civilization. Of necessarily large proportions, and covering every avenue which living men tread to do commerce with each other or open up the earth's treasures, it has been subjected on that very account to bitter names, and to the keenest criticism. But this extension is vital to its own life and to public commerce. And now, when government needs to know the number of rods which separate Boston from San Francisco, a single star in the sky and the finger of a single operator of the Western Union Telegraph Company provides it.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

JANUARY, 1869.

Total Receipts	\$606,051 90
Total Expenses	349,578 70
Net Profit	\$256,473 20

COMPARATIVE STATEMENT.

Receipts—January, 1869	\$606,051 90
“ “ 1868	539,794 00
Increase	\$66,257 90
Expenses—January, 1868	\$366,446 02
“ “ 1869	349,578 70
Decrease	\$16,867 32
Net Profits—January, 1869	\$256,473 20
“ “ 1868	173,347 98
Increase	\$83,125 22

Another Death.

“There's a city vast yet voiceless, growing ever street on street,
Whither friends with friends e'er meeting, ever meeting never
greet.”

The year 1869 opens with graves. A dispatch from Cincinnati announces another laborer who has laid his burden down.

CINCINNATI, March 2, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

J. Frank Stevens, for sixteen years chief operator of the Western Union Telegraph Co. at Cincinnati, died this morning of consumption.

GEO. T. WILLIAMS.

We have been hoping to receive from some competent hand a fitting memorial of one we have long known and loved, but find the task left in our own most willing hands, although without the data to make it more than a passing notice.

Mr. Stevens was appointed by us to the position he has so long and worthily occupied on the 11th of June, 1852, taking the place of Gen. Stager, who at that time became connected with the House Printing Telegraph Co., which laid the foundation of the present Western Union Telegraph Co. It was a post of much responsibility, and required skill and discretion to execute usefully its peculiar duties. Gen. Stager had made Cincinnati, by his skillful management of the wires, the ruling office of the National lines, and that Mr. Stevens filled his place usefully and acceptably is high proof of his ability, if indeed any is needed.

Cincinnati has had in its working force some of the most skillful and excellent men which the business has produced. The two Durfees, long since dead, were notable examples of skill and fidelity. We cannot recall the names of others, except Gen. Stager, Calvin Holmes, Geo. B. Hicks, Stevens, Durfee, although their faces are well remembered. Mr. Stevens, although we have not seen him for fourteen years, we recall with a sorrowful pleasure as a kind, willing, self-sacrificing, genial and faithful friend and companion. We cannot believe that the lapse of years changed him in any of these qualities except to mellow them, and render him worthier of esteem. We had supposed him in good health, and hoped ere long to have visited him on our old field of labor. But he has closed his key for ever, and if we ever meet again we trust it will be where death dims nevermore human eyes, or interrupts human affections.

Mr. Stevens was a member of the Telegraphers' Mutual Life Insurance Association, and a call will soon be made for one dollar to replace the fund to which his heirs are entitled. The Committee delay the duty as long as possible to prevent embarrassment.

We wish to say here that where inability prevents remittance of assessments it should be made known. A number of kind gentlemen stand ready to help such when necessary. We wish we could print the letters written us from some of them. But they are too numerous, and we fear to offend.

Since writing the above we have received the following:

CINCINNATI, O., March 9, 1869.

At a meeting of the telegraphic fraternity of Cincinnati, called yesterday, to take action upon the death of their late chief operator, J. Frank Stevens, Mr. L. C. Weir was chosen as Chairman. Upon motion Mr. J. C. Mattoon was appointed Secretary. The Chairman then appointed a Committee of five to draft appropriate resolutions. The Committee consisted of Messrs. M. B. Graham, C. M. Knox, B. F. Bush, H. A. Pugh and B. B. Glass.

The Committee then prepared and presented the following preamble and resolutions:

WHEREAS, It has pleased the Almighty, in the dispensation of his Divine will, to remove from our midst our late friend and fellow operator, J. Frank Stevens, Esq.

Resolved, That in his death we mourn the loss of a valued friend, society a useful and worthy citizen, and the Company a capable and trustworthy officer, and one whose place it will be difficult to fill.

Resolved, That we tender to the bereaved family of the deceased our heartfelt sympathy in this their hour of affliction.

M. B. GRAHAM,
C. M. KNOX,
B. F. BUSH,
H. A. PUGH,
B. B. GLASS,
Committee.

Expressions of regret and sympathy were received by telegraph from W. W. Smith, G. T. Williams, J. D. Reid, D. McCargo, C. E. Taylor, and many other friends from various points, and read to the meeting. The meeting then adjourned until ten o'clock, Sunday, March 14th, to take further action on the subject. There was a large attendance, and the utmost feelings of solemnity and regret prevailed.

L. C. WEIR, Chairman.
J. C. MATTOON, Sec.

PARIS, February 27, 1869.

MY DEAR SIR—The French papers mention the experiments recently made in America in the use of electricity for the explosion of torpedoes in mines and wells, and the usefulness of the electric current for such purposes. The eminent electrician, Mons. Breguet, has just invented a new electro-magnetic machine which is regarded as possessing qualities superior to any now in use, and admirably adapted for the purposes above indicated.

It is very light, weighing about six pounds, of small size, and very useful for purposes of war. No battery is required, as it is a battery of itself. I have personally tested it, exploding four boxes full of gunpowder simultaneously at a distance of 150 miles, using the ground instead of a return wire.

It is called “Breguet's exploseur,” and from its effective qualities, low price (\$35 in gold) and small size, ought to be adopted by all nations, as it has already been in the French army.

Believe me, yours, &c.,
FRANCISQUE MICHEL, Electrician.

They Don't Like It.

It is very evident, from the tone of the English press, that the engulphing of the telegraph by government is regarded as a very doubtful delight. The statistics furnished from America has opened some very blind eyes, and the London Times confesses that had the private management of the English telegraphs been equal to those of America, no such arrangement could have been agreed to. So far no money has been voted to carry out the scheme agreed to. Leading statesmen are known to be opposed to it. We would not be surprised, and certainly would not be sorry, to see the whole plan upset, and the property remain in private control.

A VELOCIPED race took place at Nashua, N. H., last week. A silver cup offered for the quickest half mile at a trial of speed by the pupils in a Velocipede School, City Hall, was won, over nine contestants, by James Blake, late operator for the Northern Telegraph Line, in 2:50.

A TELEGRAPH line is about to be established between Buenos Ayres and Cordoba.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
MARCH 15, 1869.

To all Offices on W. U. Lines:

The following changes have occurred since March 1, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Brandon, Miss., reopened, tariff same as heretofore.		
Greensboro', Ala.,	“	Marion, Ala.
Hicksville, L. L.,	“	Mineola, L. L.
Huntington Depot, L. L.,	“	“
Northport “	“	“
Irondale, W. Va.,	“	Newburg, W. Va.

OFFICES CLOSED.

Deer Park, L. L., Letohatchee, Ala., and Rienzi, Miss.

GENERAL INFORMATION.

[Note.—NO ORDERS TO CHANGE TARIFFS MUST BE UNDERSTOOD AS

INCREASING EXISTING RATES.]

Hereafter all offices which have heretofore sent and checked business for Henderson, Ky., to Louisville, will send and check such business to Vincennes, Ind., tariff 80 and 6 from Vincennes.

TO OFFICES HAVING “SPECIAL SHEET A.”

Hereafter you will check Niagara Falls, N. Y., same as Suspension Bridge, N. Y.

Lafayette, Ind., will be checked at same rate as Chicago, Ill., and Indianapolis, Ind., at 25 cents more than Cincinnati by all offices east of Toledo, O., and Cincinnati; offices west and south will be furnished by their Supts. with rates to Lafayette and Indianapolis, Ind.

WILLIAM ORTON, President.

Balata Insulation.

This covering for telegraphic wires we had occasion to note at the time of its introduction, and hailed it as a valuable addition to our means of bringing the telegraph to perfection. The wires in cities must either be placed under ground, inserted in a cable for carriage on poles, or be covered by some substance which will prevent the annoying contact occasioned by strings, hoop-skirts, kite-tails, and the thousand and one ways in which they can be interfered with in our large cities. This covering must be unaffected by weather, so as not to crack or soften it, and must be of high qualities as a non-conductor, to be of essential service.

We have before us a specimen of balata covered wire made in 1867, which is as apparently perfect and elastic as it could ever have been. No crack nor hardness indicates change of condition, and it presents itself to us as a highly valuable material worthy of extensive use. The Bishop Gutta Percha Company have made arrangements to cover wire of any size with this material, and we commend it to the attention of our readers. Its quality as a superior non-conductor is guaranteed by the makers.

Married.

At the residence of, and by the Rev. W. M. Cunningham, in La Grange, Ga., on the 16th February, 1869, J. W. Hoy, of the Western Union Telegraph Company, to Miss Ida Burke, all of La Grange.

On Thursday, March 4th, by the Rev. Leighton Coleman, Mr. F. C. Eckensberger, of Catasaqua, Pa., to Miss Sallie Snyder, of Mauch Chunk, Pa.

Died.

At Key City House, Dubuque, Iowa, Monday, March 8th, of consumption, Lettie A. Watson, wife of Byron A. Squires, General Superintendent Mississippi Valley National Telegraph Company, aged 32 years. Remains have been taken to Oswego, N. Y., for interment.

In Batavia, N. Y., of typhoid fever, on the morning of February 28th, Harvey F. Moore, late operator Western Union Telegraph office, Niagara Falls, aged twenty-one years.

Western Union Telegraph Company.

BOARD OF DIRECTORS.

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 R. S. Burrows, Albion, N. Y.
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 Ezra Cornell, Ithaca, N. Y.
 John D. Caton, Ottawa, Ill.
 Z. G. Simmons, Kenosha, Wis.
 R. A. Lancaster, Richmond, Va.
 A. B. Cornell, Ithaca, N. Y.
 M. Lefferts, N. Y.
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 Geo. Walker, Springfield, Mass.
 Alfred Gaither, Cincinnati.
 Le Grand Lockwood, New York.

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Hiram Sibley,

N. Green,

B. R. McAlpine,

Vice-Presidents.

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W. H. Abel, *Auditor.*

R. H. Rochester, *Assistant Treasurer.*

Marshall Lefferts, *Engineer.*

SUPPLY DEPARTMENT.

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A. H. Watson, *Storekeeper, New York.*

H. L. Melton, *Supply Agent, Cleveland, O., and Chicago, Ill.*

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Anson Stager, *General Superintendent.*

Residence, Chicago, Ill.

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Superintendents of Districts.

	Residence.
District 1—J. J. S. Wilson, - - -	Chicago, Ill.
" 2—R. C. Clowry, - - -	St. Louis, Mo.
" 3—W. B. Hibbard, - - -	Omaha, Neb.
" 4—T. B. A. David, - - -	Pittsburg, Pa.
" 5—E. P. Wright, - - -	Cleveland, O.
" 6—John F. Wallick, - - -	Indianapolis, Ind.
" 7—George T. Williams, - - -	Cincinnati, O.

EASTERN DIVISION.

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Residence, New York City.

ASSISTANTS.

District Superintendents.

	Residence.
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" 4—George W. Gates, - - -	White River Junction, Vt.
" 5—Charles F. Wood, - - -	Boston, Mass.
" 6—George B. Prescott, - - -	Albany, N. Y.
" 7—S. B. Gifford, - - -	Syracuse, N. Y.
" 8—D. H. Bates, - - -	Philadelphia, Penn.
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B. & O. Railway District—A. G. Davis, - - -	Baltimore Md.
Erie Railway District—W. J. Holmes, - - -	New York.

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John Van Horne, *General Superintendent.*

Residence, Louisville, Ky.

ASSISTANTS.

Superintendents of Districts.

	Residence.
District 11—J. R. Dowell, - - -	Richmond, Va.
" 12—J. W. Kates, - - -	Lynchburg, Va.
" 13—J. A. Brenner, - - -	Augusta, Ga.
" 14—C. G. Meriwether, - - -	Mobile, Ala.
" 15—James Compton, - - -	Jackson, Miss.
" 16—James Coleman, - - -	Memphis, Tenn.
" 17—Thomas Johnson, - - -	Corinth, Miss.
" 18—Geo. W. Trabue, - - -	Nashville, Tenn.
" 19—L. C. Baker, - - -	Little Rock, Ark.
" 20—G. M. Baker, - - -	Shreveport, La.
" 21—D. P. Shepherd, - - -	Houston, Texas.
" 22—D. Flanery, - - -	New Orleans, La.

MACHINE SHOPS.

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EDISON'S

DOUBLE TRANSMITTER.

THE MOST PRACTICAL APPARATUS OF ITS KIND YET INVENTED.

Complete Sets (put up in working order), price \$400, \$450, \$500.

For further information, address:

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Care CHARLES WILLIAMS, JR.

Telegraph Instrument Maker,

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L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

AND

BLISS, TILLOTSON & CO.,

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Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK,

General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York. The long experience of this Company (and that of Mr. SAMUEL O. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their:

SUBMARINE TELEGRAPH CABLE.

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

BENEDICT BROTHERS,

No. 601 BROADWAY,

BETWEEN AMITY AND FOURTH STREETS,

JEWELERS,

KEEPERS OF THE CITY TIME,

FINE WATCHES, CHAINS, DIAMONDS,

AND

SOLID SILVER WARE.

AGENTS FOR THE AMERICAN WALTHAM WATCH.

Watches Repaired in the most thorough manner, and Warranted.

SPECIAL NOTICE.

Since the 1st of September a new and valuable improvement has been attached to all the Watches made by the American Waltham Watch Company, namely: Fogg's Patent Pinion, and also the Sprung Over Regulator.

We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

BENEDICT BROTHERS,

Agents for the American Waltham Watch,

601 Broadway.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 3, 1893.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPRATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the plating point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

The following is an extract from a letter from Mr. Clarence Rathbone, operating city line Albany, N. Y. Referring to the "Nonpareil Relay," he says:

"The only opportunity I have had of trying your relay is on a short line in this city having twelve or thirteen offices. In wet weather with an ordinary instrument it is necessary to change adjustment for each office, but with your relay I have found it always adjusted."

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Dec. 15, 1893.

Goods sent to all parts of the Continent with bill C. O. D.

Parties remitting in advance by certified check, payable in New York, or by Post Office order, will save the expense of returning funds by express.

Address all orders to

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Manufacturers and Merchants of every variety of

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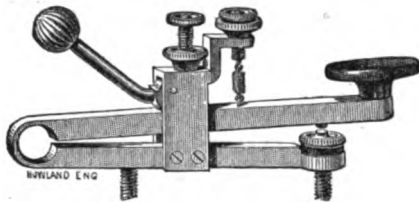
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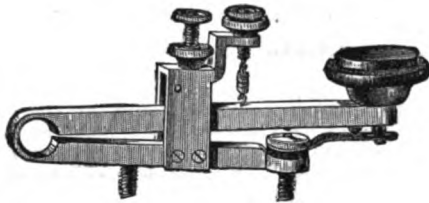
AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be intrusted, whether for the construction of any or all lines of telegraph, or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closer.



2.—Patent Self-closing anti-trunion Key.

3.—Kerite or (horn covered) copper or compound wire or cables.

4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

CHARLES WILLIAMS, JR.,

109 Court Street,

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MANUFACTURER OF

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WRITING AND COPYING FLUID,

Labeled by me, for the last ten (10) years, *ARNOLD'S FLUID* Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33¼ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

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Every Article Warranted of the

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Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

SHAWK & BARTON,

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ELECTRICAL INSTRUMENTS,

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Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
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Insulators,	Relays,	Induction Coils,
Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials
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&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

WESTERN UNION STANDARD PATTERNS,

and shall keep up with the times in all valuable improvements.

Customers can obtain at our depot a

COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

embracing such instruments of other manufacturers as are good and serviceable.

We are prepared to take contracts on liberal terms for the construction and equipment of

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BALATA INSULATION

FOR TELEGRAPHY ELECTRIC WIRES.

We are now prepared to furnish wire insulated with this new and valuable material, which, from the time in which we have had to test its merits, proves to be

VERY TOUGH AND PLIABLE,

WILL NOT BECOME BRITTLE,

WILL NOT CRACK,

IS NOT EASILY AFFECTED BY EXPOSURE TO THE WEATHER,

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IS A PERFECT INSULATOR.

Any size or style of Wire made to order at short notice by the only manufacturers,

THE BISHOP GUTTA PERCHA COMPANY.

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EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE.

Who has not used

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That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 3OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES.

S. S. STAFFORD,
Sole Proprietor, N. Y.

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MANUFACTURERS OF
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AND

MATERIALS OF EVERY DESCRIPTION.

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The Compound Wire has now stood every test to which it can be subjected. Over twelve hundred miles of it are now in operation with the most satisfactory results.

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General Agents for

PURE NITRIC AND SULPHURIC ACIDS,

Manufactured by the Lodi Chemical Works.

Importers of the best manufacture of

ENGLISH GALVANIZED WIRE.

Publishers of Prof. J. E. Smith's

MANUAL OF TELEGRAPHY.

GROVE,

CARBON,

HILL'S,

DANIELL'S,

And every description of

BATTERY ALWAYS ON HAND.

DR. L. BRADLEY,

NO. 7 EXCHANGE PLACE, JERSEY CITY, N. J.,

Keeps constantly on hand and for sale his

IMPROVED TELEGRAPH INSTRUMENTS,

Having adopted the use of

OREIDE METAL,

which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed.

His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them.

Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1863. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-800th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine	\$19 50
Small Box Relays	16 00
Same in Rosewood	17 00
Medium Box Relays	17 00
Same in Rosewood	18 00
Large Box Relays	18 00
Main Sounders same as the above, with heavy armature lever, without local connections	75 cents less
Pocket Relays, with all the adjustments of the above and good Lever Keys	22 00
Excellent Registers	40 00
Pony Sounders	6 75
Keys	6 50

All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old spools taken at the price of new wire by the pound. Goods sent to all parts of the continent with bill C. O. D. Or, to save expense of returning funds by express, remittance may be made in advance by certified check payable in New York, or Post-office orders, in which case he will make no charge for package.

He has ample facilities for furnishing all other kinds of Telegraph Supplies at the lowest manufacturers' prices.

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET

CHICAGO, ILL.

MANUFACTURERS AND DEALERS IN

TELEGRAPH MACHINERY AND SUPPLIES,

GALVANIZED AND PLAIN WIRE,

INSULATORS, AND EVERY DESCRIPTION OF

OFFICE AND BATTERY MATERIAL

ALWAYS ON HAND.

INSTRUMENTS REPAIRED AT SHORT NOTICE

L. G. TILLOTSON & CO.,

New York.

GEORGE H. BLISS,

Chicago.

THE BISHOP GUTTA PERCHA COMPANY,

The Original and Only Manufacturers in the United States of every description of

PURE GUTTA PERCHA GOODS.

INSULATED SUBMARINE TELEGRAPH CABLES.

INSULATED TELEGRAPH AND ELECTRIC WIRE.

The Insulation of Telegraph and Electric Wire with Gutta Percha has been adopted by the manufacturers of these articles, in Europe as well as here, and in an experience of over TWENTY YEARS has never failed.

We also Manufacture

WATER, BEER AND SODA PIPE,

CHEMICAL VESSELS,

GUTTA PERCHA SHEET OF ALL THICKNESSES,

TISSUE SHEET FOR HAT AND CAP MAKERS' USE,

COTTON AND SILK COVERED WIRE,

BRIDGE'S ELECTRIC CORDAGE,

BISHOP'S COMPOUND CORDAGE, &c., &c.

FACTORY, 422, 424, 426 EAST TWENTY-FIFTH STREET.

Office and Salesroom,

NO. 113 LIBERTY ST., N. Y., WEST OF BROADWAY.

SAMUEL C. BISHOP,

General Agent.

WALTER O. LEWIS, Esq.,

Electrician of the Company.

L. G. TILLOTSON & Co.,

11 DEY STREET, NEW YORK,

MANUFACTURERS OF

GLASS INSULATORS, ALL PATTERNS.

Zincs, Porous Cups, Platinum, Acids, Quicksilver, Tumblers, Coppers, &c. All of the most approved Pattern and Best Quality.

REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

Printed Message Heads and Envelopes

On hand and furnished to order.

WIRE, GALVANIZED AND PLAIN,

AT THE

LOWEST MANUFACTURERS' PRICES.

COPPER AND BRASS WIRE

Of any number required.

OFFICE WIRE,

GUTTA PERCHA or COTTON COVERED

AND

MAGNET WIRE.

REGISTERS,

RELAY MAGNETS,

SOUNDERS, KEYS,

CIRCUIT-CLOSERS,

CUT-OUTS,

SWITCH-BOARDS,

BINDING-SCREWS,

PAPER-REELS,

LIGHTNING-ARRESTERS,

REPAIRERS' TOOLS,

&c., &c., &c., &c.

OF EVERY DESCRIPTION.

CABLES

Of any desired Size and Pattern, American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

L. G. TILLOTSON & Co.

No. 11 Dey street, New-York.

THE BROOKS

PATENT PARAFFINE INSULATOR WORKS,

NO. 28 SOUTH TWENTY-FIRST STREET.

PHILADELPHIA



All varieties of INSULATORS manufactured at these Works are warranted to excel the usual style of Glass and Rubber more than one hundred fold. In view of the error and delay in transmission, waste and consumption of battery material, the results of defective insulation, its fragile nature and expense of renewal, nothing is more manifest than its economy.

To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.

JOHN POLHEMUS, Printer and Stationer, 102 Nassau St., N. Y.

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JOURNAL OF THE TELEGRAPH.

SUPPLEMENT.

THE MACHINERY OF THE TELEGRAPH.

We have had frequent occasion to express our surprise at the constant and large demand for telegraphic machinery. Twenty years ago we tried in vain to induce manufacturers to finish a few sets in advance of their purchase, so as to be ready for immediate use whenever required. But no, there was no assurance that another would be needed, and the mechanics' file and foundry awaited a written order. One or two in Philadelphia, a single house in New York, and one in Utica, were the only places where a telegraph register could be seen, or men were engaged in making them. But times have changed. The rapid extension of lines has demanded an army of men to make its appliances. Wire factories were suddenly put into requisition to their utmost capacity, night and day, to supply orders from all parts of the country; and even now, when one would suppose telegraph lines had reached their limits, the demand continues, and several hundred men are employed in various cities turning out, with all the aids of systematized labor and adjusted machinery, fresh supplies for the ever-accumulating demand.

The Western Union Telegraph Company have large establishments located in Williamsburgh, N. Y., Louisville, Ky., and Ottawa, Ill., under superintendents of known skill, where immense numbers of magnets, keys, registers and all the paraphernalia of the telegraph are turned out to meet the wants of that Company, and yet there is a demand great and constant outside of that organization, which tasks the capacity of a dozen establishments to supply. Nothing so reveals the ceaseless activity of the nation as facts like these.

Among these establishments, and within the last year or two somewhat taking the lead in the distinctive articles for practical telegraphy, is the house of

L. G. Tillotson & Co., No. 11 Dey Street, N. Y., which claims from us more than a passing notice.

In a recent mission for a friend in the South, we had occasion to visit the shops of Tillotson & Co., 137 and 139 Elm street, and embraced the opportunity to give the premises an editorial examination, presuming that it might be our duty to place the record thereof before our readers. A telegraph machine shop is a very interesting place to a telegrapher, and we presume we will be excused if we gab a little of what we saw.

We made a mistake in not taking the head of the house along with us. Mr. Tillotson is a sublime companion. We have often coveted his rotundity, his benign and jolly suavity—the *suaviter in modo* and *fortiter in re* which distinguishes him; but we found the foreman, Mr. W. H. Markland, fully equal to all we desired for our visit, and who very politely showed us the Tillotson establishment in all its detail of work. When we first entered the shop rooms about thirty men were very deeply engaged devouring their mid-day lunch, and this gave a very paternal character to the concern, as if Major Tillotson's thirty sons were enjoying the fruits of such honorable paternity. The rooms are large and commodious, and the men en-

gaged seemed to us like men of experience and skill. The system of retaining the services of good men, and making sacrifices and not unfrequently taking risks to keep them, has been pursued with admirable success. During the last winter this has been found not only a humane and generous arrangement, but has brought its proper fruits. Although at the opening of winter there were, as is usual at that season, no orders on hand to justify the retention of men, yet the whole force were retained through the entire winter on full pay. A large amount of machinery was thus accumulated upon the hands of the Company, but even before spring had set in every article thus made had been sold, and the wisdom of a generous regard for good men established and repaid.

We noticed one feature in the manufacture of machinery which has been too long neglected, perhaps because some have thought that it was against the interests of manufacturers to adopt. We refer to having all the parts of an instrument made by some distinct model, and so that every part made is a duplicate, complete and perfect, of the former. So here we were pleased to find that binding screws, armatures, cores, levers, posts, springs, keys and parts of keys, wheel trains and axles, the screws for the different parts, flys, stops, rollers, winding barrels and everything were made upon distinct models, and thus one machine made the duplicate of the other. The advantage of this must be obvious. When a part of an instrument has given out, the whole instrument has frequently had to be set aside or shipped to a great distance for repair. Many instruments have thus been lost. Now nothing is necessary but to order the duplicate of a certain part and at once the machine is complete as ever.

So of the different parts of the same part. The lathes are supplied with the drills of the exact depth required, and thus all is turned out with the exactitude of a watch. There is great economy of labor in all this, great opportunity for perfection, but the chief advantage is that of the absolute similarity of the parts and their applicability to any machine.

The Quality of the Work.

After what we have said it seems scarcely necessary to say that the Tillotson manufactures are of the highest order. It could scarcely be otherwise. When a man has been set to make a distinct part, and been educated to it thoroughly, and made it for many years his only duty, he cannot avoid a perfection of work which miscellaneous labor would never produce. The machinery is massive, strong, of elegant forms, of excellent and convenient combinations, and, therefore, always acceptable. To this, far more than to even the urbanity of the principal, is the success of this house due. We have had occasion to admire its products, and two beautiful sets of machinery have recently been selected by Professor Morse from among them to present to two of our distinguished colleges.

The Superintendent.

We missed the presence of the Superintendent of these works, Mr. E. M. Pierson, although Mr. Markland gave us ample opportunity to acquaint ourselves with all needed

details. Mr. Pierson, however, is well known to us as a very pleasant gentleman and ingenious workman. All the work of the establishment is, of course, under his care, and the management could not be in better hands. The arrangements to which we have alluded are his work, and the success of the establishment is greatly the result of his skill.

Other Manufactures.

Besides the usual telegraph machinery, Tillotson & Co. turn out various electrical appliances, burglar alarms, dial telegraphs, Colgan and Jones switches, gas lighting apparatus, electro magnetic machines, and many other things connected with electric science. Here also our friend Callahan has his valuable Broker Telegraph instruments made, of which there are now over two hundred in use in the offices of our brokers.

Bliss, Tillotson & Co., 171 South Clark Street, Chicago, Illinois.

This is a branch of the New York house of Tillotson & Co., rendered absolutely necessary to meet Western demands. It is under the direction of Geo. H. Bliss, Esq., a gentleman of much worth and ability, and has already proved itself of great value to the West. All the goods sold there are supplied at Eastern prices, and a supply is always kept on hand to meet orders.

Gutta Percha Goods.

Both of these houses are agents for the celebrated products of the house of S. C. Bishop, including cables of all kinds, the "Balata Insulation" now coming into general use, which can be exposed without injury and retains its qualities under all the tests of weather to which it has been exposed. The perfection of its insulating qualities must secure for it a large sale. The pole-cordage and office wire of the Bishop Company, and, indeed, all the telegraph appliances made by them are supplied by the houses of Tillotson & Co.

American Compound Wire.

This article, the merits of which are not yet sufficiently known, is also supplied by this house. This wire is steel copper covered, and provides a conductor of half the weight with twice the conductivity of ordinary wire, a fact which must bring it into extensive use.

The New York Sales Rooms, 11 Dey Street.

To parties visiting New York we refer them to these rooms with entire confidence in the honor of the house and the value of its products. There will be found also the products of many other manufacturers, and a large stock of railway supplies, which constitute an important feature of the business. These include all kinds of packing, rubber springs, Dudgeon's jacks, wrenches, rubber buckets, waste, hose, files, spikes, ties, head lights, steam gauges, lanterns, &c., &c. The principal of the house has long been identified with the telegraph, as well as the railroad, and few names are more familiar than his. We are gratified at his success, proud of his enterprise, and glad that he deserves the triumph which energy, and good sense, and good nature, a good partner, a first-class superintendent and faithful men have secured to his house. "Long may he wave." We now ask attention to the following advertisements.

L. G. TILLOTSON & CO.,

No. 11 DEY STREET, NEW YORK.

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO.

L. G. TILLOTSON. E. S. GREELEY. G. B. GAVETT, JR. G. H. BLISS.

PRICE LIST OF TELEGRAPH MACHINERY AND SUPPLIES.

CUT OUTS.—Single (Plug) with Lightning Arrester.....	\$6 00
GALVONOMETERS.....	10 00
“ to order.....	
SWITCHES, Repeating.....	6 00
“ Ground.....	1 00
“ to order, of any pattern.....	
SWITCH BOARDS, Jones' Patent Lock.....	
“ “ Colgan's, made to order.....	
BELL MAGNETS for any number of wires wanted.....	15 00

INSTRUMENT FIXTURES.

BASES.....	
BINDING POSTS.....	18
THUMB SCREWS.....	18
TABLE ADJUSTMENTS.....	1 00
SWITCH PLUGS.....	1 00
PAPER REELS.....	3 00
REGISTER PAPER, per lb.....	24
“ “ by the case.....	21

BATTERY MATERIAL.

MAIN.

GROVE (complete), per bell.....	\$1 60, \$1 75 and	\$2 00
“ Platinum Strips.....	85 to	1 00
“ “ Stands.....		75

INSTRUMENTS.

REGISTERS.—No. 1. Tillotson Premium Pattern.....	\$45 00
“ “ 2.....	40 00
“ Weights and Pulleys.....	2 50
“ Cords.....	35
“ Keys.....	1 25
RELAYS.—No. 1.....	18 00
“ “ 2.....	15 00
“ “ 1. Box-sounding, Tillotson Pattern.....	16 00
“ “ 2. “ “ “.....	15 00
“ “ 1. “ with Key attached.....	23 50
“ Combination Main Circuit Sounder, with Key, all on one base.....	30 00
“ Springs, per dozen.....	75
“ Pocket, in Hard Rubber Cases.....	20 00
KEYS.—No. 1. With Spring Circuit Closer.....	6 50
“ “ 2. Western Union Pattern.....	5 50
“ “ 3.....	5 00
SOUNDERS.—No. 1. Local.....	9 00
“ “ 2. “ (Pony).....	6 50
“ “ 1. “ Repeating.....	10 00
“ “ 2. “ “.....	10 00
CUT OUTS.—Single (Plug).....	3 00
“ Double “.....	6 00
“ Single “ with Ground Wire.....	5 00

GROVE Porous Cups, per doz.....	\$1 25
“ Tumblers, per doz.....	\$4 00, \$5 00 and 6 00
“ Zincs, each.....	55
CARBON (complete), per cell.....	\$1 50 to 2 00
“ Cokes, each.....	55
“ Clamps, “.....	25
“ Tumblers, per doz.....	\$4 50 to 6 00
“ Porous Cups, per doz.....	1 50
“ Zincs, each.....	55
HILL (complete), per cell.....	1 50

LOCAL.

DANIELLS' (complete), per cell.....	\$1 75
“ Connectors.....	25
“ Coppers (W. U. Pattern).....	45
“ Pockets.....	25
“ Coppers, with Pockets.....	65
“ Porous Cups, per doz.....	2 00
“ Jars (Earthen), each.....	25
“ “ Glass (Flint), each.....	60
“ Zincs (Star).....	40
HILL (complete), per cell.....	1 75

CHEMICALS.

ACID, Nitric (41 deg.), per lb.....	\$ 14
“ Sulphuric “.....	4
ELECTROPOION FLUID [(for Carbon Battery), per lb....	2
SULPHATE OF COPPER (Blue Vitriol), per lb., by barrel	

SULPHATE OF COPPER (Blue Vitriol), per lb., small packages.....	
QUICKSILVER, in Flasks, per lb.....	\$ 83
“ in Bottles “.....	90

BATTERY UTENSILS.

BRUSHES, No. 1, Main, per doz.....	\$6 50
“ “ 2, “ “ “.....	5 00
“ “ 1, Local, “ “.....	6 00
“ “ 2, “ “ “.....	5 00

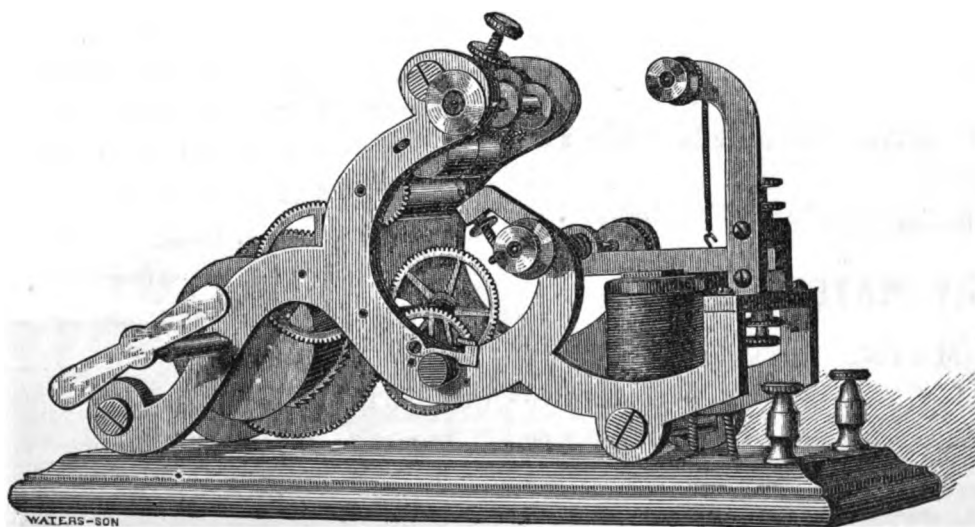
FUNNELS, Gutta Percha.....	
“ Glass.....	
SYRINGES.....	3 00
HYDROMETERS.....	75
ACIDOMETERS.....	

STATIONERY.

BLANKS, ENVELOPES, MESSAGE PAPER, MANIFOLD
PAPER, &c., &c., TO ORDER.

LINE MATERIAL.

INSULATORS, Glass.....	8c. to 10c.
BRACKETS.....	5c.
CROSS ARMS.....	
PINS.....	
SPIKES.....	
LAG SCREWS, &c.....	



CABLES OF ALL SIZES AND PATTERNS

MANUFACTURED BY THE

Bishop Gutta Percha Company.CUTS, SAMPLES AND PRICES FURNISHED
UPON APPLICATION.**LINE WIRE.**Compound Steel Core, manufactured by the American Compound Telegraph
Wire Company. Descriptive Pamphlets and Prices
furnished upon application.**PER MILE, \$54 and UPWARDS,**

According to Conductivity and Strength desired.

English and American, Best Quality, Galvanized and Annealed Iron Wire always
on hand.**OFFICE WIRE,**GUTTA PERCHA, HARD RUBBER, COTTON COVERED, BRAIDED, SILK
COVERED, &c., &c.**CONSTRUCTION TOOLS,**

Pliers, Vises, Climbers, Augers, &c.

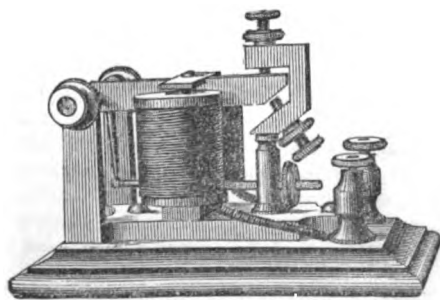
Manufacturers of Jones' Patent Lock Switch Board,
Manufacturers of Glass Insulators, Brackets, &c.,
Manufacturers of Ogden's Patent Carbons,
Manufacturers of Hill's Galvanic Battery,

AND EVERY DESCRIPTION OF

TELEGRAPHIC, ELECTRICAL, AND MEDICAL APPARATUS.

*Dealers in the best Manufacture of***Galvanized and Plain Wire.**

A Stock of No. 9 constantly on hand.



PONY SOUNDER.

GENERAL AGENTS FOR THE

Bishop Gutta Percha Company,

MANUFACTURERS OF

SUBMARINE TELEGRAPH CABLES,

AND

Insulated Wires of every description.

This is the only establishment in the United States having the right to manu-
facture Gutta Percha in any form—a material which never has been,
and never can be superseded as an Insulator for Submarine,
Subterranean and Office purposes.

GENERAL AGENTS FOR THE

American Compound Telegraph Wire Co.

ABOUT 1,000 MILES OF THIS WIRE IS NOW IN OPERATION.

Not a single complaint has been made against it; but, on the contrary, parties
using it have entirely discarded the iron wire.

GENERAL AGENTS FOR THE

Rodi Chemical Works,

Manufacturers of Pure Nitric and Sulphuric Acids.

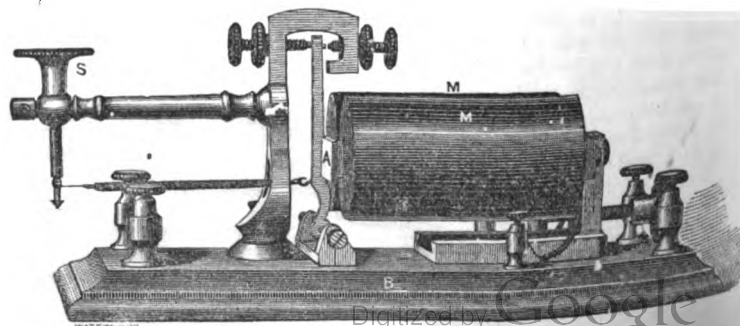
Publishers of Prof. J. E. Smith's

"MANUAL OF TELEGRAPHY."*We invite a close inspection of the quality of our Goods and
Prices. Liberal Terms to the Trade.***L. G. TILLOTSON & CO.,**

Salesroom, 11 Dey Street, New York

BLISS, TILLOTSON & CO.,

171 South Clark Street, Chicago, Ill.

FACTORY, 137 and 139 Elm St., N. Y. E. M. PIERSON, Sup^t

No. 1 RELAY.

JOURNAL OF THE TELEGRAPH.

VOL. II NO. 9.

NEW YORK, APRIL 1, 1869.

WHOLE NO. 34.

The Telegram.

Dead! did you say? he! dead in his prime!
Son of my mother! my brother! my friend!
While the horologe points to the noon of his time,
Has his sun set in darkness? Is all at an end?
("By a sudden accident.")

Dead! it is not, it cannot, it must not be true!
Let me read the dire words for myself, if I can;
Relentless, hard, cold, they rise on my view—
They blind me! how did you say that they ran?
("He was mortally injured.")

Dead! around me I hear the singing of birds
And the breath of June roses comes in at the pane;
Nothing—nothing is changed by those terrible words;
They cannot be true! let me see them again!
("And died yesterday.")

Dead! a letter but yesterday told of his love!
Another to-morrow the tale will repeat;
Outstripped by this thunderbolt flung from above,
Scathing my heart, as it falls at my feet!
("Funeral to-morrow.")

Oh, terrible Telegraph! subtle and still!
Darting thy lightnings with pitiless haste!
No kind warning thunder—no storm-boding thrill—
But one fierce deadly flash, and the heart lieth waste!
("Inform his friends.")

SARAH E. HENSHAW, in *March Galaxy*.

The Tools of Great Workmen.

It is not tools that make the workman, but the trained skill and perseverance of the man himself. Indeed, it is proverbial that bad workmen never yet had good tools. A student once asked a great artist by what wonderful process he mixed his colors. "I mix them with my brains, sir," was his reply. It is the same with every workman who would excel. Ferguson made a wonderful thing—his wooden clock, that accurately measured the hours—by means of a common penknife, a tool in everybody's hand, but then everybody is not a Ferguson. A pan of water and two thermometers were the tools by which Dr. Black discovered latent heat. A prism, a lens, and a sheet of pasteboard enabled Newton to unfold the composition of light and the origin of color. An eminent foreign *savant* once called upon Dr. Wollaston, and requested to be shown over the laboratories in which science had been enriched by so many important discoveries. The doctor took him into a little studio, and, pointing to an old tea-tray on the table, containing a few watch-glasses, test-papers, a small balance, a blow-pipe, he said: "There is all the laboratory I have." Stothard learned the art of combining colors by closely studying butterflies' wings. He would often say that no one knew how much he owed to those tiny insects. A burnt stick and a barn door served Wilkie in lieu of pencil and canvas. Bewick first practiced drawing on the cottage walls of his native village, which he covered with his sketches in chalk; and Benjamin West made his first brushes out of a cat's tail. Ferguson laid himself down in the fields at night in a blanket and made a map of the heavenly bodies by means of a thread with small beads on it, stretched between his eyes and the stars. Franklin first robbed the thunder-cloud of its light-

ning by means of a kite made with two cross-sticks and a silk handkerchief. Watt made his first model of the condensing steam engine out of an old anatomist's syringe, used to inject the arteries previous to dissection. Gifford worked his first problem in mathematics, when he was a cobbler's apprentice, upon small scraps of leather, which he beat smooth for the purpose; while Rittenhouse, the astronomer, first calculated the eclipses on his plow handles.—*American Artizan*.

Sounds of Telegraph Wires.

As the cause of the sounds frequently heard to proceed from the wires in the open air, it has been customary to accept the wind, and its producing the soundings by direct vibration, similar to those of the *Eolian harp*. A different view of it, however, and one which will recommend itself perhaps more generally, is given by a railroad officer in the *Austrian Railway Gazette*.

He calls observation to the fact that one who gives his close attention to both the wires and sounds will find that the latter make their appearance likewise when there is a total absence of wind; and in a quiet morning in winter, when the wires appear covered with frost to the thickness of a finger, they nevertheless carried on lively vibrations and swinging while the air was totally quiet. The observer had noticed this for eighteen years past, and at last was led to the real cause of the phenomenon.

According to him, therefore, the vibrations are not due to the wind, but to the changes of atmospheric temperature, and especially through the action of cold, as lowering of the temperature induces a shortening of the wires, extending over the whole length of the conductor. A considerable amount of friction is produced on the supporting bells, and this gives the explanation for the sounding both in the wires and the poles. This explanation also concurs with the fact that poles bearing but one or a few wires give off far louder sounds than when loaded with many, because in the latter case the vibrations produced must be less uniform and simultaneous.

Interesting Experiment in Electricity.

The *Boston Journal of Chemistry* gives the following amusing and instructive experiment: "Procure four glass tumblers or common glazed teacups, and having wiped them dry as possible, hold them over the fire to evaporate any moisture which may still adhere to their surface; for if there is the least moisture it makes a connection and spoils the experiment. Place them upon the floor in a square, about one foot apart; place a piece of board upon the tumblers, and have a person standing upon the board. This person is now completely insulated, the glass being a non-conductor of electricity. Now take a common rubber comb, and having wound a piece of silk around one end of it, rub it briskly through your hair, and draw the teeth parallel to the insulated person's knuckles, leaving a little space between the comb and the person's hand. The result will be a sharp, crackling noise, and if dark, there will be seen a succession of sparks. Re-

peat the process until the phenomena cease. The person is now "charged" with electricity, the same as a Leyden jar. To draw off the electricity, approach your knuckles to the person's hands or his nose (being careful not to allow any portion of your body to come in contact with his), and there will be a loud snap and the sparks will be very brilliant. If a cat be held so that the charged person can place his knuckles in proximity with the animal's nose, it will suddenly appear as if it were in contact with an electric battery. A glass bottle may be used in lieu of the comb, but it is not so well adapted for the purpose. Much amusement may be derived from this extremely simple experiment, and some of our numerous young readers will hasten to try it for themselves."

Correspondence.

The Coast Survey Experiments.

Boston, March 22, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

Although several articles have been published in relation to the recent experiments by the United States Coast Survey for the purpose of establishing the longitude of a point on the Pacific coast, I propose to offer a brief communication on the subject, confining myself more especially to a description of the instruments used at Cambridge, similar instruments for the purpose having probably been used at San Francisco.

The Chronograph, by which the measurements of time are recorded, consists of a cylinder carried by clock-work, and which makes exactly one revolution per minute. This cylinder is thirteen and a half inches in length and about six inches in diameter. Its surface is covered by a sheet of plain white paper of the proper dimensions, and above which is placed an electro magnet, with a pen attached to its armature, and resting upon the paper. When the cylinder rotates, the circuit in which the electro magnet is placed, being closed and undisturbed, a smooth ink line is marked upon the paper, which of course, with each revolution of the cylinder, represents one minute, and is twenty inches in length; but as each succeeding minute line would be marked directly over the preceding, if not prevented from so doing, the mechanism is so arranged as to gradually move the electro magnet, with its pen-armature attachment, on a slide (placed lengthwise with the cylinder) at the rate of one-twelfth of an inch per minute, thus causing the pen to mark a continuous spiral line, each of which extending around the cylinder, being one-twelfth of an inch from the preceding.

During the revolutions of the cylinder, the seconds are marked by a short break in the circuit, produced at each vibration of the clock pendulum, which break causes the pen to diverge slightly at the instant, and thereby marking a short loop in the minute line. The seconds thus recorded are separated one-third of an inch, and of course any intervening break marks the fractional part of the second in the same manner,

this fraction being measurable to the one-hundredth part of a second.

On the night of the exchange of clock signals between distant points, by means of telegraphic communication, the error of each clock is ascertained by independent observations, something after the following method :

Placed in the focus of the object glass of the Cambridge telescope are twenty-five spiders' lines, in groups of five. During the observations the electro magnet attached to the chronograph is connected with the observer's key, in a local circuit, the clock pendulum recording the seconds regularly as the cylinder revolves. At the instant a star, which is being observed, passes each of the spiders' lines, the observer breaks circuit for an instant, which break is faithfully recorded by the pen marking the seconds.

After a number of stars have been observed in their passage over these lines, and the time of each recorded, the mean of the observations are taken to ascertain the error of the clock.

The exact time at each point being known, by means of these independent observations, the next and more difficult feature of the experiments is to ascertain, by comparison of results, the differences in time, and thereby enable the observers to compute the number of degrees distant, East or West, from Cambridge. When the telegraph has not been brought into requisition, this has sometimes been done by transportation of twenty or thirty chronometers, some of which will lose time and others gain on the passage, a mean of the whole being taken for a result.

The telegraph is not able to make an absolutely perfect comparison on account of the time required for transmission and armature movements, but it is able to make them more nearly perfect than any other system, because these errors are comparatively slight, and are, in fact, eliminated by an exchange of clock signals between the two points (and comparison of results), except for the unknown differences in the adjustments of relays and repeaters, between the two directions of transmission. If using several repeaters between the distant points, of course this unknown error is augmented. During the recent comparisons between Cambridge and San Francisco seven circuits of about five hundred miles each were combined by means of six repeaters ; consequently, the direct results of the clock comparisons contained the unknown error of the difference in time required for the successive movements of the several relay and repeater armatures between the two directions of transmission. The greatest liability to error occurs in the movement of the repeater armatures, from the fact that in the automatic repeater the armature breaking the next circuit in order, has necessarily some considerable distance to move before the main circuit is broken, and this loss of time varies in different repeaters, or on opposite sides of the same repeater, it being dependent to a great extent upon the adjustment of the spring, which follows the armature a short distance before contact is broken.

After the exchange of clock signals between San Francisco and Cambridge, for the purpose of ascertaining the longitude of the former, it was proposed to experiment, for scientific purposes, upon transmission time, by the employment of two complete lines between these points, the lines to be doubled by a repeater at Boston, and to comprise fourteen circuits of about five hundred miles each, combined by thirteen repeaters. This was successfully accomplished on the nights of February 27th and March 6th. Signals were sent from San Francisco through Cambridge, and returned to San Francisco, after which the Western wires were doubled at Buffalo for the same purpose, and so on to Virginia City, doubling the Western wires at each point where repeaters were in use.

As soon as San Francisco had completed the experiment via Cambridge, the two lines between Buffalo and Cambridge were doubled at Buffalo, and Cambridge sent signals to Buffalo and return, afterwards sending to Chicago and return, and following on to San Francisco. By means of an arrangement of wire and clock connections, made by Prof. Winlock, Director of Harvard Observatory, the chronographic record of both the sending and returning time of each signal was made upon the same minute line, by the same electro magnet and pen. Thus the fractional part of a second between the two was readily measured, the result being as follows :

TIME OF TRANSMISSION FROM CAMBRIDGE.

	Hundredths of second.	
To Buffalo and return.....	10.....	1 Repeater.
" Chicago and return.....	20.....	3 Repeaters.
" To Omaha and return.....	33.....	5 "
" Salt Lake and return.....	54.....	7 "
" To Virginia City and return.....	70.....	11 "
" San Francisco and return.....	74.....	13 "

Prof. Winlock has suggested another method of measuring transmission time, with no repeaters in line, viz : To receive a clock signal at Cambridge from the greatest distance possible on a single circuit, this signal to release a pendulum at Cambridge, which, after a given time, returns a signal to the first point. The sending and receiving time of these signals being accurately recorded at each point, a comparison will give the desired result. Prof. W. is at present experimenting with this method, and I hope to be able to send you interesting results at a future time. M.

How Longitude is Obtained.

For the information of that portion of our readers who are not versed in the question of "Longitude," we propose to explain briefly the meaning of the term, and how the longitude of any required place on the earth's surface may be found. This is done so well by the *Chicago Tribune* that we copy from it *verbatim*.

The longitude of a place is the angular distance east or west from any other place selected as the standard ; the distance is measured on the equator, or parallel to that circle. If we suppose a great circle of the sphere to pass through any place, and also through both poles, that circle is the meridian of the place. The difference of longitude of any two places may, therefore, be otherwise indicated as the distance between the two meridians of those places.

In England, the Observatory at Greenwich is the place chosen as that from which the longitude of other places is reckoned. In the United States, the Washington Observatory is usually understood as being on the first meridian.

The rotation of the earth brings every part of the equatorial circle under the sun once each day. The 360 degrees of the circle are thus brought round in twenty-four hours, or 16 degrees per hour—each degree, therefore, occupying four minutes of time in passing under the sun. That is, there is a difference of four minutes in the actual time of noon between two places which differ one degree in longitude.

The process of finding the longitude is also very simple in theory, consisting only in finding the difference in the time of noon between the two meridians. In practice, however, it is a complicated operation ; the leading difficulty met with lying in the fact that it is impossible to construct a time-piece which can be depended on to preserve exactly the same "rate of going" while being carried from one place to another.

Hence some other plan than that of transporting clocks has necessarily to be resorted to. The one most in use is the observation of the eclipses of Jupiter's moons.

The satellites of Jupiter revolve around him in orbits, but little inclined to the plane of the ecliptic. Hence they pass before and behind the planet at each revolution. The times at which these satellites appear to be in contact with the edge of the planet, being calculated for the meridian of Greenwich, an observation at any other place will give the difference of time between the two places. Thus : The first satellite emerged from the bottom of the planet at 4 hours 51 minutes 6 seconds past midnight, at Greenwich, on the morning of March 4th, 1869. If it had been possible to view the emersion at Chicago, it would have been found to take place at 11 hours and 46 seconds past noon on the 3d instant, showing that Chicago is 5 hours 50 minutes 20 seconds, or 87 degrees 35 minutes, west of Greenwich.

These observations involve the necessity of also finding the instant when the sun crosses the meridian of the place whose longitude is to be ascertained, and the opportunity of doing this may not occur for several days before or after the observation of the satellite, owing to cloudy weather. During this time the clock may vary several seconds from the true rate of going, and the longitude, as deduced by this process, will be to that extent erroneous.

Since the introduction of the electric-telegraph, the "wires" have been extensively employed in comparing the time at different places. The passage of the electric fluid over the wires is practically instantaneous, being about 16,000 miles per second, so that all required is good apparatus for observing and comparing. The following will give an idea of the process :

Cambridge Observatory is selected as the point the longitude of which is known, and San Francisco is the place the longitude of which is to be determined. The two places are connected by telegraph, and a comparison made between the clocks of the two stations by striking the signal key at San Francisco simultaneously with the beats of the clock there, the beat being recorded on a register, which records, also, the instants of the Cambridge clock beats. The clocks are thus compared, to a small fraction of a second ; the current is then turned the other way, and the Cambridge clock beats are recorded on a register at San Francisco. A comparison of the two sets of observations will enable the operators to correct any difference due to the time lost in the transmission of the signals. The clocks being thus compared, a number of stars, previously selected, are observed at each place. The instant that the star crosses the spider thread drawn across the Cambridge telescope, to mark the line of due South, is recorded on the registers at both ends of the line, and when, a few hours afterwards, the same star is seen to cross the meridian of San Francisco, the instant is recorded on the revolving register there, and the telegraph wire pulsates the intelligence to Cambridge, where it is likewise recorded. These observations, being repeated many times, and the average of all the observations taken, enable the operators to determine within the one-hundredth part of a second, the difference of longitude between the two places. The approximate difference is 3 hours 25 minutes 8 seconds and nine-tenths of a second, or 51 degrees, 17½ minutes.

An eccentric English lady, who imagined herself the destined bride of Christ, recently died, and the furniture of her residence, which was fitted up in accordance with her insane idea, is to be sold. In the drawing-room is a large and costly arm chair, the judgment seat. The room is divided by a curtain from the bridal bedchamber intended for our Lord. The bed alone cost £1,000, and the furniture of the two rooms not less than £25,000.

The British Government Telegraphs.

[From the Edinburgh Review.]

In February, 1868, Mr. Scudamore presented to the Postmaster-General a supplementary report, answering certain objections which had been urged against the scheme, and going further into particulars. This report, like the former one, concludes with an estimate of the amount required for the purchase, and of the annual receipts and expenses. Considering the value of the companies to be indicated by the market price of their shares, the estimate for purchase is raised to £3,000,000; and adding £100,000 for works to be erected by the Post Office, it makes the total capital outlay £3,100,000, equivalent to a yearly charge of £100,000. The annual receipts are estimated at £640,000, as before; but £32,000 are deducted for possible excess, leaving the gross revenue at £608,000, while, to the annual charge for capital, £5,000 is added for possible excesses; so that, deducting £105,000 from £608,000, £503,000 is left to meet working expenses, which are now estimated at £405,000, plus, for possible excess, £20,250; subtracting, therefore, £425,250 from £503,000, a surplus revenue of £77,750 is the result.

Early in last session a bill was introduced into the House of Commons for the purpose of enabling Government to purchase the telegraphs and undertake the duties hitherto performed by the companies. The bill, as it has passed into law, substantially carries into effect the scheme of working described above, establishing a uniform rate, not exceeding one shilling for a telegram of twenty words, with an extra three-pence for every additional five words (exclusive of names and address)—these charges are to cover the cost of a messenger within one mile of the terminal telegraph office, or within the limit of the postal delivery when the latter office is a head post-office—with an additional charge of sixpence per double mile when the addressee resides beyond those limits, unless, indeed, the sender objects to incur the expense of a special messenger, in which case the telegram is to be delivered with the post letters. Government retains the power (conferred on it by the various Telegraph Companies' Acts of Parliament) of having its important messages forwarded at once, in priority to those of the public; but, to guard against the abuse of this privilege, every such message is to be stamped "Priority," and is to be preserved for twelve months by the Postmaster-General. The bill, as originally introduced, made provision for the purchase of the interests of the telegraph companies on the terms indicated in Mr. Scudamore's report of February, 1868; but petitions were presented against it by the various telegraph companies, and also by such railway companies as made a profit by sending telegrams along their wires.

After much delay, caused by the political business before the House, the bill was referred to a select committee, which, choosing the Chancellor of the Exchequer (Mr. Ward Hunt) for its chairman, began its sittings on 1st July, and heard counsel and witnesses for and against the measure. Before the committee had proceeded far in its inquiry, negotiations took place between the government authorities and the opponents of the measure; and ultimately terms were agreed upon, in consequence of which all the petitioners withdrew their opposition, so that the inquiry was deprived of the sifting investigation secured by the contention of two heartily opposed parties. As Mr. Goschen well remarked, the witnesses and counsel were all on one side.

Indeed, owing to so short a portion of the session remaining after the inquiry began, a thorough investigation was impossible; and the committee, as observed by Mr. Childers in the debate on the third reading of the bill, was necessarily compelled to rely

almost entirely on the government officials. Mr. Childers protested strongly against the haste with which the inquiry had been conducted, seeing that such important interests and so large a sum of public money were involved; and when the effect of the provisions of the bill as it passed into an Act are understood, it will be admitted that he had good grounds for his protest. We allude especially to the clauses relating to purchase of the interests of telegraph and railway companies.* The real drift of these arrangements is not discovered without more examination and thought than it was perhaps possible for the hurried committee to devote to it; but enough appears even on the face of the evidence given before them, to justify considerable apprehension and require further deliberation.

As has been shown, the original estimate of 1866 calculated the aggregate purchase-money required at £2,400,000, which was increased in February, 1868, to £3,000,000; but, in his evidence before the committee, Mr. Scudamore stated the amount then required to be £6,000,000, and would not pledge himself that it might not exceed £7,000,000. Indeed, the lowest amount of which he could speak quite certainly as being beyond the mark was £8,000,000. It is true that the original estimate includes only the property and rights of the telegraph companies, while the later one comprises the buying up of the interests of the railway companies in public telegraphing, and also some cables across the narrow seas; but the cost of these additional articles ought not to be very large. When, however, the terms laid down in the Act and the confirmed agreements are examined, it is not difficult to explain the great advance of the estimate. Government seems to have dealt with the petitioners against their bill pretty much as an anxious traveler in danger of losing his steam-packet deals with a boatman—paying whatever is asked. In their eagerness not to quit office without leaving a permanent memento, they passed a reform bill which went far beyond Mr. Gladstone's measure, denounced by them as revolutionary; and rather than leave the credit and patronage arising from the adoption of the telegraphs to their successors, they have given way to every demand, however preposterous and extortionate. As far as one can judge from the terms conceded, the companies' proposals must have been accepted without examination. Obviously many of the provisions have been inserted merely with the notion that they could do the proposers no harm, since they could be struck out, while, by some extraordinary oversight on the part of the government, they might possibly be conceded; and which ever company was least restrained by modesty appears to have obtained the most extravagant bargain—which, indeed, is sufficiently proved by the very great diversity of the terms contained in the different agreements.

On examining these conditions granted to the telegraph companies, we find that each of them is to receive twenty years' purchase of its net profits, to be estimated on the year or half-year ending 10th June last, an unfortunate period for the buyer, inasmuch as the companies' accounts were not then published to that date, so that an opening was left for so arranging the figures as to swell apparent profits. But even supposing that the annual profits will be fairly taken, twenty years' purchase of them would be an excessive price.

The interest of a telegraph company partakes of the nature of a *trade*, rather than that of an estate, the value of the concern being as much in good-will as in

* As to the four principal telegraph, and sixteen of the railway companies, the terms of purchase—or rather upon which arbitrations are to be based—are inserted in the Act; but with regard to the remaining railway and telegraph companies, agreements made between them and government are simply referred to and confirmed. The agreements are printed at length in Appendix No. 6 to the report.

tangible property; for, although the older companies have been paying ten per cent. dividend, their shares did not, until the purchase by Government was proposed, stand at more than 45 per cent. premium. But this is by no means all. In addition to twenty years' purchase of its profits, the United Kingdom Company is to receive, first, the price paid by the company for the purchase of Hughes' type-printing telegraph; secondly, a sum equal to the aggregate value of the share capital of the company, estimated at the highest quotation shown in the official list of the London Stock Exchange on any day between the 1st and 25th of June, 1868; and thirdly, compensation for the loss of the prospective profits of the ordinary shares, and any sum that may be determined on in consideration of the efforts to establish a uniform shilling rate for the conveyance of telegraphic messages.

Now, we have heard of a cabman charging an inexperienced foreigner for the mileage which he had traversed, and also for the time occupied in the transit; but, in comparison with this company, the cab exaction falls within the bounds of moderation. First, they sell their concern for twenty years' purchase of the actual profits, then they are paid the cost of a portion of the plant employed in obtaining those profits; further, they are paid the full market price of the shares even when swollen by the intended purchase by Government; and lastly, they are to receive compensation for prospective profits, and a sum (which may be great or little according to the discretion of the arbitrator) in reward of services which in past time they had *endeavored* to render to the public, for as a matter of fact they did not succeed in establishing the uniform shilling rate. This looks very much like buying them up *four times over*. Reuter's company, also, in addition to the twenty years' profits, is to receive twenty years' purchase of the *probable profits* to be derived by the company from its contract with the Indo-European Electric Telegraph Company. The London and Provincial Telegraph Company is to have, in addition to twenty years' profits, "the highest market quotation of the ordinary shares between 1st June and 8th July, 1868, together with what an arbitrator shall give in respect of the prospective profits of the Company," and thirdly, compensation to officers and clerks—a provision which is indeed inserted in the other agreements, though it might be supposed that, with such enormous terms, the companies could take this burden on themselves, but as perhaps most of these officers will be taken into the Post-Office service, this liability may not turn out to be very serious.

The statements must appear to our readers quite incredible; we trust, therefore, that such of them as have the opportunity will refer to the documents quoted.

If an additional proof is needed of the extravagance of the terms conceded to the telegraph companies, it is supplied by the rise in the market price of their shares, bearing in mind, also, that it is not certain that these bargains are irrevocable; that is, that Parliament is bound in honor to maintain them, a subject which will be considered in a later part of the article. Thus we find that the shares of the Electric and International Telegraph Company which fluctuated in 1866 and 1867 between 133 and 145, are now worth from 235 to 240, having risen between June 23d and July 23d from 165 to 206. The British and Irish Magnetic Company's shares are now quoted at 165-170, having stood in 1866 at from 78-90, and in 1867, 90-97. From the exorbitant terms it obtained, it may be supposed that the United Kingdom Company will have derived the greatest advantage; and, in fact, it seems that their shares (£5 paid), which in 1867 varied between 1½

1½, are now selling at from 5½ to 6—a fourfold increase in value.

BEAUTIFUL VARIETY.

The terms of arrangement with the railroad companies are even more ill considered and mischievous than those with the telegraph companies; and here it is most obvious that any stipulation was admitted which the ingenuity of the company's agent could conceive. The diversity is still greater. Indeed, it would seem that the negotiators looked at the matter from an artistic point of view, considering variety as a beauty. Not only do the contracts differ very greatly in substance, even when in effect the same, but their language is varied.

TERMS OF COMPENSATION.

First, as to the terms of compensation. Most of the companies have bargained to receive twenty years' purchase of the net profits made by conveying telegraphic messages for the public, though in the statute this is expressed "net annual receipts;" the London and South-Western and North-Eastern Railways have, however, no such stipulation, but merely a general provision for compensation, to be settled by arbitration. In some instances the annual amount of these profits is fixed, subject to verification, at specific amounts, while the North British railway company is to have twenty years' purchase of the present value of its "trade receipts," and the Caledonian railway has bargained for twenty years' purchase "of the amount of the whole receipts drawn by the railway company for the transmission of telegraph messages, reckoned on the basis of the receipts for the week ending 12th June, 1868," limited to £1,200 per annum; while the Bristol and Exeter railway is to have twenty years' purchase of its whole receipts of public telegraphic messages, without any limitation.

WHAT THE RAILROADS GET.

In addition to the foregoing, all the railway companies, except the London and South-Western and North-Eastern, are to receive twenty years' purchase of the estimated annual increase of their net profits; though in the case of the British and Exeter railway, this is to be on the increase of the whole receipts. All the companies have stipulated for compensation for the relinquishment of the right to grant way-leaves for the erection of telegraphs; and all, save the London, Chatham, and Dover company, are to be compensated for the loss of the reversion of the telegraphs and of the right of granting way-leaves on the expiration of the telegraph companies' terms of agreement. The Great Western, the London, Chatham, and Dover, the Bristol and Exeter, and the Caledonian railway companies have stipulated that the Government shall make good the rents payable to them by the telegraph companies during the unexpired periods of their agreements.

ALL GET WHAT THEY ASK.

It will be seen, therefore, that the pecuniary compensation to be paid to the respective companies is based on very diversified principles, some having driven far harder bargains than others, and having, indeed, evidently obtained whatever they chose to ask for. When we turn to the other stipulations, we find an equal diversity, and much that is highly objectionable. Thus, all the railways, save the Caledonian, are empowered to shift the poles and wires at the Postmaster-General's expense whenever their own works require it, while the Caledonian is bound to give notice to the Postmaster-General, who will shift them at the cost of the company. In some instances it is specially provided that Government is to have an exclusive right of way for its poles and wires, while in other cases this is left to inference. Generally, but not always, the company is to receive, in addition to the other emoluments, rent for the standing of the poles and wires. Several other stipulations seem very un-

favorable to Government; as that it is to hand over in good repair to the railway company such of the poles and wires of the telegraph companies as have hitherto been used for railway purposes, and that these are to become the absolute property of the railway company, &c.

THE FRANKING PRIVILEGE.

It is needless to weary the reader by enumerating all the variations in these agreements; suffice it to say that they are very numerous, both in substance and in form. But one provision is particularly mischievous. Except the South-Eastern and the North-British, all the railway companies, and also the Grand Junction Canal and the Bridgewater Canal Trustees, are to have the right to frank by telegraph to all parts of the kingdom. In the statute the privilege is expressed as regards the railways to be to and from all "foreign stations" (whatever that may mean, for the word, though placed between inverted commas in the Act is not interpreted), while the canals are to frank to and from "any places in the United Kingdom," and the confirmed agreements generally confer the right to frank to and from all parts of the United Kingdom. The abuses caused by the old system of franking are well known, and it is much to be feared that they will now be reproduced in an aggravated form; for, although the franking of letters undoubtedly tended to injure the revenue by diminishing chargeable correspondence, it did not appreciably enhance the expenses of the department; for neither mileage of mails nor beats of letter-carriers increased with the number of letters conveyed. Not so with telegraphs, most of which are sent out by special messengers, and thus cause a certain expense. The loose manner in which the provisions are worded, too, may place the Post Office in a very awkward position; thus the Act provides that "the Postmaster-General shall also transmit to their respective destinations all messages of the said trustees, and of the Earl of Ellesmere respectively, and their respective agents and clerks *bona fide* relating to the business of the said trust and undertaking, between any places in the United Kingdom free of charges;" and the same privilege is granted to the Grand Junction Canal Company. The corresponding stipulation in most of the confirmed agreements is equally stringent. It is clear, therefore, that the franking privilege is not confined to places to which the public can telegraph without paying for a special messenger, but that the companies may force the Post Office to send their telegrams gratis to any spot, however distant from a telegraph office. It is impossible to distinguish whether or not a message is on the business of the company; consequently this stipulation must lead to endless disputes, if not to fraud. That such a provision could have been allowed to pass shows with what reckless haste the business has been managed.*

AS BAD AS CAN BE CONCEIVED.

Indeed, the mode adopted of determining the compensation is as bad as can be conceived. Either a definite sum, to include every thing, should have been fixed on each case, or the whole matter should have been referred to arbitration. Had the former case been taken, Parliament would have seen its way, and sums obviously in excess of what was reasonable could not have been allowed to pass; while, on the other hand, had the whole question been left to arbitration, the *pros* and *cons* might have been fairly brought before the arbitrator, and a reasonable determination might have been expected. But under the insidious details of these agreements it is impossible

*Indeed, under the words of the Statute and agreements, the whole correspondence of these bodies (both to and from them) may be conducted by franked telegram, and, considering the convenience and costlessness (to the parties) of the process, no doubt a great portion of it will be so conducted.

to form an idea of what may be awarded; though it is certain that it will be something very large. Indeed, it is well known that the officers of the railway and telegraph companies are jubilant about the terms they have obtained.

No doubt the honor and the true interests of the country require the Government should deal fairly, and even liberally, with parties whose rights it is acquiring for public purposes, and we freely admit that the sellers were entitled to receive the full value of their property and something more—the transaction ought to have been decidedly beneficial to them; but that double, or even more than double, the value of their concern should be paid to the parties, is a gross and profligate waste of the national funds.

NOTHING DEFINED.

A prominent feature of all the agreements is that nothing is accurately defined, all being left open to arrangement; and failing that, to arbitration—not only in settling the compensation for the properties acquired, but in the yearly transactions with the railway companies along whose lines the telegraphs pass. This must infallibly lead to frequent disputes, and will place the officers of Government under a serious temptation, to which, although they may prove superior, they ought not to be subjected. Even if the receipts from telegrams should be so great as, after paying working expenses, to cover the annual charge occasioned by the original outlay, that would be no justification of its extravagance. Recollecting that it is agreed on all hands that the system must be self-supporting, the reduction of the minimum charge for a telegram from the high rate of 1s. (two and a half fold what is paid in Belgium) must depend upon the profits to be derived; and on this head the estimate laid before Parliament seems to us to be of a very sanguine character.

BELGIUM ONCE MORE.

Mr. Scudamore calculates that the post office will convey 11,200,000 telegrams per annum at a minimum rate of 1s., i. e. where the communication does not exceed twenty words in length, and no charge for a special messenger is made. In Belgium, where the rate is only 50 centimes (4½d.), and where a low uniform charge has been for some years in existence, the number of telegrams was in 1866 (according to a table published in the appendix to the report) 1,128,005 only. Now Belgium has a population of about 5,000,000, or one-sixth of that of the United Kingdom, and it stands next to this country in manufacturing and commercial energy, while, on the other hand, postage is higher than here, being twenty centimes (2d.) for distances exceeding nineteen miles. It is obvious that a 4½d. telegram rate can compete against a 2d. postage at much greater advantage than a shilling rate can compete against a penny postage. Yet the inhabitants of the United Kingdom are expected to send twice as many telegrams per head as in Belgium.

The calculation of annual outgoings is based upon the expenditure of the companies; and supposing that Government can work as economically as those bodies, it does not seem to be unduly low, save that only £26,000 is allowed for the cost of working the new extensions to be made by the Post Office. And as the present telegraph stations do not much exceed 2,000, and there are 3,000 money-order offices—each of which is to be connected with the wires, although many of them are at great distances from existing telegraphs—this seems to be a very small allowance for the maintenance of poles, wires, and instruments of these extensions, and the cost of the clerks and messengers employed upon them, even allowing that much of the work can be done by the existing postal staff.

The Post Office has a monopoly of the conveyance of letters, but the Act of last session accords to it no monopoly of telegraphic business. Mr. Scudamore argues that it is well that the Department should be subjected to the possibility of competition, so that it may not become careless and unwilling to adopt improvements. And, indeed, if it were probable that a sixpenny rate could be introduced at an early period, there would be little fear that the revenue would be injured by competition so long as the public was fairly well served. But, with a shilling rate, this is by no means clear. In some of the principal cities there are already local sixpenny telegraphs—in these cases the charges will be increased by the proposed measure—and it is by no means improbable that between large towns a successful competition may be maintained. The cost of erecting a telegraph is from £25 to £30 per mile, so that a hundred miles may be established for £3,000; and although Government seems to have bargained for an exclusive right of way over the railways, there is nothing to prevent the erection of telegraphs over canals, roads, or private property. Now the Act provides that the rate shall always be uniform; thus the Post Office could not drop the charge in particular districts to meet competition. It appears that Mr. Goschen was so struck with the danger of serious injury to the revenue by competition, that in the Select Committee he proposed a modification of the Report, recommending that Government should have a monopoly of telegraphic communication. Possibly, indeed, this competition may become so serious as to compel the adoption of a rate so low (unless Parliament should sanction the abandonment of the principle of uniformity) as to occasion a loss to the revenue; and thus the telegraphs may become a serious burden on the State; though, on the other hand, were the system loaded only with a reasonable outlay for purchase, there can be no doubt but that, ere long, the great benefit of a universal sixpenny rate might, without loss, have been conferred upon the public.

POST OFFICE CANNOT BE TRUSTED.

In order that the real financial results of the measure may be seen, it is most important that the expenditures and receipts of the telegraphic system be kept perfectly distinct in the accounts of the Department. As regards the receipts, this object may be easily attained by providing special stamps for telegrams; but much care and watchfulness will be needed to prevent expenses properly belonging to telegraphs from being mixed up with those of the letter service. It is to be hoped also that the work of constructing and maintaining telegraphs (where this is not done by railway companies) will be let to contractors. If the post office attempts to manage these operations itself, they must prove very costly.

Among the many proofs of haste in the concoction and carriage of the measure, is that the statute confers no compulsory powers on the Post Office of laying its poles and wires along high roads and canals, or over private land. Subject, of course, to proper liability to compensate, the creation of such a right would be perfectly just, and very advantageous to the Department when it makes the intended extensions into the districts to be newly accommodated; the want of this power, indeed, may enable road trustees and others to exact very high prices.

It will be observed that the charge for a telegram is the same, whether it is to be delivered by special messenger or by the letter-carrier with the post-letters. Now, considering that with a short telegram (not exceeding twenty words) the cost must be mainly in the special messenger, one to be delivered by the letter-carrier might have been admitted at a lower rate, seeing that penny letters are thus con-

veyed to their destination; in many cases, where the addressee resides within the limits wherein no extra charge is to be made for a special messenger, delivery by post would answer the sender's purpose. In all the large towns there are several deliveries of letters daily. A telegram, therefore, sent from one of these towns to another in the morning or forenoon would reach its addressee by postal delivery in ample time to enable a business transaction to be effected the same day and an answer to be returned by the evening post. Telegrams, also, sent early in the day to very distant places—as from London to the north of Scotland or to Ireland—would, although delivered by the ordinary letter-carrier, arrive a day earlier than if sent by post; and the same would be the case as regards telegrams dispatched, after the departure of the night letters, to one of the numerous districts which have no connection with the day mails. Clearly, therefore, such telegrams ought to be conveyed at a reduced charge, say sixpence or eightpence. Again, as one shilling is to be charged for a telegram of twenty words (exclusive of names and addresses), it does not seem just to exact so high a payment as threepence for every additional five words of the text, seeing that the delivery and other processes are the same, whatever may be the length of the message.

In an earlier part of this article the question whether public faith requires that Parliament should carry into effect the purchases and compensations sanctioned by this Act, has been alluded to. Both Mr. Gladstone and Mr. Goschen, as appears by their speeches on the third reading of the bill, are of opinion that the Legislature may still without unfairness refuse to vote the requisite funds, and thus reopen the whole subject. And it must be owing to this consideration that the telegraph companies' shares have not risen much more in value than has been the case. The last section of the Act provides that,

"In case no Act shall be passed during this or next session of Parliament, putting at the disposal of the Postmaster General such moneys as shall be requisite for carrying into effect the objects and purposes of this Act, the provisions contained in this Act, or in the agreements hereby confirmed, relating to the arrangements with railway and telegraph companies, and all proceedings thereunder, shall become void; and the Postmaster General shall thereupon pay the several companies mentioned in such clauses and agreements all reasonable costs and expenses, if any, properly incurred by them respectively in any relation to any proceedings taken under this Act."

The present Parliament will therefore have to consider whether it will vote the funds required to carry into effect the rash engagements of its predecessor; and the present Government will have to determine how far it is morally bound to adopt the terms of agreement which were accepted by the late ministry and sanctioned by the legislature. The question is one of great nicety and moment, and we commend it to the special attention of the Chancellor of the Exchequer, the Postmaster General, and the President of the Board of Trade.

A Promising Applicant.

Here is a sweet specimen of an enterprising youth who wishes to aid the development of the great West. Let him speak.

LACEYVILLE, March 22th, 1868.

American Telegraph Co., N. Y.

DEAR SIR: Have you enny Telegraph School that you warrant them a situation on the Union Pacific R. R. If so please send me a circular and turms and where.

Yours, & C.

Laceyville, Wyoming Co., Pa.

REPLY.

Dear Juvenile: You are not wanted on "enny turms" until your studies are more advanced. We have no "circulars" for your persuasion, only for girls from eighteen to twenty-four, and that is not in your way.

Smoking in Telegraph Offices.

MARCH 16, 1868

EDITOR JOURNAL OF THE TELEGRAPH:

I would like to call your attention for a few moments to the consideration of a practice, which is exceedingly prevalent among all classes of men, and it seems to me more so among Telegraph employees than any others. I allude to the habit (and it is nothing else) of smoking. I wonder if it acts as a sort of stimulant, and helps arouse the sluggish powers, enabling them to keep pace with the "lightning steed." It seems to me to be a very ungentlemanly practice, to say the least, and I would like to inquire why a telegraph office should not be kept as free from the vile smoke as are banks, insurance offices, and other places where business is transacted. I am a little interested in an office not a thousand miles from New York city, where the public, as well as the employees of the office, seem to consider it "the" place to congregate, and (as they say) "enjoy" their favorite Havanas. It would seem that there ought to be self respect enough, or respect for the delicate olfactories of some of our lady customers, to induce the operators of an office situated as the one I refer to is to forego the pleasure (if it indeed be such) of a smoke during business hours. Is there no way by which this intolerable nuisance can be abated? It surely cannot be healthful to breathe an atmosphere so largely impregnated with the fumes of tobacco, and I wish that our smokers could be prevailed upon to smoke elsewhere and try and relieve the office from the odium which now rests upon it. I think I am safe in asserting that you are not a smoker, and can sympathize with me, being the only one here who does not indulge in the weed in some form, and judging from the Bible standard, there are hardly enough temperate ones here to save the place from utter destruction, should the angel of death see fit to shake his dark wings over our devoted heads. I wonder if President Orton couldn't be induced to issue an order prohibiting smoking in every office during business hours. Such an order would be the cause of great rejoicing to those of the employees who do not smoke, would please those of the public who do business at such offices, and *could not* in any way injure those who are in the habit of using the article. If you can in any way bring about such a happy result, you will be considered, by some at least, one of the benefactors of your race. If you should think this worthy of mention in the JOURNAL, will you please omit my name and location. Would like to see your views on the subject. Respectfully,

DECENCY.

New Telegraph Battery.

A foreign exchange says that a modification in batteries has been introduced by M. Ney. It consists of the ordinary copper and zinc elements, but placed in different solutions to the general variations of the Daniell cell. An amalgamated plate of zinc is placed in a vessel filled with a solution of chloride of ammonia; in this vessel is the porous cylinder, containing the copper plate, immersed in a solution of carbonate of copper. It is contended for this battery that it is constant in action, and remains so for a length of time. It can be maintained for a great period in active operation, if the liquid ammonia be replenished; for this purpose, it is sufficient to drop in solid chloride of ammonia. The natural carbonate of copper can be used. It is suggested that if required for military purposes, or for any service requiring transport, or where the batteries are liable to be carried about, it is only necessary to use sand impregnated with a solution of chloride of ammonia, instead of the solution itself.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, APRIL 1, 1869.

Decency in Telegraph Offices.

A correspondent complains of the practice of smoking in the office where he labors. He has a right to do so. We do not offer a moral objection to the cigar or chibouk, for we do not understand their influence, and we rather like to see an elderly gentleman, after a comfortable dinner, sit down beneath the grape vines, or in his library, or even by his fireside, and enjoy a whiff of a good Havana. But to smoke in an office devoted to a decent vocation is execrable, and in bad taste. Especially is it objectionable in all avocations where the parties are in constant contact with the public, or where the duties require careful concentration of the mind to perform them correctly. The telegraph office we deem essentially of this character. It should itself be clean, neat, appropriate, so as to suggest the personal respectableness required of its occupants, and everything connected with it, and every employee, should in some way deepen the impression that the business is respectable.

We remember, some years ago, entering unknown one of the large telegraph offices, to make some inquiry. The receiver had his hat on and a cigar in his mouth. He answered our inquiry without lifting his eyes from a paper he was reading. The office itself had an ungainly look, as if neatness was an unknown quality. We heard men laughing and calling to each other. The whole appearance of things struck us as hideous and inconsistent with the business, and yet very consistent with itself. The smoking and the disorder were natural results of each other, and both alike improper. The effect on personal character of such practices, in such circumstances, cannot fail to be prejudicial. The company that permits it must suffer also. An institution which does not respect itself cannot long command it from others.

All connected with a telegraph office should be not only cleanly in their habits, neat in their personal appearance, and genial in their manners, but should meet the public with more of that decorum which banking houses exhibit than even these present. We want the respectability of the telegraph as a pursuit and as a public blessing asserted. We should like to see smoking absolutely forbidden during the office hours or in an office at all. It is offensive to good manners, to the ladies, many of whom have to frequent our offices, and to good taste. It leads to other irregularities, and is pernicious. We beg that it may be abandoned without the need of any executive order, or with it, should that be necessary.

Meteorological Telegraphic Observations.

Most of the European journals, especially those of Vienna, obtain by telegraph and give the details of temperature and the pressure of the air in a much more comprehensive manner than is customary in the United States. The *New Free Press* of Vienna, gives daily, in a table, very neatly arranged, the pressure of the air, and states in another column the actual condition as well as the amount of variation from the normal. It also furnishes the temperature according to Celsius' thermometer, which is the one accepted by science, and regarded as much better than Fahrenheit, giving all variations from the normal. It also states the direction of the wind, and its strength, and the appearance of the sky, whether

cloudy, what kind, and whether the weather is dry or rainy. In addition to this the condition of the weather at the nearest sea coast is announced. All this is followed up by explanatory notes stating, for instance, where the pressure of air is lowest, and where temperature is highest or lowest. The fall of rain within twenty-four hours, and where it took place, are also given. The table includes fifteen of the principal localities of Austria, and the information covers German Austria, Bohemia, Hungary, or about one-fifth of Europe. Sometimes the ozone condition of the air is given.

By such reports the public become familiar with the main points which enter into the conjunctions from which the weather in a given locality arises, and soon a body of men exist to whom the weather is no longer a chapter of accidents, but who comprehend it as the result of natural causes.

What has proved so useful in Europe must sooner or later find attention here. It is a kind of knowledge, it is true, which does not interest a large circle of minds, and appeals at first to those whose mental cultivation and leisure lead them to desire intimacy with general science. Yet this by no means proves that it is not needed. All maritime interests would find in systematized meteorological observations valuable knowledge and safety, and even the general public would ultimately utilize such a knowledge to regulate many of their arrangements and decide their plans. To agriculture it would become of surpassing value, provided the daily newspaper kept pace with the electrical intelligence in its circulation among those who till our farms and reap our harvests. We cannot as yet see how the firing of cannon at county towns will ever give any intelligent directions to farmers to enable them to save crops, as proposed by Mr. Watson, of Washington, but many years cannot pass without something being accomplished in this direction, and by adequate means.

American Compound Wire.

It is not the business or design of this paper to puff articles proposed by sanguine inventors as panaceas for existing wants. So few of these have proved of permanent practical use, that even when an apparently valuable improvement is presented for acceptance, a thing desirable and needed, we have felt compelled, by experience, to bid it wait the verdict of actual use, and bide its time. Had we desired to make bids for advertising, we could have easily added page upon page by cheering every inventor's whim, and induced a large waste of money while making it for ourselves. But we did not deem this our proper path, and have preferred to bear the accusation of indifference to any hasty acceptance of the merits claimed for many things which we have not only seen but admired.

Here, however, is an article, the fruit of the brain of one of the best known practical telegraph and electric workers, of a man thoroughly honest and in earnest, who has given these last twenty-five years and more to the patient, careful, thorough examination of not only electric science, but of the means by which that science can subserve in the best way and widest extent the public necessities. We need not recapitulate all he has accomplished, for every intelligent operator, and every one who has followed the literature of the telegraphic art in America, knows the name of Moses G. Farmer, of Boston. We regard him as one of those to whom it is a richer compensation to add to the present knowledge of the capacities of the telegraphic art than any mere gain from the sale of his inventions. For this reason we are led to estimate highly the products of his industry.

Now, one of the wants of the telegraph system in America is a conductor superior to those in use so as to make it possible, at wider distances, to use the single circuit, without the intervention of repeaters, however ingenious these may be. Thus, it is not now possible with the machinery yet provided, and with the present conductors, to manipulate a printing instrument in a single circuit from New York to Chicago. That capacity must be found. What is wanted? a larger or better conductor? But a larger conductor will too greatly burden the poles, be difficult of erection, be awkward to handle, be an increase of exposed surface to storms and the accumulation of sleet. With increase of size there is, also, comparative decrease of actual strength, the proportion of

fibre decreasing as the wire is enlarged. All this is well known and appreciated.

Another want of the telegraph is increase of strength to conductors without increase of weight, so that the lines exposed to accumulation of sleet, often so disastrous and extensive, may be able to maintain themselves.

Now, it is because this compound wire provides for these two desirable things that we look upon it with eager interest. What is it? Of what is it composed? Has it been tested?

The compound wire, to which attention is called in another column, is simply a steel wire covered with copper, the steel providing the element of strength in largely increased ratio to its weight, the copper providing a conductor of increased capacity. A compound wire of half the ordinary size of that in general use is claimed to have twice the strength, twice the conductive power, and half the exposure. We state it roughly, and without reference to the tables which the manufacturers present of the capacity of the different sizes.

Now, if these are actual results, they are worth knowing, and valuable. We want now to know, is the copper so connected with the steel that it will not flake? Is the copper so considerable a part of the whole body of the wire that lightning traversing the wire along our great prairies will not fuse it? Of the tenacity of steel we do not need knowledge. But the steel with the copper stripped from its surface will only leave strength at the loss of a more valuable quality. What are the facts respecting this?

It is easy to see that if what is claimed for this wire be correct, it must be of incalculable advantage in many countries where great strength is required. The lines from St. Petersburg to the Amoor are of this character, as well as our own lines which must yet traverse Alaska. To science, also, it claims attention. We are not content with the loss of eighty one-hundredths of a second between Cambridge and San Francisco. With a single conductor we believe the time would be found positively nil. Let this new gift to the telegraph and to science be examined fairly and fully. Its claims are too great to be either dismissed or undervalued. If correct, compound wires of the present size will give such power and such capacity as to dispense with half our repeaters, and make possible results now unattempted.

Elegant Scientific Diction.

In a prominent paper hailing from a good city nearer sundown than New York, we find the following charming description of a thunder storm, which shows a skill in the use of Webster, and a nice felicity in description, which must be very refreshing to all our readers. If men and women could only be induced to converse in this manner with each other, how delightful would be their mutual interviews!

"During the thunder storm of yesterday the stable of Mr. John Jones became subject to electrical conditions. There resulted a violent molecular electrical agitation whereby a hole was undulated or rotated through the roof of a barn. The peculiar motion of the molecular was finally carried to and communicated through a hay mow, setting it on fire, and thence through the body of a horse whereby death resulted."

What a delightful thing it is to be scientific!

A Wonderful Observation.

There has been observed recently at Paris, upon two wires held by the same support, and employed for the Prussian dispatches, disturbing influences of a peculiar nature, the causes of which cannot be exactly defined. At each opening and closing of the current upon one of the conductors, there is exerted upon the other an influence sufficient to disturb the correct working of the receiver at the other end of the line!

These effects, which one is tempted to attribute to the phenomena of deduction, have called forth the most earnest attention. Moreover, the Administration of the Telegraph Lines has urged the operators to investigate and experiment, in order to study this interesting question.—*Journal des Telegraphes.*

NOTE.—This is either very innocent or very sarcastic.

THE Atlantic Cable is growing more perfect in its insulation month by month, it is said.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

	Feb., 1869.	Feb., 1868.
Total Receipts.....	\$575,249 07	\$600,183 32
Total Expenses.....	354,855 72	345,855 52
Net Profits.....	\$220,393 35	\$254,327 80

Telegraphers' Mutual Life Insurance Association.

ASSESSMENT NO. 7.

To the Members of the Telegraphers' Mutual Insurance Association:

At the time of the three deaths for which the assessment of two dollars was made, the number of certificates issued was 399. To the call of the Treasurer, 346 members responded promptly, and the money was placed to the credit of the heirs of the deceased. Of the fifty-three unpaid, several have moved away or resigned, one of the latter "because it had done him no good, although he had been in it a year." One-third are able to pay, but have neglected to do so, or have failed to receive notice, and a third are those who, from inability, or having entered the organization without a definite idea of its character or claims, have allowed themselves to drop out of its ranks.

Since then 111 new applications have been received, which will make 457 actual membership, should no more assessments be paid, a very gratifying increase, and to which daily accessions are being made. These additions are from men who have been stimulated to it by the sad facts of mortality the last few weeks have presented, and who desire to aid in so good a work as is opened up to them by the association, as well as care for their own families. The stability of the association, its reliability, has thus been greatly increased. We expect to find it a membership of prompt, right-minded men, who will thus honor the calling with which we are connected and themselves.

We have now the duty of calling for one dollar from each of you whose certificates are dated prior to the death of J. Frank Stevens, March 2, 1869, and trust it will be responded to with the same promptitude which has been shown in answer to former calls. Remittances will be addressed to

D. R. DOWNER, Secretary,
145 Broadway, N. Y.

[Box 3,393.] The disposition of the funds thus far has been as follows:

Family of Seba Christie.....	\$274 00
" " Edwin A. Hall.....	246 00
" " John T. Winne.....	325 00
" " J. S. Vandusen.....	370 00
" " James A. Allan.....	346 00
" " W. W. Shipman.....	346 00
" " J. Frank Stevens.....	346 00

\$2,253 00

A record of usefulness in eight months of which its members may be proud. When the membership shall consist of 500 reliable members we shall feel that the labor and anxiety connected with it have been abundantly repaid.

JAMES D. REID, Treasurer.

NO. 7. ASSESSMENTS ALREADY RECEIVED:

Thomas A. Laird,	Mary E. Houseman,
D. P. Livermore,	J. H. Purnell,
William Cook,	John C. Thomas,
John H. Pearce,	L. P. Crum,
James R. Heenan,	Judson Babcock,
George S. Shepard,	J. H. Dixon,
John Coyne,	James G. Baldwin,
J. T. Heenan,	J. J. Heenan,
J. F. Heenan,	James W. Smith.

An English newspaper has an advertisement which, minus the punctuation marks, reads as follows: "Run away: my hired man John. His nose is turned up five feet ten inches high, and had on a pair of corduroy pants much worn!"

A MAN never feels more like a fool, nor looks like a pair of them, than when he wants to sneeze and can't.

Snow in Canada.

It is not of frozen dewdrops we write. Many wish that Canada knew no other snow. Telegraphic snows in the New Dominion are not white, and graceful, and gentle. They are a kind of human leech, quick, sharp, cunning. We have a personal experience of the original "Snow," which is enough for a lifetime—one of those indomitable, cool, sleepless, insinuating men who are eternally boring, and win by sheer persistence. Under that same "Snow," if the papers which reach us be true, the New Dominion is passing through a perfect winter of grief. Three columns of densely printed matter, headed "The Age of Humbug Verified," attest the sufferings of the people on whom this "Snow" has been falling.

It is the old story. A new telegraph line is being built in Canada to relieve the people from monopoly and make a contractor happy. The contractor is of the "Snow" line and shows his education. He understands the value of the names of good men; knows how to arrange a Board of Directors. He is a bankrupt, with everything to make and nothing to lose, sees a fine margin in building a "snow" line at \$250 per mile, and "seizes the opportunity." "Old Josiah" always "seizes the opportunity." They are numerous. Here is what the *Trade Review* says of the contractor:

"Why, in the name of common sense, was Mr. Seals Reeve ever selected by the directors to build this line? He had never built a line of telegraph in his life, he is not even an operator, and knows nothing about the business; he had no capital, was already bankrupt, and his connection with the Snows, both in business and relationship, sufficiently intimate to be grounds for suspicion. Why, we repeat, was he selected by the directors? Is the explanation not found in the fact, that instead of being selected by the directors, the directors were selected by him! for the purpose of carrying out his design of duplicating the Grand Trunk job. Should he be successful, and build for the Dominion Company 2,000 miles of line, in accordance with their programme, he will have made at least \$200,000 by the operation, for which the stockholders will be compelled to pay; and on which they expect to make a dividend. To show how he expects to make the mileage increase, we append a paragraph from the *Hamilton Spectator* as to the circuitous route taken to Wellington Square, a place about seven miles east of Hamilton—'To go to Wellington Square, the Company have built their road to Dundas, thence to Bullock's Corners, thence to Waterdown, and thence to the Square, making in all a circuit of some thirty odd miles. We do not say that this circuit has been made because the contract is a mileage one, and because it traverses a country where poles are at hand, and therefore cheaply obtained and easily put up. But it would puzzle a Philadelphia lawyer to understand for what other reason this circuit has been made.'"

Oh! the beautiful Snow and the relative Reeve. How all this awakes in us recollections of past years. When "Josiah" used us to order his goods, and left us the honor of paying his bills! Bah! And what beautiful lines rose along the wooden fences of Michigan, fairy lines, slim, delicate, genteel! Oh! the beautiful Snow.

Deaths by Lightning.

Few people are aware how many are the deaths from lightning. It appears, from statistics kept in France, that during the last thirty years more than 10,000 people were struck by lightning, of whom 2,252 were killed outright. 880 were killed during the last ten years, and of these only 243 were females. If lightning falls on a cloud, it does more mischief among the men than among the women, the latter persons being most exposed.

Animals are frequently stricken, while those in charge of them are spared. The old idea that the beach tree is a protection is a fatal error, the neighborhood of all isolated trees being dangerous, except when they are in metallic connection with the soil.

Railroads and telegraph wires are protectors in so far as they are able to absorb and convey considerable amounts of electricity. Every locomotive does this unperceived, its metallic mass being an excellent conductor. Walking along a railroad track, where it runs through a country without trees, is as dangerous as taking shelter under a tall tree. That windows are dangerous is believed to be an error, for experience does not show that lightning strikes through open windows or follows a draft of air.

A TELEGRAPHIC message was recently sent from London, and a reply received from Calcutta in less than 7½ hours.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

Agents in New York,

MESSRS. L. G. TILLOTSON & CO., No. 11 Day street.

THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with its

GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high-cost Norway Iron Wire, in the same locality and strung at the same time, was broken in several places.

Address—

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

ALANSON CARY, Treasurer,

No. 234 West 25th street,

New York.

Or Agents of the Company.

The Future as seen by the N. Y. Herald.

A new era commences to-day, March 4th, with a population that may be practically estimated at any figure between one hundred millions and five hundred millions of people, marching shoulder to shoulder under a system of political consolidation on the broad path of empire. Their arms are the steam engine, the electric telegraph and the independent press, and the victories they will achieve are beyond the wildest dreams of human thought to-day. The last generation compassed progress from the slow coach to the rapid car, from the uncertain sail to the certain paddlewheel, and has served its apprenticeship with the electric battery. Whoever believes that we stop here deceives himself.

Velocity of Light and Sound.

It has been calculated that the deepest note which the human ear perceives as a continuous sound is produced by sixteen vibrations in a second; the acutest by 48,000. The extremes of color are red and violet, the former given by 458 billions of vibrations per second, and the latter by 727 billions. The relative velocities of light and sound, and the relative refinement of the media through which their effects are conveyed, are illustrated by the comparison.

Born.

Friday, March 26th, a son, to Mr. D. A. Van Ham, Manager Castle Garden telegraph office.

At Albany, N. Y., March 27th, a daughter to R. C. Rice, of the Western Union Telegraph office.

To Publishers.

This paper goes into every town and city of the United States, and Nova Scotia and New Brunswick where a telegraph office is to be found. As far West as Vancouver's Island, and as far East as Plaister Cove, as well as to the chief cities of Canada, the JOURNAL OF THE TELEGRAPH is sent and read. In this circulation it is peculiar. It goes also into numerous houses of telegraph and railroad managers and stockholders. For giving publicity to a large class of publications, it is one of the most advantageous which can be found. We do not ask publishers to send their books to us for notice. The advantage of their doing so should be apparent enough.

To all Telegraph Offices.

When you receive a message for a large city, demand a full address. New York, for example, is a large village, and has in its population hundreds of Browns and thousands of Smiths. A full address quickens delivery.

How they Rise.

A. B. Cornell, Esq., for many years manager of the New York office of the New York, Albany & Buffalo Telegraph Company, has been appointed surveyor of the port of New York. So far as we can learn, this appointment was entirely unsought and unexpected. It is a post requiring firmness, unswerving honor, and zealous labor. All of these Mr. Cornell will give, and will find that his old engagements have been a useful preparation for his new duties. We believe he will honor this important national trust.

WASHINGTON, March 30.

The Senate Committee on Foreign Relations, at a meeting to-day, agreed to report a general bill prescribing the regulations under which foreign telegraph cables may be laid on our shores. The bill is substantially the same as that reported at the last session.

Western Union Telegraph Stock.**SALES AT THE NEW YORK STOCK EXCHANGE.**

[Reported by J. HORN, Jr.]

MARCH, 1869.

13th—400 @.....	38½
900 @.....	38½
200 b. 30 @.....	38½
15th—800 @.....	38½
16th—100 @.....	38
17th—10 @.....	38
200 @.....	38½
15 @.....	38½
18th—100 @.....	38½
14 @.....	37
300 @.....	37½
200 @.....	38
19th—100 @.....	37½
100 @.....	38
20th—100 @.....	38
23d—50 @.....	38
200 @.....	38
24th—300 @.....	38
25th—100 b. 15 @.....	38
100 b. 30 @.....	37½
100 @.....	37½
900 @.....	38
200 b. 15 @.....	38½
300 b. 30 @.....	38½
29th—200 @.....	37½
30th—200 @.....	38
31st—1000 @.....	38½
1000 @.....	38½
500 @.....	39
600 @.....	39½
100 b. 10 @.....	39½

The Meeting of the Rails.

The successful building of the telegraph between the two oceans made the connection by rail apparent and possible. We hail the near consummation of the gigantic work.

The distance on the Pacific Railroad from Omaha to Sacramento is 1,760 miles. The Omaha line is to-day 1,056½ miles west of Omaha. The Sacramento line is 594 miles east of that city, leaving a gap to-day of only 110 miles. There is a contest here between the two companies as to where the two roads shall meet. The California end is desirous of having the junction at Ogden, 1,029 miles from Omaha, but the Omaha or Eastern line to-day crossed Bear river with their engines and track, 31 miles west of Ogden, and will reach Monument Point before the California end comes up. This is 1,105 miles from Omaha. It is to induce the Eastern line to stop building and await the arrival of the Western rail that the contest is now going on. General Grant and his Cabinet have decided that the Omaha line shall go on until it meets the other, and that the issue in advance of bonds by Mr. Browning to the California end cannot be so construed as to arrest the building of the road, which will be completed, if both companies go on, by May 1.

Telegraphers' Mutual Life Insurance Association.**ASSESSMENTS RECEIVED.**

E. Chapman,	C. A. Bolton,
Michael Foley,	W. G. Jamieson,
James E. Moore,	C. E. Merritt,
Harry E. Henry,	S. M. Hunter,
H. F. Thurber,	T. J. Landy,
James H. Way,	T. J. Hewlett,
R. B. Welch,	W. W. Wall,
Claude Freeman,	W. H. Stanton,
James Lytle,	J. C. Thomas,
T. Dolan,	A. J. Lumbard,
M. S. Roberts,	C. E. Moody,
Chapin Cole,	J. T. Heenan,
P. J. Casey,	John J. Heenan,
A. J. Burton,	Thomas F. Heenan,
W. M. Nettles,	James W. Smith,
W. L. Ives,	James R. Heenan,
A. J. Jarvis,	Waldo H. Collins.

Fast Time.

The Western Union Company's New York Stock Exchange office, under the management of Mr. J. Horn, sent and received from Philadelphia on the 18th ult., in one hour, from 12:26 to 1:26 P.M., 96 messages. The operator was interrupted three times by other offices, reducing the time about six minutes.

Telegraph in Mexico.

During the last session of Congress a law was passed authorizing this Government to construct a wagon-road from Queretaro to a point on the river Panuco, or one of its tributaries, from whence navigation might be practicable to Tampico. The engineer, Don Jose M. Romero, was named to survey the ground, and he has made a very lucid report, in which he estimates the cost of construction from Queretaro to the rancho del Mirador, on the river Moctezuma, an affluent of the Panuco, in \$800,000—for a distance of 62 leagues. A telegraph line has been commenced to communicate the town of Sombrerete with the city of San Luis Potosi; and the Governor of Zacatecas has invited the Governor of Durango to co-operate with him for the establishment of telegraphic communications between the two States. An Evangelical society exists in the State of Zacatecas, and is increasing in numbers; its members are subscribing for the erection of a Protestant church.

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York.
APRIL 1, 1869.

To all Offices on W. U. Lines:

The following changes have occurred since March 15, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Charlotte, N. Y., reopened, tariff same as formerly.
Elizabeth, W. Va., reopened, tariff 25c. more than Parkersburg, W. Va.
Illioopolis, Ill., tariff same as Niantic, Ill.
Leingsburgh, Mich., tariff same as Owasso, Mich.
Masonville, Iowa, tariff same as Manchester, Iowa.
Niverville, N. Y., tariff same as Chatham 4 Corners, N. Y.
Quincy, Mass., tariff same as Harrison Square, Mass.
Raymond, N. H., tariff same as New Market Junction, N. H. (Business for Raymond will be checked to New Market Junction.)
Riverton, N. J., tariff same as Bordentown, N. J.
Seville, Ill., tariff same as New Philadelphia, Ill.
Winnetka, Ill., tariff same as Evanston, Ill.
Harlem, Mo., }
Delassus, Mo., } Offices formerly known as "Caton offices" will use "map tariff" for Harlem and Delassus. All other offices will make tariff to Harlem same as Kansas City, Mo., and to Delassus 65c. more than St. Louis, Mo.

Indianola, Texas, }
Lavaca, Texas, } Tariff same as Austin, Texas
Victoria, Texas, }

OFFICES CLOSED.

Concord, O., Henderson, Texas, York, Ala., Bear River, Utah,
White Tail, Mon., Salina, Mich., Tyler, Texas, and Mamareock, N. Y.

GENERAL INFORMATION.

Those offices which have heretofore sent business for points named in the following list via Boston, Mass., Springfield, Mass., or Burlington, Vt., will hereafter compute tariff to the same points by adding to their rate to Boston, Springfield or Burlington the rates given, herewith, from those offices. Offices having "Special Sheet A" will use special rates.

The rate to be taken will be that amount found to be the lowest after adding as directed.

For example: New York to Gardner, Mass.

By referring to the list the rate to Gardner is found to be—

From Boston, 40c.; Springfield, 50c.; Burlington, 60c.
Add N.Y. to Boston, 30c. N. Y. to " 30c. N. Y. to " 1 00
The result is, ————
via Boston, 70c. via " 80c. via " 1 00

The rate to be taken will be the lowest, 70c.

	Tariff from Boston.	Tariff from Springfield.	Tariff from Burlington.
Alburgh Springs, Vt.	75	75	40
Athol, Mass.	40	40	60
Assabet, Mass.	30	50	60
Ashland, N. H.	40	60	55
Baldwinsville, Mass.	40	45	60
Barnet, Vt.	50	50	50
Barton, "	60	60	60
Barnardstown, Mass.	50	35	60

	Tariff from Boston.	Tariff from Springfield.	Tariff from Burlington.		Tariff from Boston.	Tariff from Springfield.	Tariff from Burlington.	
Bellows Falls, Vt.	50	40	50	Newport, Vt.	60	60	50	
Bethel, "	50	50	45	Northampton, Mass.	50	25	60	
Bradford, "	50	50	50	Northboro, Mass.	35	50	60	
Braintree, "	50	50	45	Northfield, Vt.	50	50	40	
Brattleboro, "	50	35	50	Northfield, N. H.	30	50	55	
Bath, N. H.	60	60	55	North Thetford, Vt.	50	50	50	
*Bethlehem, N. H.	75	75	75	North Hatfield, Mass.	50	30	60	
Burlington, Vt.	60	60	—	Northumberland, N. H.	55	60	60	
Bradford, N. H.	40	50	55	North Conway, N. H.	75	75	75	
Canaan, N. H.	50	50	50	Newport, N. H.	50	50	55	
Concord, N. H.	20	35	50	Orford, N. H.	50	50	50	
Concord, Mass.	30	50	60	Orange, Mass.	50	40	60	
Charlestown, N. H.	50	40	50	Pepperell, Mass.	35	45	60	
Chicopee, Mass.	50	25	60	Porter's Station, Mass.	20	50	60	
Chicopee Falls, Mass.	50	25	60	Pratt's Junction, Mass.	35	50	60	
Clinton, Mass.	35	50	60	Putney, Vt.	50	40	50	
Claremont, N. H.	50	45	50	Potter Place, N. H.	45	50	50	
Chelsea, Vt.	50	50	45	Plymouth, N. H.	50	60	55	
Charlemon, Mass.	50	40	60	*Profile House, N. H.	100	100	100	
Centre Harbor, N. H.	50	60	60	Richmond, Vt.	60	60	40	
Conway, N. H.	75	75	75	Rouse's Point, N. Y.	75	75	40	
*Crawford House, N. H.	100	100	100	Roxbury, Vt.	50	50	40	
Contocookville, N. H.	40	50	55	Royalston, Mass.	40	45	60	
Danbury, N. H.	50	50	50	Rumney, N. H.	50	60	55	
Derry, N. H.	30	50	60	St. Albans, Vt.	60	60	30	
East Andover, N. H.	45	50	50	St. Johnsbury, Vt.	50	50	50	
Enfield, N. H.	50	50	50	Sharon, Vt.	50	50	45	
Essex Junction, Vt.	60	60	30	South Acton, Mass.	30	50	60	
Erving, Mass.	50	40	60	South Ashburnham, Mass.	40	45	60	
Fitchburg, Mass.	30	4	60	South Deerfield, Mass.	50	30	60	
Fisherville, N. H.	20	35	50	South Royalton, Vt.	50	50	45	
Fitzwilliam, N. H.	40	50	60	South Vernon, Vt.	50	35	60	
Franklin, N. H.	20	35	50	Springfield, Vt.	50	45	50	
Fayville, Mass.	35	50	60	State Line, N. H.	40	50	60	
Framingham, Mass.	—	—	60	Stanstead, Quebec.	60	60	50	
Gardner, Mass.	40	50	60	Sterling Junction, Mass.	35	45	60	
Georgia, Vt.	60	60	30	Stowe, Vt.	60	60	40	
Grafton, N. H.	50	50	50	Stoneham, Mass.	20	35	60	
Greenfield, Mass.	50	30	60	Swanton, Vt.	75	75	40	
Groton Junction, Mass.	30	55	60	Shelburne Falls, Mass.	50	35	60	
Grout's Corner, Mass.	50	40	60	Sanbornton Bridge, N. H.	30	50	55	
*Glen House, N. H.	100	100	100	Townsend Centre, Mass.	40	50	60	
Hanover, N. H.	50	50	50	Troy, N. H.	40	50	60	
Holyoke, Mass.	50	25	60	Templeton, Mass.	40	45	60	
Hookset, N. H.	20	35	60	Tamworth, N. H.	60	65	65	
Hudson, Mass.	35	50	60	Walpole, N. H.	50	45	50	
Hartland, Vt.	50	50	50	Waltham, Mass.	30	50	60	
Hoosac Tunnel, Mass.	50	40	60	Watertown, Mass.	30	50	60	
Haverhill, N. H.	50	55	55	Waterbury, Vt.	60	60	40	
Hillsboro Bridge, N. H.	45	50	60	Wells' River, Vt.	50	50	50	
Jonesville, Vt.	60	60	40	West Andover, N. H.	45	50	50	
*Jackson, N. H.	100	100	100	Westburke, Vt.	60	60	50	
Keene, N. H.	40	40	50	West Boylston, Mass.	35	45	60	
Lancaster, Mass.	35	45	60	West Canaan, N. H.	50	50	50	
Lebanon, N. H.	50	50	50	West Hartford, Vt.	50	50	45	
Leominster, Mass.	35	50	60	Westminster, Mass.	40	45	60	
Lowell, Mass.	20	35	60	West Randolph, Vt.	50	50	45	
Lyndon, Vt.	60	60	50	Westmoreland, N. H.	50	45	50	
Laconia, N. H.	30	50	55	White River Junction, Vt.	50	50	45	
Lake Village, N. H.	30	50	55	Winchendon, Mass.	40	45	60	
Lisbon, N. H.	60	60	65	Winchester, Mass.	20	35	60	
Littleton, N. H.	60	60	55	Windsor, Vt.	50	50	50	
Lancaster, N. H.	60	60	60	Woodstock, Vt.	50	50	50	
Mason Village, N. H.	40	50	60	Woburn, Mass.	20	35	60	
Marlboro Depot, N. H.	40	50	60	Winouaki, Vt.	60	60	25	
Marlboro, Mass.	35	50	60	*Weirs, N. H.	40	60	55	
Middlesex, Vt.	60	60	40	Wentworth, N. H.	50	60	55	
Milton, Vt.	60	60	30	Warren, N. H.	50	60	55	
Montpelier, Vt.	50	50	40	Woodsville, N. H.	50	50	50	
Manchester, N. H.	20	35	60	Whitefield, N. H.	60	60	60	
Methuen, Mass.	30	50	60	*White Mountain House, N. H.	100	100	100	
Meredith Village, N. H.	40	60	55	Warner, N. H.	40	50	55	
*Mt. Washington, Mass.	125	125	125					
Nashua, N. H.	20	35	60					
Newbury, Vt.	50	50	50					

*Summer office. Notice will be given when open and when closed.

The foregoing rates are not intended for those offices which have

been furnished with tariffs by Superintendent G. W. Gates, as they will use the tariffs so furnished.

OTHER LINES.

Hereafter the following tariffs to points on the Union Pacific R. R. will be collected, and business sent and checked to the points from which tariff is given.

Alkali, Neb.	1 60 and 11	from Omaha, Neb.
Big Springs, Neb.	1 70 and 12	" "
Brady's Island, Neb.	1 40 and 9	" "
Columbus, Neb.	75 and 5	" "
Elkhorn, Neb.	50 and 3	" "
Elm Creek, Neb.	1 20 and 8	" "
Fremont, Neb.	60 and 4	" "
Julesburg, Neb.	1 75 and 12	" "
Kearney, Neb.	1 10 and 7	" "
Lodge Pole, Neb.	1 80 and 13	" "
Lone Tree, Neb.	85 and 6	" "
McPherson, Neb.	1 45 and 9	" "
North Bend, Neb.	65 and 4	" "
Ogallala, Neb.	1 65 and 11	" "
O'Fallon's, Neb.	1 55 and 10	" "
Pappillion, Neb.	40 and 3	" "
Plum Creek, Neb.	1 25 and 8	" "
Silver Creek, Neb.	80 and 5	" "
Shell Creek, Neb.	70 and 4	" "
Wood River, Neb.	1 00 and 7	" "
Willow Island, Neb.	1 30 and 9	" "
Antelope, Neb.	70 and 4	from Cheyenne, Wy.
Archer, Wy.	40 and 3	" "
Bushnell, Neb.	60 and 4	" "
Buford, Wy.	60 and 4	" "
Benton, Wy.	1 50 and 10	" "
Bitter Creek, Wy.	1 85 and 13	" "
Cooper Lake, Wy.	90 and 6	" "
Como, Wy.	1 20 and 8	" "
Carbon, Wy.	1 30 and 9	" "
Creston, Wy.	1 55 and 11	" "
Ft. Sanders, Neb.	75 and 5	" "
Granite Canon, Wy.	50 and 3	" "
Hazard, Wy.	40 and 3	" "
Hilledale, Wy.	50 and 3	" "
Lookout, Wy.	1 00 and 7	" "
Medicine Bow, Wy.	1 25 and 8	" "
Potter, Neb.	75 and 5	" "
Pine Bluff, Wy.	60 and 4	" "
Percy, Wy.	1 40 and 9	" "
Red Butte, Neb.	70 and 4	" "
Rock Creek, Wy.	1 10 and 7	" "
Rawlins, Wy.	1 55 and 10	" "
Red Desert, Wy.	1 75 and 12	" "
Sherman, Wy.	65 and 4	" "
St. Mary's, Wy.	1 45 and 9	" "
Separation, Wy.	1 60 and 11	" "
Table Rock, Wy.	1 80 and 13	" "
Wyoming, Wy.	85 and 6	" "
Washakie, Wy.	1 70 and 12	" "
Aspen, Utah	60 and 4	from Echo City, Utah
Bridger's Station, Utah	70 and 4	" "
Bryan, Wy.	90 and 6	" "
Black Buttes, Wy.	1 30 and 9	" "
Carter, Utah	75 and 5	" "
Church Buttes, Wy.	80 and 5	" "
Evanston, Utah	50 and 3	" "
Green River, Utah	1 00 and 7	" "
Point of Rocks, Wy.	1 25 and 8	" "
Piedmont, Utah	65 and 4	" "
Rock Springs, Wy.	1 10 and 7	" "
Salt Wells, Wy.	1 20 and 8	" "
Wasatch, Utah	40 and 3	" "

Hereafter check direct with Coatesville, Pa. Tariff from offices on Pennsylvania R. R. between Philadelphia and Altoona, 25c. From offices between Altoona and Pittsburgh, 30c. From all others, 25c. more than Philadelphia or Harrisburgh, taking lowest rate as explained in JOURNAL of February 1.

The tariff to points between Salt Lake City, Utah, and Helena, Montana, from offices East of Omaha has been made as follows :
Virginia City, Mon., 1.00 more than San Francisco, Cal.
Snake River, Idaho, 50c. more than San Francisco, Cal.
Ruddy's, Idaho, 60c. more than San Francisco, Cal.
Brigham City, Utah, same as San Francisco, Cal.
Ogden, Utah, same as San Francisco, Cal.

Where the rate to points on "Other Lines" from Salt Lake City has heretofore been 50c. for ten words and 2½c. for each additional word, it is now 50c. for ten words, and 20c. FOR EACH ADDITIONAL FIVE WORDS OR UNDER. Where it is 1.00 and 5 it is now 1.00 and 40c. FOR EACH ADDITIONAL FIVE WORDS OR UNDER.

Business for Kinderhook, N. Y., should be checked to Valatie, N. Y. Tariff 8 and 1 for other lines.

Tariff to Paxton, Ill., 55c. from Chicago, from offices sending business for that office via Chicago.

WILLIAM GORDON, President.

been furnished with tariffs by Superintendent G. W. Gates, as they will use the tariffs so furnished.

OTHER LINES.

Hereafter the following tariffs to points on the Union Pacific R. R. will be collected, and business sent and checked to the points from which tariff is given.

Alkali, Neb.	1 60 and 11	from Omaha, Neb.
Big Springs, Neb.	1 70 and 12	" "
Brady's Island, Neb.	1 40 and 9	" "
Columbus, Neb.	75 and 5	" "
Elkhorn, Neb.	50 and 3	" "
Elm Creek, Neb.	1 20 and 8	" "
Fremont, Neb.	60 and 4	" "
Julesburg, Neb.	1 75 and 12	" "
Kearney, Neb.	1 10 and 7	" "
Lodge Pole, Neb.	1 80 and 13	" "
Lone Tree, Neb.	85 and 6	" "
McPherson, Neb.	1 45 and 9	" "
North Bend, Neb.	65 and 4	" "
Ogallala, Neb.	1 65 and 11	" "
O'Fallon's, Neb.	1 55 and 10	" "
Papillon, Neb.	40 and 3	" "
Plum Creek, Neb.	1 25 and 8	" "
Silver Creek, Neb.	80 and 5	" "
Shell Creek, Neb.	70 and 4	" "
Wood River, Neb.	1 00 and 7	" "
Willow Island, Neb.	1 30 and 9	" "
Antelope, Neb.	70 and 4	from Cheyenne, Wy.
Archer, Wy.	40 and 3	" "
Bushnell, Neb.	60 and 4	" "
Buford, Wy.	60 and 4	" "
Benton, Wy.	1 50 and 10	" "
Bitter Creek, Wy.	1 85 and 13	" "
Cooper Lake, Wy.	90 and 6	" "
Como, Wy.	1 20 and 8	" "
Carbon, Wy.	1 30 and 9	" "
Creston, Wy.	1 65 and 11	" "
Ft. Sanders, Neb.	75 and 5	" "
Granite Canon, Wy.	50 and 3	" "
Hazard, Wy.	40 and 3	" "
Hillsdale, Wy.	50 and 3	" "
Lookout, Wy.	1 00 and 7	" "
Medicine Bow, Wy.	1 25 and 8	" "
Potter, Neb.	75 and 5	" "
Pine Bluff, Wy.	60 and 4	" "
Percy, Wy.	1 40 and 9	" "
Red Butte, Neb.	70 and 4	" "
Rock Creek, Wy.	1 10 and 7	" "
Bawlings, Wy.	1 55 and 10	" "
Red Desert, Wy.	1 75 and 12	" "
Sherman, Wy.	65 and 4	" "
St. Mary's, Wy.	1 45 and 9	" "
Separation, Wy.	1 60 and 11	" "
Table Rock, Wy.	1 80 and 13	" "
Wyoming, Wy.	85 and 6	" "
Washakie, Wy.	1 70 and 12	" "
Aspen, Utah	60 and 4	from Echo City, Utah
Bridger's Station, Utah	70 and 4	" "
Bryan, Wy.	90 and 6	" "
Black Buttes, Wy.	1 30 and 9	" "
Carter, Utah	75 and 5	" "
Church Buttes, Wy.	80 and 5	" "
Evanston, Utah	50 and 3	" "
Green River, Utah	1 00 and 7	" "
Point of Rocks, Wy.	1 25 and 8	" "
Piedmont, Utah	65 and 4	" "
Rock Springs, Wy.	1 10 and 7	" "
Salt Wells, Wy.	1 20 and 8	" "
Wasatch, Utah	40 and 3	" "

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Where the rate to points on "Other Lines" from Salt Lake City has heretofore been 50c. for ten words and 2½c. for each additional word, it is now 50c. for ten words, and 20c. FOR EACH ADDITIONAL FIVE WORDS OR UNDER. Where it is 1.00 and 5 it is now 1.00 and 40c. FOR EACH ADDITIONAL FIVE WORDS OR UNDER.

Business for Kinderhook, N. Y., should be checked to Valatie, N. Y. Tariff 8 and 1 for other lines.

Tariff to Paxton, Ill., 55c. from Chicago, from offices sending business for that office via Chicago.

*Summer office. Notice will be given when open and when closed.

The foregoing rates are not intended for those offices which have

Journal of the Telegraph.

Our Sun the Origin of all the Forces on Earth.

[From the Scientific American.]

When we trace backward the origin of all the forces or motions on the surface of our planet, we come to the necessary conclusion, that they all, with the single exception of the ocean tides, are to be found in the heat of the sun. In fact, this heat causes air currents, and so the force of the wind; it evaporates the water of oceans and lakes, which, coming down on mountains as rain, forms streams, and gives water power in its descent. Again, this heat of the sun causes plants to grow, which, storing up heat in their fibers, procure us a fuel, either fossil as coal, or recent as wood; which fuel, by its combustion, gives us only the heat of the sun back, which heat is thus made available to us at any place, at any time, and is also easily transformed into motion by means of steam or caloric engines. Or, again, the vegetable matter formed by the light and heat of the sun, is consumed by animals as food; and the stomach of animals acting in certain respects like the furnace of a steam engine, sets partially the hidden heat free to keep the animal system at the proper temperature, and partially consumes this heat to produce muscular motion for moving the individual itself, and partially this muscular motion may be applied to produce motion of matter, overcoming all kinds of resistance to this motion, and this last is what is commonly called force.

The use of a number of pounds only, as a measure of a force, without referring to its motion, notwithstanding extensively applied, is, when critically examined, very erroneous; as is also the old definition of force as something which "can create or destroy motion of matter," as if force was something exterior to matter and independent of it.

Force, on the contrary, is the manifestation to us of something co-existent with and inseparable from matter; no force without matter, and, as far as our experience goes, no matter without force.

Matter shows itself to us under different forms, and continually undergoes the most stupendous transformations by chemical and other agencies. Sometimes a light, invisible gas like hydrogen becomes condensed without any external pressure, in the one-thousandth part of its former space, in the metallic state in palladium, increasing the weight of this last metal almost one per cent; or this same gas combined with another gas, nitrogen, making the mysterious metal ammonium, forms a perfect amalgam with mercury, swelling its bulk till it becomes lighter than water, and will float on it.

Similar transformations we observe in force: one time it will manifest itself to our eyes as light streaming from the sun; then as an agent expanding matter, and giving to our bodies the sensation of heat; then changing the solidity of ice into the fluidity of water, and this again into the highly elastic vapors or steam—by every one of these molecular changes, a portion of heat disappearing, becoming latent, to reappear again when another change occurs in the opposite direction. By not only overpowering and destroying the natural cohesion of the waters molecules, but changing it in a powerful repulsion, this force increases the bulk of the water more than a thousand times, and enables it to exceed not only pressure, but to move heavy bodies; thus we may transform molecular force, or heat, into motion of the masses which then is distinctly observable to most of our senses. This constitutes what formerly, exclusively, was called a force.

P. H. VANDER WEYDE, M. D.

WITHOUT SLEEP.—Five young men in Berlin lately made an agreement, for a wager, to see who of them could keep awake for a whole week. They all held out for about five days and a half, by drinking largely of strong coffee, and keeping up a constant round of active exercises and exciting amusements. At the end of that time two of them yielded to drowsiness; a third soon fell asleep while riding, tumbled from his saddle and broke his arm; a fourth was attacked by severe sickness, and compelled to retire from the list; the fifth held out to the end, but lost twenty-five pounds of flesh in winning the wager. Long ago, Frederick the Great and Voltaire made a similar experiment, but they did not succeed.

SPECIAL NOTICE,

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK.

AND

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK,

General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York.

The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their

SUBMARINE TELEGRAPH CABLES;

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

BENEDICT BROTHERS,

No. 691 BROADWAY,

BETWEEN AMITY AND FOURTH STREETS,

JEWELERS,

KEEPERS OF THE CITY TIME,

FINE WATCHES, CHAINS, DIAMONDS,

AND

SOLID SILVER WARE.

AGENTS FOR THE AMERICAN WALTHAM WATCH

Watches Repaired in the most thorough manner, and Warranted.

SPECIAL NOTICE.

Since the 1st of September a new and valuable improvement has been attached to all the Watches made by the American Waltham Watch Company, namely: Fogg's Patent Pinion, and also the Sprung Over Regulator.

We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

BENEDICT BROTHERS,

Agents for the American Waltham Watch.

691 Broadway.

DURANT'S

NONPAREIL RELAY.

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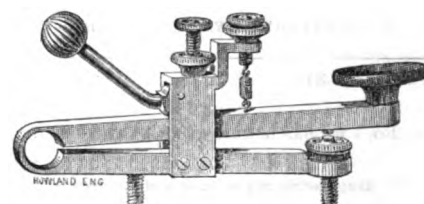
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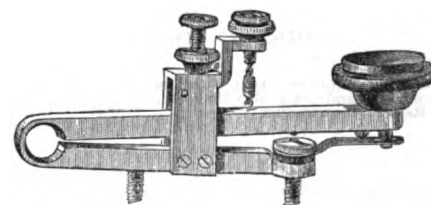
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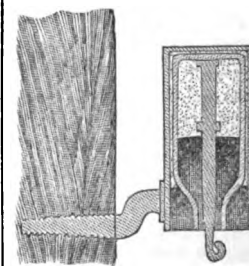
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JOURNAL OF THE TELEGRAPH.

VOL. II NO. 11.

NEW YORK, MAY 1, 1869.

WHOLE NO. 36

A New Magneto-Electric Machine.

[From the Student and Intellectual Observer.]

Many ingenious contrivances have been used for the production of electric currents from permanent magnets. The general principle of the construction and action of such apparatus is as follows :—

A bar of soft iron is made to revolve with great rapidity in front of, or between, the poles of a permanent magnet or magnets. On the bar of iron, or revolving armature, is wound a quantity of fine copper wire, insulated with a covering of silk. Motion is communicated to the armature by some arrangement of multiplying wheels. Every time the direction of the armature is changed relatively to the poles of the permanent magnet an induced electric current is generated in the coil of insulated wire surrounding it, the current being reversed in its direction twice in the course of each single revolution of the armature. The reason of this reversal will be understood when the cause of the production of the electric current is more fully explained.

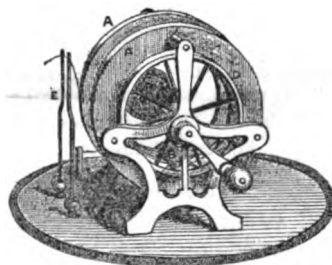
Faraday demonstrated the production of an induced electric current by the action of a permanent magnet by the following beautifully simple experiment. A coil of insulated copper ribbon, about forty feet long, was wound in a single flat coil, like a chronometer spring, round a soft iron rod. The end of the ribbon was drawn out of the centre of the coil, and soldered to a small plate of copper, stouter than the ribbon. One surface of this plate was amalgamated with mercury. The outer end of the ribbon was pointed and bent in the form of a letter S, so as to act as a spring and rest lightly on the amalgamated plate. The iron rod on which the coil was wound was placed on the poles of a powerful permanent magnet, supported in a vertical position. Thus placed, the rod became itself a magnet by induction, and generated an induced current in the coil of insulated copper ribbon wound upon it. Induced currents being instantaneous, are only present at the moment of making and breaking contact between the bar and the magnet. When the contact was broken with a sudden jerk, the spring end of the ribbon flew up from off the amalgamated copper plate on which it rested, and deflagrated a portion of the mercury, producing a small bright spark. On reversing the ends of the bar relatively, it becomes an induced magnet with its poles reversed, and the current induced in the ribbon will run in the contrary direction. If instead of fifty feet of copper ribbon, we wind fifty yards of fine insulated wire upon the iron rod, and attach the rod by its centre to an axis at right angles to itself, as well as to the poles of the permanent magnet, and bringing the two opposite ends of the fine wire into contact, by means of springs with two separate pieces of metal, upon touching both pieces of metal, while the axis is rotating, a strong electric current will be felt.

Machines of this kind, as usually made, are only powerful enough to produce physiological effects. Those which have been made powerful enough to exhibit effects similar to voltaic batteries or plate glass

electrical machines, have been so cumbersome and expensive as to preclude their coming into general use.

Mr. Browning, of the Minories, has just introduced a magneto machine of novel form and arrangement, in which the disadvantages of the old machines have been completely removed.

In the engraving, A A are two permanent magnets, of a similar form, whose poles at the lower part nearly approach, and actually face, each other. B is an armature of soft iron, round which a quantity of insulated copper wire is wound lengthwise. The armature is made to revolve with great rapidity by the following ingenious arrangement. The handle in front of the instrument communicates motion to the cog wheels at C, which are a modification of Watt's celebrated sun-and-planet-motion. The wheel D moves with cog wheels, and being attached to a hollow ar-



bor through which the spindle passes, to which the handle is attached, it makes six revolutions for one turn of the handle. The rim of the wheel D gives a multiplied motion to the armature B, which is thus caused to revolve nearly thirty times for every time the handle makes one revolution.

The ends of the insulated wire on the armature are connected with the two brass balls in which the wires marked E are fixed. A commutator, which cannot be seen in the engraving because it is behind B, controls the connection, in such a manner, that all the positive currents are sent to one ball, and all the negative to the other.

Two armatures are supplied with each machine, one containing a few yards of insulated wire of large size. This is known as the quantity-armature. The other armature contains a great length of exceedingly fine insulated wire. This is the intensity-armature. The quantity-armature produces effects similar to those produced by a voltaic battery; the intensity-armature such results as are obtained by means of an electrical machine.

With the quantity-armature the following effects can be produced :—Half an inch of platinum wire placed between the poles at E, can be made white hot in a few seconds. An induction coil may be made to give off bright sparks, or illuminate small induction-tubes. Bells may be rung, or telegraphs worked, even at a distance of many miles. Water or chemical salts may be decomposed.

With the intensity-armature, Abel's fuzes may be fired, and most powerful physiological effects may be

produced. The power of the shock-current may, however, be modified to any extent at the will of the operator, so that it may be made quite unbearable, or scarcely perceptible, as desired.

The decomposition of metallic salts under the microscope is a singularly beautiful experiment. It is only necessary to place a small quantity of a metallic salt, such as sulphate of copper, nitrate of silver, or acetate of lead or zinc, in solution, in a hollow glass cell on the stage of the microscope; then bring the ends of the wires from the machine, and dip them into the liquid. Upon turning the handle of the machine, the salt will be decomposed, and the metal will be deposited in the form of crystals upon the end of the wire forming the negative pole.

If the current from the quantity-armature be sent through a short coil of stout insulated wire, wound round a rod of soft iron, bent into the shape of a horseshoe, the iron becomes a magnet, and will support a weight attached to its feeder. Here we see the permanent magnetism of the magnets make the revolving armature an induced magnet. The interruptions in the magnetism of the armature, caused by its revolution, induce a current of electricity in the wire wound upon it; and the passage of this electric current through the coil of wire on the soft iron horseshoe converts the iron bar into an induced magnet.

The machine we have described moves with very little friction, is very compact and portable, and is comparatively inexpensive, being less than one third the price of the old machines of equal power. With the intensity-armature a most powerful and intense current is produced. The current is completely under control, and, as we have said, can be modified at pleasure, so as to be applicable for medical use. By an ingenious arrangement of the commutator, the current is made to flow continuously in one direction. Dr. Richardson, F.R.S., so well known for his most valuable method of using ether-spray for the purpose of producing insensibility to pain, instead of administering chloroform to patients about to undergo surgical operations, states that he has used this magneto machine with great success.

For any purpose, the effects of a moderately powerful voltaic battery may be produced, without the trouble and inconvenience attending the use of batteries. The instrument is elegant in appearance, and always ready for instant use.

ELECTRO-PLATING iron with copper and brass is successfully carried on in France, in the following simple manner: The iron object is coated with a varnish of rosin, dissolved in benzine. This is then coated with plumbago, and the copper deposited as usual. By this means the peeling off of the thin layer of copper is obviated.

A THEORY OF THE AURORA BOREALIS.—The New York Journal of Commerce submits and argues an original theory to explain the phenomena of the Aurora Borealis, to the effect that the Aurora Borealis is the silent discharge of accumulated electricity in the atmosphere, furnishing the same relief to nature as flashes of lightning under other conditions.

The Great Auroral Display.

The effect of this magnetic storm, which occurred April 15th, was marked and unusually prolonged. It had appeared on the telegraph lines leading north from New York at an early hour in the afternoon, and, at an hour or two later, on the lines eastward. But it was not until 7.30 P. M. that any peculiar vigor was manifest. At that hour it affected the wires leading from New York to Boston like two antagonistic batteries of great power on a short circuit, bending over the armatures of the magnets with great agitation and violence. At first it was supposed the disturbance was caused by wires fouling, but the peculiar appearance of the sky drew several operators to the roof of the telegraph building, when a large segment of the lower portion of the horizon from N. W. to S. E., was found to be of a bright yellow, which half an hour afterwards changed to pink, at the same time that splendid flashes of light darted up in silent grandeur towards the constellation Lee, terminating there in a beautiful oval corona.

From 7.50 to 8.10 P. M. the auroral current on the wires was very strong, and was used between New York and Boston instead of the battery in forwarding business. Washington could be reached as well as Pittsburgh by the same means, but with a much weaker and inconstant auroral current. At 9 P. M. the auroral current was weaker, and so remained until 10.30, when it became stronger. At 11.15 it again declined. At 11.30 it became very strong. At midnight it became weaker but steadier, and all the Boston Press matter was sent by the auroral current. At no time, from 7.30 to midnight, did the auroral current so fail on the eastern wires as to prevent the transmission of messages. It was attempted to use them north, but failed. It was used for a short time on the Washington wires, and Philadelphia used the auroral current to Pittsburgh.

In a still summer night, upon one of our great northern lakes, and more especially upon Lake Superior, the Aurora Borealis can be seen in great perfection. Floating in a small boat, remote from the shore, one seems to be enveloped in the meteor as in a fog. Nothing is visible but the unearthly light strangely flickering, appearing here and there, filling the whole atmosphere, and keeping it all in tremulous movement. The effect is bewildering. One's ideas of space, distance, progress, and direction, are as confused as if floating among dense clouds in a balloon. The lights, at times, assume various colors, as different shades of orange, green, gray, and red. When they meet at the zenith and form a corona, this has been seen of green, blue, and purple colors. The red tinge has been known to overspread a large portion of the sky, giving to it the color of blood. Such appearances in ancient times were regarded with great horror. The streamers of light are converted by the imagination into the forms of familiar objects in motion. The inhabitants of the north of Scotland call them merry dancers. The ancient Greeks and Romans regarded their appearance as portentous of great events and saw in their varying forms,

Fierce, fiery warriors fight upon the clouds
In ranks and squadrons, and right form of war.

Henderson remarks that in Iceland, where the coruscations are particularly quick and vivid, a crackling noise is heard, like that of the sparks emitted from an electrical machine. Blagden, Gmelin, Nairne, and Cavallo, all speak of the sound proceeding from the aurora. In the chronicles of the middle ages it is frequently recognized in the superstitious descriptions of the gleaming swords of the fighting aerial hosts.

Prof. Olmsted estimates that the height of the corona above the earth is between 70 and 160 miles. Other

observers have found the auroral display much lower, and approaching, indeed, very near to the earth's surface. The cause of the phenomenon is ascribed to the plunging of the earth through nebulous vapor, the velocity being sufficient, notwithstanding the rarity of the materials, to develop this luminosity. Biot and Dalton explain the magnetic phenomena by supposing that the vapor is metallic, probably ferruginous.

An enthusiastic correspondent of the N. Y. Sun writes as follows:

As we looked up to the zenith, where the planet Mars was beginning to glow in the pale blue-green of the twilight sky, we observed faint lines as of thin vapory clouds running from the north and west toward the zenith. Soon the white streaks increased in number infinitely, rising up in all directions from the horizon and forming a cloudy fan-like corona around Mars, which gazed down like the All-seeing Eye through the glorious canopy. Suddenly pulses and waves of soft light would tremble and shiver through the sky, breaking the electric beams into new forms, fading there and brightening here, undulating with a perfect music of motion. Then, while the northern sky was of a pale white, and the western horizon of the loveliest apple-green, broad flushes of the most exquisite pink moved up in the heavens, changing to lilac, and deepening at times to crimson, while simultaneously were seen belts of rich orange and yellow. Glorious beams of light shot up at intervals from the north, and almost from all points of the horizon; broad fans of the electric clouds filled the air with a faint brilliancy. The wondrous pageant kept incessantly changing; it was all motion, all variety, white light alternating with the most exquisitely toned and richest colors.

And all the wondrous display going on in perfect silence; no noise or crackling, no explosions or thunder; all done so grandly in the sublime stillness which reigns in the infinitude of the universe.

At about 11 o'clock there was a second display, more beautiful for the brilliancy of the white light, but not showing the colors which so rarely accompany the Northern Lights in this latitude. The electric clouds took the forms of several of the great nebulae, thus presenting those remarkable objects, as it were, on an enormous scale, an effect truly beautiful and wonderful.

Teaching Girls the Art of Telegraphy—They are Apt Students.

From the San Francisco Chronicle.

The school for the instruction of women in telegraphing, at our Cooper Institute, flourishes so promisingly, that it seems quite unlikely that male operators can hold out much longer against their smiling rivals in that branch of industry. The school is under the control of the Western Union Telegraph Company, and twelve ladies at a time are taught the art and mystery of manipulating the wires by Miss Snow, a preceptress highly accomplished, and apparently an enthusiast in her profession. I dropped into this school a few days ago, and speak from personal observation when I say that I think it opens for the sex a new field of enterprise that cannot but prove a profitable, as well as an extensive one. There are certain positions in the world of business and trade for which women are eminently qualified, and there is no valid reason why they should not occupy them. As clerks in stores, as bookkeepers, as telegraph operators, as compositors or type-setters, and so on, they can earn a remunerative sum, and can accomplish as much as their masculine rivals, who are fit for more robust employments. At this school of telegraphy no girl under seventeen, and no woman over twenty-four years of age, is received as a pupil. They are all taught gratuitously, and all have to pledge themselves in advance to accept situations away from the city when offered to them. As situations are bestowed on the capable ones which return from fifteen to thirty or more dollars a week, the pupils have a cheerful prospect before them, and hence the number of applications for seats in each far exceeds the capacity of the school at present. The girls are, as a body, remarkably apt in the acquisition of this art, and will ultimately make a mass of sober, steady, quiet, practical and expeditious operators for the rural stations, whence they can be gradually drawn, as they become perfect, to fill situa-

tions in the city now occupied by men who devote too much time to smoking, drinking, and frolicking generally, to be considered reliable employees. I should not be surprised to find ordinary places of trust all filled by women before long. They are safer cash-keepers than men. Even when dishonest, they cannot steal as much and as successfully as men. They cannot so readily waste money in cigars and wine, on horses and dogs, and in debauchery. They cannot so easily invest stolen funds without detection; and, at any rate, they have more fidelity, more patience, more tractability. Their capriciousness and volatility can be cured by business discipline, and hence they can, in time, be made valuable assistants in many a light position. Let the women rejoice therefore. They have a brilliant era approaching.

A Beautiful Passage.

Artesian wells are sunk through the sod of the prairies, through the loam, through the gravel through the hardpan, which is almost granite, until at last, 1,000 or 1,500 feet beneath the surface, the hand of man reveals a deep and rapid river coursing through those solitary sunless depths, at a speed of ten miles an hour, swifter than the Ohio, Mississippi or Hudson, or any of the bountiful and important streams of this country, flowing, as they do, through picturesque mountain scenery, stately forest, or enameled meadow, amid towered cities, or cultivated fields. And when the shaft has reached that imprisoned river, and the rent for the first time has been made through its diageon wall, the waters, remembering the august source on far distant mountain-tops, whence ages ago they fell, leap upward to the light with terrible energy rising in an instant far above the surface of the earth, and pouring forth their healthful fertilizing current to delight and refresh mankind. And with even such an awakening are we gladdened when half-forgotten humanity bursts from time to time out of the depths in which it has pursued its joyless, sunless course, moaning and murmuring through long years, but never quite forgetting its divine and distant origin. Such was the upward movement out of the intellectual thralldom which we call the Reformation, when the shaft of Luther struck the captive stream; such an awakening, but a more significant and hopeful one, has been heralded over this whole Republic, East and West, North and South, and for all humanity, by the triumph of the light in the recent four years conflict, in which all have been conquerors.

KNOX COUNTY, ILLINOIS, April 28, 1889.

EDITOR JOURNAL OF THE TELEGRAPH.

A few days since a message reached this office from a village in Missouri, having passed through one or two Repeating Offices on the way. When it started it bore the signature of "Ella;" when it reached this office it had been shorn of its beauty, by the signature having been changed to "E. T. Lack."

I believe it is safest for an operator not to know any thing about what a signature should be—only be sure of what it is; but, as is often the case in small offices, an operator, when receiving, feels sure of what the "sig." will be long before he gets it, from a personal acquaintance with the parties, and a knowledge of the facts stated, so in this case, the writer hereof, after thrice breaking on the "sig.," and insisting that the signature must be wrong, was finally compelled to "accept the situation," and "E. T. Lack" for the first time greets the astonished young man to whom "Ella" had addressed the message. It will be very readily seen that the ck of "Mr. Lack's" name should have been prefixed to the check (or omitted) and not affixed to Ella's name.

Yours truly,
"A. B."

Telegraphers' Mutual Life Insurance Association.

One of many Such.

TROY, April 29, 1869.

EDITOR JOURNAL OF THE TELEGRAPH.

MY OLD FRIEND—Inclosed please find check for over 14 subscribers to the Telegraphers' Insurance. Allow me to say I think it one of the very best things I know of. We had it brought close home to us in the death of "Winnie," one of our number, and had it not been for his membership he would have been buried by charity. I cannot say with the subscriber who refused to renew, "because he had derived no benefit after having been a member for a whole year." I have been repaid FIFTY times over in the satisfaction I have derived from the thought that the few dollars I have paid have been the means of giving relief to the families of our deceased brothers.

Yours truly,

W. C. BUELL.

ASSESSMENT NO. 7.—REMITTANCES RECEIVED.

James D. Beld,	Ch. L. Snyder,
W. H. Hill,	C. E. Higdon,
Alfred S. Downer,	E. C. Armstrong,
W. W. Burhans,	C. M. Knox,
Arthur K. Ingraham,	B. F. Bush,
W. K. Applebaugh,	E. C. Bush,
Geo. W. Baldwin,	D. W. Warner,
Eunice M. Baker,	A. Kern,
Benj. Clark,	G. T. Williams,
John C. Christie,	F. A. Armstrong,
Charles L. Chase,	W. J. Lawlor,
W. C. Chapman,	M. C. Newman,
Henrietta Dieckman,	C. H. Summers,
Horace L. Fardon,	John J. Harrigan,
J. U. Analey,	W. W. Smith,
Fred. J. Grace,	J. C. Mattoon,
Carrie A. Hinda,	S. C. Taylor,
A. W. Gordon,	R. H. Woodward,
R. W. Marriott,	H. W. Monaghan,
H. F. Makepeace,	W. C. Long,
Andrew Neilson,	J. B. Leach,
M. S. Roberts,	S. Lawrence,
Gerrit Smith,	Joseph Knittle,
Lizzie H. Snow,	H. P. Dwight,
Mattie L. Smith,	A. Hunter,
Frank C. Ward,	B. B. Toye,
Leonard Read,	O. M. Gay,
Francis M. Ingram,	Philip Diegen,
E. T. T. Adams,	P. C. Cassidy,
M. D. O'Connor,	A. B. Chandler,
J. B. Munday,	Titus W. Baughan,
Albert Bear,	A. Stuart Brown,
John F. Myers,	W. H. Booth,
C. E. Tweed,	J. M. Armstrong,
G. E. Gilleland,	L. E. Atwater,
C. K. Myers,	M. Foley,
G. H. Grace,	F. H. Seibert,
J. W. Kelly,	W. W. Shook,
H. H. Ward,	A. J. Stoddard,
J. M. Crowley,	O. H. Stanciliff,
Henry Griffith,	Ch. H. Smith,
Joseph Beach,	J. C. Smith,
E. C. Cockey,	F. P. Brown,
E. L. Catterfield,	P. Bruner,
E. B. Brundage,	M. C. Bagley,
Geo. O. Smith,	J. P. Kirohner,
A. J. Lumbard,	W. H. Allen,
W. W. Wall,	Jacob M. Rhodes,
Geo. L. Lang,	A. H. Seymour,
James H. Pressaley,	J. H. Way,
Thomas Landy,	J. A. Hard,
Thos. J. Tobin,	Harry B. Henry,
B. W. Patterson,	S. B. Gifford,
Julian Soule,	J. B. Collins,
W. H. Turner,	C. E. Case,
Leander Stewart,	J. W. Crouse,
J. D. Easterlin,	S. E. Peabody,
R. H. Morris,	Arch. Craig,
John W. Lewis,	P. H. Cooke,
G. W. Bell,	W. H. Sawyer,
C. N. Lamb,	Fred S. Smith,
G. W. Dyer,	D. T. Francis,
Walter Miller,	James P. Golden,
A. R. Brewer,	O. C. Harrell,
Geo. W. Roberts,	Robert N. Norton,
F. C. Vanduzen,	W. H. Hoyt,

J. D. Page,	F. P. Nightingale,
W. J. Purdon,	C. H. Vogel,
J. R. Dowell,	J. H. Cade,
J. McGovern,	C. D. Camp,
Geo. R. Pace,	J. Herrick,
C. J. Gaines,	J. M. Bechtel,
E. McCarty,	O. W. Chapin,
R. M. J. Painter,	R. J. Morrison,
G. W. McGovern,	J. B. Helms,
W. S. Taylor,	E. J. Saville,
Geo. B. Gaines,	Celia E. Smith,
B. H. Johnson,	Florence A. M. Eyster,
Francis J. Nicholson,	J. J. Calahan,
John H. Emerick,	O. M. Clark,
Jacob B. Bogar,	Cornelius Dwyer,
John M. Peters,	Alice A. Smith,
Samuel H. Edwards,	George Durant,
A. Watts Haygood,	Charles Beardale,
C. L. Le Baron,	W. A. Tinker,
R. H. Shaughnessy,	R. C. Humphreys,
Wm. Roche,	A. B. Waite,
W. B. Munroe,	W. T. Lindley,
D. Macdonald,	C. Oscar Blake,
James E. Moore,	John P. Towler,
A. Ferguson,	J. D. Stone,
George Farrell,	*N. H. Browne,
W. C. Buell,	A. J. Locke,
B. F. Follett,	J. Harrigan,
W. H. Ashby,	A. F. Crissey,
George A. Lance,	Philip P. Hauff,
Freeman D. Adams,	A. W. Campbell,
C. A. W. Briggs,	Geo. Wadsworth,
Samuel Moore,	John W. Lewis,
A. R. Phillips,	Jas. Hansen,
Isaac Ford,	R. B. Lown,
C. S. Follett,	William H. Chivvis,

George Chivvis.

*On 4, 5 and 6 assessment.

Russian Railways and Telegraphs.

IMPORTANT LINES BUILDING—RESOURCES OF THE COUNTRY.

[Correspondence of the N. Y. Times].

It may be safely predicted that in a couple of years Russia will be covered with such an iron network as will give means of quick and easy communication with the different parts of the Empire, and render possible the development of immense mineral and agricultural resources, to the present time comparatively dormant. The vast tract from the Carpathian Mountains to the Ural range, and from Moscow to the Black Sea and the Caucasus, is equalled in fertility of soil and abundance of iron and coal only by the best States of the Mississippi Valley. The anthracite of the Don and the south of Russia is equal to the best American.

In view of the value and amount of natural wealth, as well as of the immense distance, it is evident that the railroad question must be the one of the hour, and that the railroad fever is at its height throughout the whole extent of the empire. In traveling from Moscow to Kieff, one is reminded of the Illinois Central, and the country between Chicago and St. Louis—rich rolling prairies and pasture lands on all sides. In such a country there are few deep cuts and no tunneling. In May the trains will run directly from St. Petersburg to Odessa, connecting the Baltic and Black Seas. In about one year there will be direct communication with the Sea of Azoff through the port of Taganrog. A very important line is also the Moscow-Smolensk, which will bring Central Russia in direct communication with the west—through Warsaw by rail, and by water through the northwestern ports in the Russian Baltic Provinces. One of great importance will doubtless be built in a short time between the Caspian and the Aral. This will bring Central Asia into direct and easy communication with Russia and the rest of Europe, of immense importance commercially. At present the transactions between Russia and Central Asia amount annually to thirty millions of rubles, or \$23,310,000, the rouble being equal to 77.7 cents. All this trade is carried on by caravans over the plains and through Orenburg. The distance between the

Caspian and the Aral is less than three hundred miles. I am told by good authorities that in two or three years after the completion of this road trade would be at least trebled. The Amoo Daria is navigable for a distance of nearly 1,200 miles. Taking its rise in the Himalayas, it waters the best parts of Central Asia and empties into the Aral. The Amoo Daria is navigable as far as Balk; the Syr Daria almost to Khodjent. With a little improvement in the bed, light draught steamers on the American model might go to Khodjent. How the world is moving on! Railroads, steamboats, and telegraphs, where, but a few years since, travelers were put to death for daring to put their feet upon those forbidden territories. In all probability, before five years have passed, it will be possible to travel from the upper waters of Lake Superior, in North America, to the heart of Central Asia, all the way by railroad and steamboat.

A few words concerning telegraphs. Russia is very much better provided with telegraphs than railroads. The extent of projected lines to be built soon amounts to thirty thousand miles. Among these is one which may interest Americans, as it will afford direct communication with China. This line is intended to connect Pekin with the Siberian telegraphs at Possiet Bay, on the Japan Sea. The branch to Possiet is not yet quite finished, but the materials are all ready and on the ground.

A Newly-Discovered Characteristic of Iron.

A new fact in the behavior of iron under the influence of heat and strain has been noticed by an English scientist. A strained iron wire was heated to redness by a current of voltaic electricity, and then, the current being discontinued, was allowed to cool. It was observed that there arrived a moment in the process of cooling at which the wire suddenly elongated, and then gradually shortened, until it became perfectly cold, remaining, however, permanently elongated. No other metal besides iron exhibited this peculiarity, which is attributed to a momentary molecular change; and this change would probably happen in large masses of wrought iron, and would come into operation in various cases where those masses are subjected to the conjoint influence of heat and strain, as in various engineering operations, the destruction of buildings by fire, and other cases. The phenomenon deserves a further investigation, since every fact relating to iron is of importance to us.—*American Artisan*.

Attraction of Mountains.

The pendulum experiments in India show that, contrary to theory, the nearer the observing stations are to the Himalayas, the less is the force of gravity, the difference between theory and fact diminishing with the distance from the hills. This seems to confirm the opinion of Professor Airey, that the strata of the earth below the mountains are less dense than the strata below plains and the bed of the sea.

Why is a battery man like a newspaper editor?
Because he does up the "locals." "I"

AN article on the inventions of our friend Mr. George Little has been unavoidably postponed to our next number.

Our readers must excuse us from any expression of opinion respecting the comparative value of the different modes of insulation in use until we can feel secure that each has had its proper test. It is a subject which has caused much anxiety and on which a vast amount of money has been expended. Those who are devoting themselves to the investigation of this interesting problem are deserving of all praise.

Beautiful Hands.

Such beautiful, beautiful hands;
They're neither white nor small,
And you, I know, would scarcely think
That they were fair at all.
I've looked on hands whose form and hue
A sculptor's dream might be,
Yet are these aged, wrinkled hands
Most beautiful to me.

Such beautiful, beautiful hands,
Though her heart were weary and sad,
These patient hands kept toiling on
That children might be glad.
I almost weep, as looking back
To childhood's distant day,
I think how these hands rested not,
When mine were at their play.

Such beautiful hands, beautiful hands,
They're growing feeble now;
For time and pain have left their work
On hand and heart, and brow,
Alas! alas! the nearing time,
And the sad, sad day to me,
When 'neath the daisies, out of sight,
These hands will folded be.

But oh! beyond this shadow-land,
Where all is bright and fair,
I know full well these dear old hands
Will palms of victory bear.
Where crystal streams, through endless years,
Flow over golden sands,
And where the old grow young again,
I'll clasp my mother's hands.

Compound Telegraph Wire.

Boston, April 20th, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

Referring to the article on compound wire in your last issue, questioning its ability to withstand the elements equally as well as iron, and inviting the communication of facts in relation to its capacity and value, we are gratified to be able to give information, such as should convince the most skeptical, of the entire truthfulness of each and every claim made for this improvement; and, to this end, we invite a thorough examination of the special cases hereinafter mentioned, also as to the general behavior of the compound wire lines, through the winter.

The first compound wire of any considerable length was strung in the latter part of May, 1868, on the Alton Bay branch of the Boston and Maine railroad, by J. S. Bedlow, Esq., superintendent Western Union Telegraph Company. This line is twenty-nine and a half miles in length, has the No. 16 steel core (smallest size used), is supported on glass and brackets, and strung quite taut. Mr. Bedlow has very kindly furnished a statement, dated April 1st, 1869, referring to this wire, and also to another of about the same length, subsequently strung for the Eastern railroad, in which he says these wires have stood the extreme cold weather and sleet of the past winter *without a break*, the thermometer reaching *twenty-three degrees below zero*, on the morning of March 6th.

In June, 1868, a compound wire line, of some one hundred and fifteen miles or more, was put up by general superintendent M. L. Wood, Esq.

Mr. Wood, having a desire to so string wires as to leave no possible chance for crosses, and having great confidence in the ability of the compound wires to stand a tight strain, acted directly against our advice in this instance, by stringing it *exceedingly taut*, on twenty-three poles to the mile, and in hot weather. The results of cold weather, and sleet of the past winter, proved that Mr. Wood had made no mistake, as English galvanized wire on the same poles, having an ordinary slack, failed to stand, while the compound has, in the words of Mr. Wood, "stood the test of winter *splendidly*."

Subsequent to the erection of this line, and later in

the season, Mr. Wood constructed a line from Toledo to Detroit on fourteen poles to the mile, using a wire with No. 15 steel core. Of this line he says, in a letter referring to the winter tests of both lines, "The line from Toledo to Detroit, of No. 7 compound, with fourteen poles per mile, has proved most satisfactory. No break reported, except from falling trees or other equally severe test."

It is presumed that the statement referred to in the JOURNAL, claiming breakage of the compound wire oftener than iron, has reference to an article of a recent date, from a correspondent at Emigrant Gap, on the Pacific railroad.

This statement referred to a compound wire line in the Sierra Nevada mountains, and probably to the great storm of February last, in that region. In answer thereto, we can only say that our advices were very radically in opposition to those of the Emigrant Gap correspondent.

Mr. S. D. Field, line constructor on the Pacific coast, writes, in relation to this storm that the compound wire was broken only from falling trees, there being five breaks in an iron wire on the same poles to one in the compound. Also that an equal strain was put on the compound in stringing, as on the No. 9 iron, thus drawing the compound much straighter. Mr. Field also states that out of seven iron wires and one of compound, the last named was the only available line across the mountains for two days after the cessation of the storm. This wire has the No. 16 steel core; outside diameter No. 13½.

The above are a few facts which we have stated in response to the invitation contained in the JOURNAL.

It is true, as implied in the JOURNAL article, that the iron wire, even when drawn up well, has considerable slack, and that the steel wire, being lighter, is apt to be drawn much more nearly straight; but is there any reason why a compound wire, because of its lightness, *should be drawn straighter* than it is customary or necessary to draw iron? Yet it has been done, and the results have proved that, notwithstanding the disadvantage under which it is thus placed, it stands better than English; and in one case (not above given), to a high cost Norway iron.

We believe this quality of withstanding a great and constant tension to be due, in a great measure, to uniformity in the tensile strength of the steel; and this has been one of our most important claims for the wire. The fact of the steel being drawn to the necessary size in its manufacture is assurance of its uniformity, otherwise it would break in the drawing. This is not so with iron, and, of course, the weak spots are the first to give way when brought under unusual strain.

It is well known that an iron wire will break oftener the first year than the second, yet most of the compound and iron wire comparisons have been made with *new* compound and comparatively *old* iron wires.

Another quality of the compound wire, and one which gives it another advantage over iron in very cold weather, etc., is its elasticity.

If an iron wire be stretched the sag is permanently increased in a great measure, while it has been ascertained that properly tempered steel is capable of being elongated, by a gradually applied strain, a two hundred and fiftieth part of its length without setting, and will consequently return to its normal position upon removal of the strain. In case of the compound wire, the copper is controlled by the steel.

Hence, it appears that while an iron wire will be constantly increasing in length on account of changes of temperature, etc., a compound wire will practically retain its original condition, with ample margin for contraction and elongation, in virtue of its elastic property.

CHESTER SNOW,

President of the C. T. W. Co.

The Age of Humbug.

EDITOR JOURNAL OF THE TELEGRAPH:

QUEBEC, April 22, 1869.

The shareholders of the Dominion Telegraph Company met yesterday at the Board of Trade rooms, for the purpose of receiving the report of Mr. Murphy of his visit to Toronto, whither he was sent to investigate the affairs of the New Dominion Telegraph Company. At the conclusion of Mr. Murphy's explanations, the following resolutions were unanimously adopted: "Moved by Mr. Garneau, seconded by Mr. Roche—

"That, in the opinion of this meeting, the gentlemen who have lent their names as directors to the Dominion Telegraph Company are highly censurable for not attaching more moral importance to the obligation incurred by them as directors.

"Moved by Mr. Roche, seconded by Mr. Henry—

"That the information furnished by Mr. Murphy, who was deputed by the stockholders of the New Dominion Telegraph Company of this city to go to Toronto to inquire into its affairs, prove it to be unsound in its inception and in all its management, and that this meeting, by this resolution, binds itself to resist payment of any calls made, the expense of defence to be borne *pro rata* to their stock.

"Mr. Joseph moved an amendment, inserting the words 'until such time as a satisfactory account is given.'—Carried."

Next motion was: "Resolved, That the public are under obligations to the Montreal *Trade Review* and Mr. Wiman, for the energetic, able, and independent manner in which Reeves' manipulations have been exposed, and subscribers to the stock of the New Dominion Telegraph Company placed on their guard."

After a vote of thanks to Mr. Murphy, the meeting adjourned.

San Francisco Fire-Alarm.

THE NEW FIRE-BELL TOWER AND THE ROOMS OF THE TELEGRAPH OPERATORS—SPLENDID APPEARANCE, ETC.

Ever since the terrible earthquake, that for a time rendered tenantless the old City Hall, the fire-alarm telegraph operators have manfully and bravely performed the hazardous duty of remaining in that dilapidated old shell which, at every stroke of the fire-bell, trembled from roof to basement. When all the other offices were removed, they remained watchful sentinels over the welfare of the city; and, as a just reward for their services, they are now furnished with safe and suitable apartments over the first story of the Exempt Fire Company's house on Brenham place. The front room is fifteen by nineteen feet, and is splendidly furnished, and contains the telegraph apparatus. Adjoining this is a private office, and further back are two sleeping rooms, elegantly fitted up for the operators. The battery-room extends from the main office thirty-five feet along the south side of the building. In this are one hundred and fifty cups of the new Mediguer battery. Thirty-three wires centre in the office, twenty of which are signal wires. Six lines run for the police, and the remainder to other public places and institutions. Last night the operators took formal possession of their new apartments, amid the congratulations of a number of invited guests, who were welcomed with sparkling wine and cordial greetings from the Superintendent, Monroe Greenwood, and the operators, Messrs. S. D. Field, D. W. Swain, and C. F. Simmons. Toasts were offered, and the old bell tolled in honor of the occasion. From the operators' room a splendid view of the city can be had, while from the balcony around the top of the tower one can overlook nearly the entire city.

Telegraphic Honors.

NEW YORK, April 27, 1869.

MY DEAR SIR—Ever since I received the proof of your great skill, in connection with your skilful associates, in testing rapid transmission of despatches by the Morse telegraphic system, I have been desirous of manifesting to you, and also to N. J. Snyder, Esq., of Philadelphia, some token of my gratification on your accomplishment of feats which, so far as I know, are unexampled in the annals of telegraphy.

Please, therefore, accept from me, on this the 78th anniversary of my birthday, the accompanying *gold pencil-case and pen*, as a very slight, and, indeed, inadequate expression of my admiration of your masterly performance of recording 2,731 words in one hour, a feat which I have not failed to put on record in my report to the Department of State on the telegraphic apparatus of the Paris Exposition of 1867.

The necessity for exclusive attention in preparing the above-mentioned report has prevented an earlier recognition of your skill. My thanks are also due to all concerned in the satisfactory result of the test of speedy transmission.

While your associates deserve high praise for their rare dexterity in manipulation, you and Mr. Snyder, I think, deserve the highest praise for the admirable, and, indeed, faultless manner of recording that which was so ably transmitted.

Accept also the assurance of my sincere respect and esteem.

SAMUEL F. B. MORSE.

WALTER P. PHILLIPS, Esq.,
Providence, R. I.

NEW YORK, April 27, 1869.

MY DEAR SIR—The necessity of exclusive attention to the preparation of my report on the Telegraphic Apparatus of the Paris Exposition of 1867, which, as United States Commissioner, I have just sent in to the Department of State, has prevented me from earlier acknowledging my indebtedness to you, and also to Walter P. Phillips, Esq., of Providence, R. I., for the result of the *test of speed of transmission* by the Morse system, which was accomplished early in 1868.

Your great skill in recording 2,520 words in one hour, and Mr. Phillips' feat of recording 2,731 in the same time, are feats which, so far as I know, are unexampled in the annals of telegraphy.

Please accept from me the accompanying medal (a souvenir of the great Exposition of 1867), as a small token of my admiration of your masterly performance. In the report above-mentioned I have noted these results as worthy of special record. Accept the assurance of the sincere respect and esteem of

Your obedient servant,

SAMUEL F. B. MORSE.

N. J. SNYDER, Esq., Philadelphia.

Two Superintendents made Happy.

We are pleased to read the record of the presentation of a beautiful gold American lever watch to Col. W. H. Heiss, the able and experienced General Superintendent of the International Ocean Telegraph Company, and of a solid silver ice-pitcher to his worthy assistant, Major W. W. Sadler. These gifts were presented very gracefully by T. W. Scull, Esq., Manager of the Baldwin, Fla., office, and responded to by the grateful recipients feelingly and appropriately. There is no more faithful man in the profession than our old friend Heiss, and now if he is not up to time, all the time, with the aid of this new gift or without it, we have mistaken the man. Mr. Sadler is a most capable assistant.

RICHARD W. WINANT, lately employed as clerk at the Western Union Company's Stock Exchange office, was dismissed on the first instant for dishonest practices.

Pope's Modern Practice of the Electric Telegraph.

The value of this work will be found to be its simplicity and absence of scientific pretension, although scientifically exact and complete. We are able to give the following extract and illustrations, furnished us by the author, to show the practical character of the work and its adaptation to a widely felt necessity.

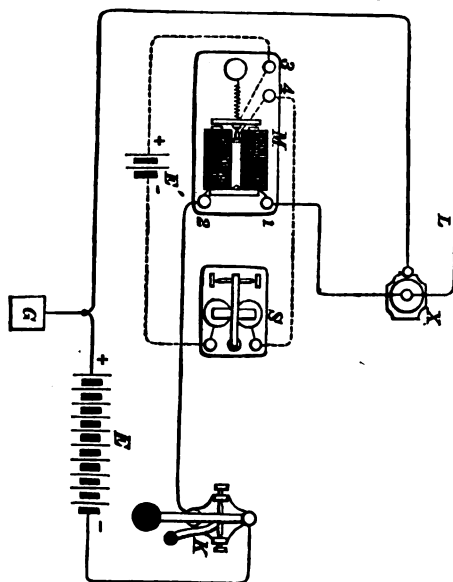


Fig. 17.

ARRANGEMENT OF A TERMINAL STATION.—Fig. 17 is a diagram showing the arrangement of wires, batteries, and instruments for one of the terminal stations of a line. The line wire L first enters the lightning arrester X, and passes thence through the coils of the relay M by the binding screws, 1, 2, and thence to the key K, main battery E, and finally to the ground at G. The local circuit commences at the + pole of the local battery E, and through the platina points of the relay by the binding screws, 3, 4, thence through the register or sounder coils, S, and back to the other pole of the battery.

ARRANGEMENT OF A WAY STATION.—Fig. 18 shows a plan of the instruments and connections at a way

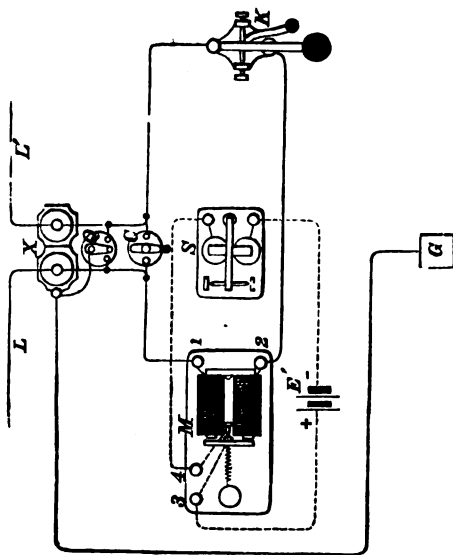


Fig. 18.

station. The line enters at L, passes through the lightning arrester X, and thence through the relay M, key K and back to the lightning arrester, and thence to the next station by the line L. The arrangement of the local circuit is the same as in the last figure. The button C, arranged as shown in the figure, is

called a "cut-out." When turned so as to connect the two wires leading into the office, it allows the line current to pass across from one to the other without going through the instruments. The instruments should always be cut out by means of this apparatus when leaving the office temporarily, or for the night, and also during a thunder storm, to avoid damage to the apparatus.

The *Ground Switch*, Q, is used to connect the line with the earth on either side of the instruments at pleasure. It is only used in case of accidents or interruptions on the lines, as will be hereafter explained.

FAULTS OF THE MORSE APPARATUS.—The principal difficulties which the operator is liable to meet with in working the Morse apparatus are as follows:

1. When the paper in the register does not run freely from the reel on which it is held, or sticks in the guides, from irregularity in width, or if the style is adjusted to indent the paper too deeply, the paper moves irregularly, shortening dashes into dots, and causing dots to run together.

2. The style should be adjusted so as to move freely in the groove of the upper roller, or the marks will be more or less indistinct. If it is completely out of the groove, no marks will be produced. These faults generally arise from too much end play in the pivots of the lever, or from the pivot screws working loose. When the lever works too loosely in its bearings, irregular dashes, too deep at their commencement, and tapering off to nothing, will be produced.

Residual magnetism sometimes causes the armature of the electro-magnet to stick. This will always happen if the armature is allowed to touch the poles of the magnet. The screw stop should therefore be adjusted so as to prevent the armature from approaching too closely to the poles of the magnet. The upper screw stop, which regulates the play of the lever, should be adjusted so that the movement is just sufficient to withdraw the style from contact with the paper.

3. If the paper runs between the rollers "crooked," the pressure of the upper roller upon the paper is greater at one end than the other. This pressure is regulated by two springs, one on each side of the instrument, and they should be made as nearly equal in pressure as possible.

Durant's Nonpareil Relay.

The following comes from the night manager of the Western Union Telegraph Office at Providence, R. I., and which we are glad to publish:

PROVIDENCE, April 24, 1869.

DEAR SIR: I have given the Nonpareil Relay which you sent here, a very thorough trial on different wires and under all manner of circumstances, always with the happiest results. It has, however, been used chiefly on a long circuit, extending from New York to New Bedford, via Boston, which is devoted to press business. The "current" on the wire in question changes often from various causes, when the weather is not wholly clear, and I have always found the Relay received from you to accommodate itself to the variation with wonderful facility. It was in use on the night of the 15th inst., on which it will be remembered that the auroral display occurred, and the operator who was on duty here on that occasion avers that he was able to receive from New York, with comparative ease, while stations varying from fifty to one hundred and fifty miles nearer New York, where the ordinary Relay is in use, found it impossible to adjust their instruments to the ever changing "current," and were, consequently, put to the necessity of frequent "breaking."

If your Relay has faults, they are sufficiently diminutive to have escaped any careful scrutiny, and I have no hesitation in pronouncing it, in my opinion, a marked improvement on all that has gone before.

Truly yours,

WALTER P. PHILLIPS.

To Mr. Charles Durant,
New York.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—**JAMES D. REID, Editor,**
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, MAY 1, 1869.



United.

With the opening of the flowery eyelids of the blooming month of May, the last rails are being laid which are to connect the Atlantic and Pacific in a Union which, we trust, may be eternal. One rail only remains unlaunched awaiting its formal consecration on the 10th instant. It is the great event of the century. No man can forecast its splendid results. It will open up a wealth of population which must follow the tread of the locomotive, which will change the centres of civilization, and make old ocean a crowded highway of emigration to these vast domains. America will be, henceforth, the pathway to China for all Europe. San Francisco will rival New York in coming years as the great entrepot of Asia, and both will be mammoth in extent, in population, and in influence.

The Union we hail as the marriage of the oceans and the nation. No day could better herald the event than that which ushers in the season of bloom and beauty. The world may well be gay to-day. It is the day of the grandest physical triumph the earth has seen. May God bless it.

"Like spectral lamps, that burn before a tomb
The ancient lights expire;
I wave a torch, that floods the lessening gloom
With everlasting fire!

Crowned with my constellated stars I stand
Beside the foaming sea,
And from the Future, with a victor's hand,
Claim empire for the Free!"

Magnets.

It is a remarkable fact respecting the Morse system of telegraphing that, since its first introduction, no change has been proposed or effected therein, which has, in the least degree, improved it so as to render it more effective, or better to answer the ends for which it was designed. This cannot be regarded as other than high praise. The elements are so simple, so utterly without complication, that nothing more seems possible to render it more complete.

In a very weak article in "Engineering," we see that in claiming for Wheatstone the first place as a telegraph inventor, it is charged to Prof. Morse, as evidence of ignorance, that he used at one time magnets which were so large that one of them required three men to carry it. This is said to show how crude were his ideas, and how clumsy his thoughts of the machinery needed to carry out his plans. His supposed ignorance of the small and beautiful magnets, covered with fine and delicate wires, which appeared about the same time in France, is evidence to these jealous Englishmen that Mr. Morse was a mere artist who blundered into a discovery which, though it has given him a world-wide reputation, yet gives him no title to the fore rank so many claim for him.

Now it is a little curious to know that, in the matter of magnets, we are just about to return to the very position of Mr. Morse when he made his ponderous magnets, of whose weight we ourselves have had some experience,

and which we used to look upon with a kind of wondering awe. Solemn things indeed, were they, enclosed in black walnut cases, under lock and key from human eyes, except when Mr. Vail used to open the door an instant, and revealed to our wondering eyes the mysterious spark which allied that ominous box with the lightning of the skies.

These magnets were made on the supposed necessity of presenting no unnecessary obstruction to the current of the line, and that, for this purpose, the nearer the wire of the magnet approached the capacity of the outside conductor the better. No sane man can deny to-day the correctness of the idea, and the desirableness of such an attainment. Our magnets have been one of the great evils connected with the whole system. Under a desire to secure great sensitiveness, the size of the wire wound around magnets has not only been ruinously reduced, but the coils have been enlarged and elongated, until the resistance of a single magnet has sometimes exceeded the resistance of a hundred miles of line, and thus rendered the manipulation of the crowded and obstructed circuits an operation of the most irritating difficulty. How often have we felt relieved when 8 P. M. would come, and cut out the magnets of the intervening offices, so that the lines would work easily and the crowded files might be cleared. Even to-day, good insulation is rendered imperfect, the action of many important circuits made unsteady, and repeaters indispensable, just because of the obstruction of multiplied coils of fine wire which, under beautiful forms of velvet or rubber, check and embarrass the flow of the electric current.

"But are we to have these mammoth magnets again?" Oh, no. "What then?" Only this, that our magnets must have their wires of such size as shall admit of easy and complete saturation with the least obstruction, and the quantity used be reduced to as low a standard as efficiency will permit.

"How large then would you have the wire of a receiving magnet?"

We think the wire should never be smaller than No. 30, and, if the copper is pure, this size of wire may be found sufficiently large, although No. 28 may yet be preferred.

"How large, then, would you make your coils?"

We would have the coils so small that the resistance of a magnet would not exceed that of, at most, five miles of the main line, and, if possible, not more than three or four. Even this seems an immense resistance, rendering the magnets of some way wires equal to that of the whole length of the main wire itself.

"Has this size of magnet been tested?"

When we had charge of the lines south of Louisville nearly 20 years ago, when Witman reigned at Louisville, and Zook at New Orleans, we used a receiving magnet at Louisville, Ky., an inch and a half in length, and not exceeding an inch in diameter, which we have never seen excelled. A number of such magnets have recently been put into long and important circuits, which have removed one-half of the insulating resistance, and increased the capacity of the wires in bad weather immensely. The proof is important, clear, and abundant. We are convinced that more than half of the evils attending our insulation, and a large amount of bad temper and blundering would be removed by such a reduction of the resistance now offered by most of our magnets. Let manufacturers take the hint in time. In a year hence, on all important circuits, large magnets of fine wire will be unknown, or, if used, will be either because of the impecuniosity of the companies, or because the truth, so apparently self-evident, has failed to arrest the attention which it merits.

The Auroral Currents.

We have given elsewhere a brief account of the recent brilliant display of the Aurora Borealis, and its effect upon the wires. We are asked if the currents produced on the wires during these displays are atmospheric, acting direct from these auroral phenomena thus irradiating the heavens, and which weave their triumphal coronas up apparently among the planets?

Although there are, unquestionably, large masses of electric clouds sailing in the upper regions of the air during the presence of these auroral displays, yet the fact that all, or nearly all, interference from the currents then exhibited can be prevented by simply using two

wires instead of the earth and wire, proves that these currents are caused by a disturbance of the earth's normal electric state. The earth's ordinary electric tension is disturbed, and its currents are, so to speak, scattered by this induced current from the vast masses of electricity in the sky, but are ever seeking, by the violent action peculiar to them, to restore themselves to their normal condition, thus causing temporary electric currents of great power and rapid changes of tension. Thus they enter a wire from one earth connection in this effort at restoration, and are chased back by another from the opposite extreme, exhibiting the violent and changeful currents which mark these magnetic storms. The earth, itself, is a great reservoir of electricity, offering no sensible resistance to the entrance of electrical currents, yet varying in its electric tension or condition at different points. This causes an almost ceaseless action of the earth's currents, and at almost all times they can be felt upon the wires which they use to effect the equalization of their tension. During the auroral displays this action is excessive. At the same time it can scarcely be regarded as incorrect to say that it is the induction of vast volumes of electricity from the upper air which cause these extraordinary currents which, as we have seen, can be utilized and harnessed for human service; and as a line can be worked by any polarity, provided the whole wire is worked with a like polarity, the changing currents do not prevent the line from being operated during the violent contest for the supremacy of the one current or the other.

Kissing by Telegraph.

A bright-eyed cheerful looking lady went recently into one of our offices, where the machinery being visible, she saw the process of transmission as her own message to her husband was manipulated by the operator. A few moments sufficed to complete the work, and she was informed that the message was sent.

"Gone! already!" she exclaimed, "and when will my husband receive it?" inquired the delighted face.

"In a very few minutes," replied the operator.

"Oh! how I do wish I could send him a kiss as quick as that," uttered this little loving wife as the telegraph seemed to bring the lord of her heart near to her.

"Oh," responded the dapper operator, "that is easily done, give me the kiss and one dollar, and it will be sent!"

It took several seconds for the blooming wife to comprehend the situation. The offer was bold and pert. Its full meaning did not at once dawn on her. The science of kiss transmission was not clear to her. Besides, the operator was homely. The medium was unpromising. But the womanly sense came, and with it, indignation.

"Kiss you! a dollar!" she said, with a rising lip and curling nose, "Kiss you! the company should employ a better looking man than you, sauce box!" and with a snort which seemed to come from her soul, the little angry lady flouted out into the open air, the sweet visions of labial bliss thus rudely broken by the proposed medium of the impertinent lips which offered to make it possible.

We have received a number of orders for the new work of Mr. Pope on Modern Telegraphs, and will take pleasure in supplying all who desire, on receipt of the price. Mr. Pope designs leaving a number of copies in our hand for that purpose. Price \$1.50, which includes the postage.

Among the computations made by some of our telegraphic savans while watching the auroral current is the following: "The test of the strength of the current on the wire from auroral influences shows that at such seasons there are 30 millions of horse power for every cubic mile of space! This is obtained by ascertaining first the strength of the current, and then the cubic space occupied by the wire. Now, gentlemen, we demur. We can't see it. Because the wire exhibits a certain strength of current it by no means proves that the air adjoining is charged to a like degree. If the influence was simply atmospheric it would be clearer, but this not being so, and earth contact essential to the exhibition of any current at all, we must reject the computation as entirely too many horses between us and heaven.

We have on hand a few bound copies of the first volume of the JOURNAL OF THE TELEGRAPH, which we will send, post-paid, on receipt of two dollars and a half.

Official Statement.

WESTERN UNION TELEGRAPH COMPANY.

	March, 1869.	March, 1868.
Total Receipts.....	\$594,279 84	\$587,962 23
Total Expenses.....	373,645 09	335,947 65
Net Profit.....	\$220,634 75	\$252 014 58

Sales Western Union Stock.

REPORTED BY J. HORN, JR.

15th—1,000 from.....	41 to 41½
16th—1,600 from.....	40½ to 41½
17th—2,100 from.....	41½ to 41½
19th—2,500 from.....	41½ to 41½
20th—3,700 from.....	41½ to 42½
21st—1,600 from.....	42½ to 42½
22d—2,300 from.....	42½ to 43½
23d—2,000 from.....	42½ to 42½
24th—2,300 from.....	42½ to 42½
26th—1,415 from.....	42½ to 43
27th—2,800 from.....	43½ to 43½
28th—3,000 from.....	43½ to 43½

Prof. S. F. B. Morse entered his 79th year on the 27th ult. He was born at Charlestown, Mass., April 27, 1791. His step is as youthful, and his back as straight, and his spirits as buoyant, as thousands who bear not half his years. He has all that Cowper enumerates as desirable in advanced years, "an elegant sufficiency, retirement, books," and a zest for active life, and a cheerfulness, which always makes his presence welcome and instructive.

By a communication from Toronto, Canada, we learn that a delegate sent from Quebec from the stockholders of what is called the Snow Reeve New Dominion Telegraph Company, to investigate the condition of its affairs, reports the concern as utterly unworthy of public confidence. The papers of London, Ontario, announce that the stockholders there have concluded to initiate proceedings in Chancery for the purpose of recovering the money they have invested in this snowy enterprise, satisfied that the whole scheme is an unmitigated imposture.

We take no special pleasure in ventilating these bogus enterprises, because we had hoped that the "age of humbug" was passed, and that proof enough had been given that a telegraph line, to be a success, must first be needed, and, secondly, be built under the distinct control and inspection of those who invest their means in the erection of telegraphic structures. In Canada, the Montreal Telegraph Company has adopted a low standard of charges; has opened up its lines to the freest and most liberal public use; has manned its offices with intelligent and fairly remunerated men; has erected wires enough to secure speedy despatch of business, and has, we believe, done everything which the public can desire, consistent with self support, to meet public necessities. We do not believe that there is in Canada a demand for such enlarged facilities as to justify expectations of successful competition, which, we believe, would only tend to destroy the value of telegraph property, reduce the compensation of its agents, and cripple its healthy administration.

In *Le Nord*, is published an interesting account of the progress of telegraphic correspondence in Russia.

The revenue derived from this source during 1868 amounts to 11,175,104 francs, being 1,217,804 francs more than during the previous year. This increase is stated to have followed the adoption of a reduced tariff, and has proved to the authorities that high charges, both for the postal and telegraph service, is injurious to the revenues of these administrations, and harmful to the general welfare.

Married.

April 18th, at the residence of the bride's mother, by the Rev. G. Abbott, Mr. J. S. Hunter, Manager Western Union Telegraph office, Marion Ala., formerly of Philadelphia, to Miss Amosina Bates, of Perry County.

Philadelphia papers please copy.

Wire.

We need not call attention to the letter of Mr. Chester Snow, which may be found elsewhere, for it will be read by all who desire information on the possibility of improving and strengthening our conductors. On one point it corrects an impression we entertained, that steel lacked that ductility which, when drawn taut in summer, would prevent its injury when exposed to great cold. In this we are glad to be corrected. Steel wire is not only ductile, but its ductility is that of elasticity, which restores the wire to its former condition as soon as the strain is removed. In this it differs both from the iron and copper, both of which are ductile, but have not the elastic property of the steel just stated.

The question naturally suggests itself, and which we ourselves have asked, "How does this elastic quality of the steel affect the copper covering, which has none, and which must, therefore, apparently, be shrivelled by the return of the steel to its former condition?" The answer is, that "it don't," which is, perhaps, the most satisfactory which can be given. If "it don't," it is little matter why "it don't." One thing is clear. If the steel is drawn taut in summer, its length is not diminished in winter, the wire simply changing its molecular condition, but not occupying any less or any more space than before, so that the copper is governed by the superior resistant and elastic powers of the steel. We cannot help feeling that there is a valuable element in this wire which will yet render it a substantial success. The specimens of it shown to us by Messrs. Tillotson & Co., who are agents for its sale, are certainly beautiful, and indicative of a careful preparation, which speaks well for the skill and the earnestness of its manufacturers. Not the least valuable property of such a wire is the ability to keep it always taut, straight and rigid, so that crosses, except when caused by falling bodies, or design, will be impossible.

Scarcely less pleased were we to see, at the same house, evidence of increased care in the production of galvanized wire, samples exhibiting unusual tenacity, and having a galvanized surface which the most ruthless twisting did not seem to disturb, justifies the large demand made for it. The scale of prices, also, is lower than the ordinary market quotations.

The British-Indian Telegraph Company have entered into contract with the Telegraph Construction and Maintenance Company for the laying of 3,600 nautical miles of submarine cable between the Isthmus of Suez and Bombay. The capital of this company is £1,200,000, and its design is to reach India and eventually the Chinese coast by cable almost exclusively. The contract for laying the cable to Bombay is £1,000,000; £540,000 cash, and £460,000 in paid up shares; £440,000 will be paid when the cable is successfully laid to Aden, and £100,000 reserved until the line is completed to Bombay. Only £170,000 in shares has been put on the market, all of which have been taken, and a distribution of profit shares to the amount of £137,000 will be made on the completion of the work. Twelve words per minute has been guaranteed as the minimum capacity of the cable, and the whole work is to be completed by April 1, 1870. Curiously enough it has been determined to make the core of this important cable quite small, much less than the Atlantic cable. The company will own the steamer engaged in laying the cable, and keep it in readiness for repairing damages.

THERE is no other spoken language so cheap and expressive by telegraph as the English. So the electric wires are becoming teachers of our mother tongue in foreign countries. The same amount of information can be transmitted in fewer English words than French, German, Italian, or any other European language. In Germany and Holland especially, it is coming to be a common thing to see telegrams in English, to save expense and ensure precision. Thus, the red, white and blue, the Celtic, Teutonic, and Latin elements of our English language, will yet make the tour of the globe, and be the silent speech, fitted to the flashing lips of lightning as well as the tongue which half of the earth's millions will speak within two centuries of the present time.

You Lie Like the Telegraph.

The telegraph in Prussia must be in bad hands. Count Bismark says that it will not be long before the expression, "You lie like the telegraph," will be recognized everywhere as an accepted proverb. If the irascible old premier had said, "You lie like Reuter," there would have been some sense in it. The emanations from Reuter are curious enough. Now it is, and now it isn't, follow in quick succession, and the truth is seldom fully known until the steamers come and give the details. Of late Reuter has improved. He finds a reputation for uncertainty too damaging. He has curbed the imagination of his deputies. Yet there is enough left to justify even so rough an expletive as the one we have suggested.

The telegraph proper tells no lies. It has nothing to tell. It is a tongue for others. When it lies, it is some one using its fiery lips to pronounce it. But Count Bismark is not the only one who thus errs. Thousands of fools charge the telegraph companies with the follies which sometimes find passage over their wires.

WANTED.—A copy of the pamphlet containing the proceedings of the 1st, annual, 2d, annual, 4th annual and 8th annual meetings of the American Telegraph Confederation. Any of our readers having a spare copy will confer a great favor by forwarding the same to
GALVANI,
Care Editor JOURNAL OF THE TELEGRAPH.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

Agents in New York,

MESSRS. L. G. TILLOTSON & CO., No. 11 Dey street.

THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with its

GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high cost Norway Iron Wire, in the same locality, and strung at the same time, was broken in several places.

Address—

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

ALANSON CARY, Treasurer,

No. 234 West 29th street,

New York.

Or Agents of the Company.

Nature's Non-conductors.

To keep a thing cool in summer and warm in winter requires, curiously enough, although the results are so different, the same appliances. To preserve ice throughout the hottest weather we have to surround it, as we do ourselves in winter, with non-conductors. Thus the sides of our ice-houses are filled in with sawdust or charcoal, and we wrap our crystal Rockland or Wenham Lake, on the hottest day in August, in flannel to keep it cool, as we in December envelope ourselves with the same material that we may retain our natural warmth. In the former case the non-conducting wool prevents the external heat from reaching what it covers, and in the latter it hinders the internal from escaping.

Nature, in its provident care, has freely distributed among its numerous dependents these non-conductors wherever they might prove the most useful. The eider-duck, a bird peculiar to cold climates, is furnished with a down which is almost impervious to heat. So with the swan and most birds, and especially their young, the plumage of which is exceptionally soft and light, as these fledgelings require more and produce less heat than those of stronger wing. This beneficent care of nature has extended still further, and penetrated even to the egg, where the living principle has been warmly enveloped with a non-conducting albumen (white of the egg), and its vitality thus preserved, in spite of its frequent deprivation by absence of the hen-bird of the maternal warmth. The eel, tench, and also the garden-slug, or snail, have the power of secreting a slimy fluid, which serves as a warm coat to protect them against exposure to unusual cold. Those fish thus provided will live longer when drawn from their warmer element into the colder air than the mackerel, for example, which, having no such provision, is quick to die when landed. The blubber of the grampus and whale, as well as the corpulence of the alderman, are securities against freezing to death, although the former wallow in seas cooled by ice, and the latter waddle at the slowest pace exposed to the frost of a severe New York winter's day. Nature, by a wonderful process of compensation, is always equalizing its distribution of gifts, and thus cold and heat, practically as well as theoretically, become almost convertible terms, and life is made as enjoyable exposed to the freezing touch of the one as to the melting breath of the other.—*Harper's Monthly*.

Singular Freaks of Lightning.

THE TELEGRAPH OFFICE AT COLUMBIA THROWN INTO CONFUSION—A LADY AND CHILD KNOCKED DOWN BY THE CONCUSSION.

Our correspondent at Columbia (Cal.) sends us the following:

On Friday evening, March 13, we had the most severe thunder-storm ever experienced in this vicinity by that oft-quoted individual, "the oldest inhabitant." About half-past eight o'clock "Franklin's steed" commenced bucking in regular California mustang style, and gave us an unusual and alarming exhibition of its power. The lightning took possession of the telegraph line at Gold Springs (about one mile from Columbia), making kindling-wood of five telegraph poles, and scattering the splinters around very carelessly. Immediately after, the operator at Columbia was made aware of the fact that an extra battery had been attached to the line, and an expensive message had been dead-headed through, in violation of the rules of the Western Union. The lightning followed the line into the office, making a report as loud as that of a musket, and filling the room with a shower of fiery stars. The telegraph instruments were both ruined, all the connecting wires under the operating-table were melted

off, and the covering of the insulated wires, as well as the operating-table, were set on fire. The platina points of the relay were melted, and the glass covering over the instrument was filled with minute particles of platina, some of them protruding through the glass on the upper side, although the glass was not broken. After leaving the operating-table, the lightning passed along the wire leading to the local battery, in an adjoining room, and made several holes through the bottom of one of the copper cups of the local battery, and from thence jumped to a lead sink-spout, where it divided its forces, most of it passing down the spout to the ground. A small detachment of it, however, started on a prospecting trip "up the spout," made two very nice round holes, each about the size of a quarter of a dollar, in the pipe, and then attempted to go through a heavy cast-iron sink in two different places, both of which attempts being only partial successes, it desisted from further efforts, and retired exhausted. Fortunately, no one was injured. A lady and child, residing at Gold Springs, near where the lightning struck the line, were knocked down by the concussion, but escaped with only a severe fright.

Carbolic Acid for Embalming.

There is an interesting use to which carbolic acid is put, and in which it seems to supply a much needed want, viz., as a means of embalming. It has been used for this purpose in the Bellevue Hospital College, New York, and, it would seem, with great success. The corpse is simply washed with a solution of carbolic acid of a certain strength. If too strong, it becomes so caustic as to destroy the tissue, and render its minute structure one common mass of coagulation. About a moderate strength is one part of acid to 100 of water, and when the muscular tissue is dipped into this it takes its red and natural appearance. In this process the body is not mutilated in any way, no injection is made into the veins, no cut or incision is made upon the body. Bodies thus prepared, of one, two, three, and four months' preservation were examined. The skin was soft and pliant, with the epithelium intact, the body rotund and plump, expression good and natural, the joints free and easy, and, upon dissecting the brain, it was found sound and free from odor, save a faint smell of coal-tar. Even the fluids were preserved, and the lungs, liver, intestines, and spleen, the blood and blood disks, muscular, fatty, and cellular tissue. Even in a subject who died of tubercular disease of the lungs, seventy-three days after death the abscesses of the lungs had not undergone any change, and a laudable pus was found from broken-down tubercles. A curious incident is given in the case of the corpse of a little girl. When the solution was applied to the cheeks and lips, they instantly became so florid and life-like that the parents and friends could not but believe that life still existed. This was simply due to some peculiar chemical change. The simple process of bathing and wrapping the body in cloths saturated with this solution, and injecting the natural cavities or openings with it, is certainly an easy mode of embalming, and a process, too, of vital importance to all mankind. All of the antiseptics, such as corrosive sublimate, arsenical acids, carbolic acids, etc., act, as such, by destroying all sources of decay and decomposition; that is to say, they destroy or prevent the formation of the germs of putrefaction and fermentation, without acting on the mineral or vegetable matters present. Carbolic acid, merely destroys the cause of putrefaction; it meets with and destroys the germs or spores which float in the atmosphere and vitiate it, and this is why the acid was used with such marked success, and so largely in England, Belgium, and Holland during the prevalence of cholera and the cattle plague.—*Medical Investigator*.

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York.
MAY 1, 1890.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since April 15, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Claverack, N. Y., tariff 20c. more than to Hudson, N. Y.
Kmans, Pa., tariff same as Millerstown, Pa. Business between Emans will be checked to Millerstown.
Jamesville, N. Y., tariff same as Cortland, N. Y.
Mt. Joy, Pa., formerly an other line office, tariff same as Marietta, Pa.
Mt. Dallas, Pa., tariff same as Bedford, Pa.
Petroleum, W. Va., reopened, tariff same as heretofore.
St. Marks, Fla., tariff from points North of Louisville to Washington same as Tallahassee, Fla.

Hamilton, Nev., }
Treasure City, Nev., } Tariff same as Ruby, Nev., unless otherwise ordered.

Pittsfield, Me., tariff same as Newport, Me.
Charleston, Ind., tariff same as Jeffersonville, Ind.
Leslie, Mich., tariff same as Jackson, Mich.
Ironton, Mo., re-opened, }
Avoca, Iowa, } Offices having Map Tariff will collect according to map scale. All others will make rate to Ironton and La Plata same as heretofore, and Avoca same as Atlantic.

So. Pass, Wy. T., re-opened, tariff same as heretofore.

OFFICES OPENED ON OTHER LINES.

Shamokin, Pa., }
Trevorton, Pa., } Tariff 35 and 3 from Philadelphia. Check Philadelphia.
Welland, Ont., tariff 35 and 2, currency, from Buffalo. Check Buffalo.

OFFICES CLOSED.

Plattsmouth, Neb., White Cloud, Kas., Memramcook, N. B.
River John, N. S., and Mapleton, Pa.

TO OFFICES HAVING "SPECIAL SHEET A."

Tariff to Fairport, N. Y., unless otherwise ordered, same as "special rate" to Palmyra, N. Y.

GENERAL INFORMATION.

The post office address of Lehigh Summit, Pa., office is Sand Out, Pa., and post office address of Okaw, Ill., is Arcola.

All offices having Illinois and Mississippi Map will use "Map Tariff" to Bloomfield, Ill., the opening of which office was noticed in last JOURNAL.

In notice to offices having "Special Sheet A" in last JOURNAL, Grennell, O., should read Greenville, O.

Business for Frankfort, Me., should be sent and checked to Winterport, Me. Tariff to Frankfort same as Winterport.

Business for Salmon Falls, N. H., should be checked to and at same rate as So. Berwick, Me.

ON AND AFTER MAY 1st, NEW YORK AND OFFICES BETWEEN New York and Montreal, which have heretofore checked Montreal and St. Johns on business with Montreal Company, will check "Montreal Junction" on such business. Tariff for "this line" will be the regular currency tariff to Montreal less 20 and 1. Tariff for "other lines" will be 20 and 1 to Montreal, plus tariff from Montreal to destination as per JOURNAL of January 1st.

WILLIAM OXLEY, President

The American Artisan Patent Agency and the Atlantic Telegraph.

On Wednesday, March 31, an individual left New York by the Cunard steamer, for the purpose of taking advantage of that unjust provision of the British law which allows the patent for an invention made abroad to the first person who is in possession of the knowledge of the invention within the realm of Great Britain, and thereby securing a patent in that country for a valuable invention made by one of the clients of the "American Artisan Patent Agency." This was discovered by our client on Thursday, April 8, and on that day we telegraphed by Atlantic Cable to our London agent proper instructions, and a suitable description of the invention, to enable him to obtain provisional protection for the invention, on Friday, April 9, and thus secure the British patent for our client from that date. The steamer arrived at Liverpool on the following Monday, and the individual we have mentioned probably reached London on Tuesday morning, the 12th inst., and he must have been greatly disappointed to find that we had anticipated him by four days.—*Am. Artisan.*

THE STANDARD AMERICAN WORK ON THE TELEGRAPH.

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MODERN PRACTICE OF THE ELECTRIC TELEGRAPH.

A Handbook for Electricians and Operators.

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This book supplies what has long been recognized as the great desideratum in American telegraphic literature. It is a

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Which have stood the test of actual experience. The construction and management of the different Repeaters, Switches, etc., in use in this country, is explained at length. Full explanations are given of the most approved methods of testing lines and locating faults and interruptions upon telegraph lines, accompanied by numerous diagrams. The work also contains the new system of

TESTING BY MEASUREMENT,

Which has been employed with great success upon the Atlantic and other cables, and more recently upon land lines. The mode of working the

ATLANTIC CABLE.

And the apparatus employed will be found fully described in this book. The appendix contains a large amount of useful and practical information, formulae, tables, etc., which have never before been brought together in a convenient and accessible form. The work has been freely illustrated, wherever requisite, with

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Most of which have been engraved expressly for its pages by the best artists.

ALL TELEGRAPHERS

Who wish to inform themselves in regard to the construction and management of the various appliances used in telegraphing such as

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Relays
Sounders,
Registers,
Switches,
Lightning Arresters,
Repeaters,
Double Transmitters,
Combination Locals,
Insulators,
Cables,
Galvanometers,
&c., &c., &c.,

Will find this just the work that is wanted.

Notwithstanding the great expense incurred in the publication of this work, in order to insure its general introduction, and to place it within the means of every telegrapher, relying upon large sales for remuneration, it will be issued at the low price of

ONE DOLLAR AND A HALF.

On receipt of the price of the book, it will, if desired, be forwarded by mail, post paid, to any part of the United States or British Provinces. Orders should in all cases be accompanied by the money to insure prompt attention, and if sent by Post office order or registered letters, will be at the risk of the publishers. Orders may be sent to the editors of THE JOURNAL OF THE TELEGRAPH or of THE TELEGRAPHER; or to

F. L. POPE, Box 6, 182, N. Y. City.

Other agents will be hereafter announced.

THE HISTORY, THEORY AND PRACTICE OF THE

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By GEORGE B. PRESCOTT,

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commencing with the first rude apparatus of Lesage, in 1774, and describing every subsequent improvement made in the art up to the present time. The subject is treated in a scientific, and, at the same time, in a popular manner, the style being divested, as far as possible, of scientific technicalities.

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Albany, N. Y.

[Advertisement.]

The Brooks Insulator.

REPORT OF MOSES G. FARMER, C. E., BOSTON.

DAVID BROOKS,

DEAR SIR—I do not know how I can better set forth the value of your insulator than by showing what it will do on a No. 9 iron wire with 30 posts per mile, in comparison with what other insulators in common use will accomplish.

The average of No. 9 iron wire in this country will weigh about 320 lbs per mile, and offers about 18 ohms, or British Association units, of resistance per mile.

The resistance which an insulator will offer to the escape of current from a line depends upon the material of which it is made, and also upon the character and condition of its surface. If, during bad weather, an insulator retain much moisture upon its surface, although moisture is a poor conductor in comparison with iron or copper, yet it is an exceedingly good conductor in comparison with glass, porcelain, paraffine, &c., being perhaps a billion times poorer than copper, yet a billion of billion times better than glass.

A common glass and bracket insulator, in average condition upon a line, will, in clear cold frosty weather, offer perhaps 10,000 megohms resistance, more or less (a megohm equals a million ohms), but during a long continued rain this high degree of resistance falls, sometimes as low as 9 or 10 megohms, and often lower—even below one megohm, but then it quickly regains a portion of its insulating power as its surface becomes dry. I presume from long experience, and many careful tests made in the worst weather, that 9 megohms will be above the average value of three quarters of the insulators used in this country in the Middle and Northern States, in long continued heavy storms.

Some of your insulators, when new, will show tests as high as 50,000 to 100,000 megohms, and that too in damp weather, and even after six or seven months exposure they rarely fall below two or three thousand megohms; I have tested some as low as fifteen or sixteen hundred. The subjoined tables will show that so high insulation as this will enable the lines which use them to work to greater distances than have been hitherto practicable.

Since a portion of the current leaks from a line at every insulator, it will come to pass that at some distance, depending upon the conductivity and insulation of the line, so much of the current will have escaped that what remains will be unable to affect the receiving instrument. For example, take a No. 9 iron wire, conductivity resistance 18 ohms per mile; 30 posts per mile, insulators of 4 megohms each, in worst weather; suppose the line 250 miles long, with way stations at 50, 100, 150, 200 miles distance—only about 51 per cent of the entering current will reach the first station, 26½ per cent reaches the second, 14 per cent the third, 8½ the fourth way station, and about 7 per cent reaches the terminal station.

But if the insulators used be 9 megohms insulators, 69 per cent will reach the 1st, 49 per cent the 2nd, 37 per cent the 3d, 30 per cent the 4th, and 28 per cent the terminal station—nearly four times as large a proportion of the entering current reaches the far end with the 9 as with the 4 megohm insulators.

If now you should build lines of 50, 100, 150, 200, 250 miles in length, the terminal currents would be 93, 76, 57, 41, and 28 per cent of the entering currents for the 9 megohm insulator, but with the 4 megohm insulator they would be 81, 49, 26, 13 and 7 per cent. These results I will throw together in tables No. 1 and 2.

In order to show what distances can be reached by the use of different insulating powers on a similar line, I subjoin table No. 3, in which the second horizontal line shows to what distance one-tenth of the entering current will reach with insulators of the several powers as noted in the several columns from the second to the ninth inclusive. Line third shows similarly to what distance ¼ of the current will reach, line fourth same of ½, line fifth same of ¾, line 6th same of 9-10. Comparing the 8th and 9th column of this table with the second, third, and fourth, will show more graphically to the eye, than words to the ear, what the Brooks insulator can do.

Truly yours,

MOSES G. FARMER,
Consulting Electrical Engineer,
Boston, Mass.

April 9th, 1869.

Table No. 1.				Table No. 2.			
No 9 wire, 18 Ohms and 30 posts per mile.	Strength of current at different distances along a line 250 miles in length with insulators.			No 9 iron, 18 Ohms and 30 posts per mile.	Fraction of entering current which will reach the farther end of a line of length as in first column with Insulators of		
	Miles. 4 megohms. 9 megohms.				Miles. 4 megohms. 9 megohms.		
0	100	100		0	100	100	
50	51	69		50	81	93	
100	26	49		100	49	76	
150	14	37		150	26	57	
200	8	30		200	13½	41	
250	7	28		250	7	28	

Distances of terminal station, to which a stated fraction of the entering current will reach on a line of No. 9 wire, having a conducting resistance of 18 ohms, with insulators as designated in the first line. The strength of the arriving current being set in the first column.

Table No. 3.											
Megohms.	1st	2d	3d	4th	5th	6th	7th	8th	9th		
1-10	125	258	396	516	774	1290	4094	5180	second		
¼	89	178	267	356	534	890	2837	3560	third		
½	58	116	174	232	348	580	1850	2320	fourth		
¾	36	73	109	146	219	365	1161	1460	fifth		
9-10	22	45	67	90	135	235	716	900	sixth		

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Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
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Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials,
Acids,	Switches,	Philosophical Apparatus,
&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

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and shall keep up with the times in all valuable improvements.

Customers can obtain at our depot a

COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

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FOR TELEGRAPH AND ELECTRIC WIRES.

We are now prepared to furnish wire insulated with this new and valuable material, which, from the time in which we have had of test its merits, proves to be

VERY TOUGH AND PLIABLE,

WILL NOT BECOME BRITTLE,

WILL NOT CRACK,

IS NOT EASILY AFFECTED BY EXPOSURE TO THE WEATHER,

AND

IS A PERFECT INSULATOR.

Any size or style of Wire made to order at short notice by the only manufacturers,

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EXTRA MUCILAGE
THICK, CLEAR AND ADHESIVE.

Who has not used

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That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding or any other man. It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

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They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

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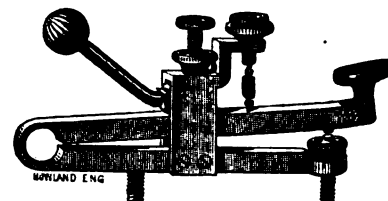
PARATUS, BATTERIES, WIRE, ACIDS, INSU-

LATORS, MEDICAL INSTRUMENTS,

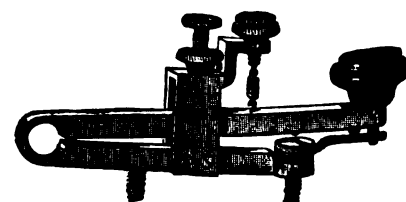
AND SUPPLIES.

Respectfully announce that they have increased their facilities for the prompt execution of all orders with which they may be trusted, whether for the construction of any or all lines of telegraph or for the supply of apparatus or material.

Among other recent improvements, for which they have secured the sole or part agency, attention is called to the following novelties:



1.—Patent anti-trunion Key with eccentric circuit closer.



2.—Patent Self-closing anti-trunion Key.

3.—Kerite or (horn covered) copper or compound wire or cables

4.—Covered compound out door line wire.

5.—Blasting apparatus, cartridges, batteries, &c., &c.

6.—Calcium lighting apparatus.

7.—Medical and test batteries, direct and induced currents.

8.—Apparatus for electrical measurement.

9.—Electric gongs of any desired size or weight; alarm apparatus, &c., &c.

10.—Electrical clock work and experimental apparatus of every kind.

The success of the past year and increased resources warrant the promise of dispatch in the execution of all orders, upon terms satisfactory to our customers.

Journal of the Telegraph.

The Line to Russia.

Although this great projected and half executed work is now spoken of as a grand failure, and, we are inclined to think, a fortunate failure to all concerned, yet it still comes up at times to the public eye in allusions which are not without interest. To some, no doubt, these references are mournful, they have an unpleasant connection with "extension stock" bought at 50, which now rests in the most breathless and inanimate sleep in a sad drawer of an unvarnished black walnut secretary. Many a sigh has that poor paper, with its half dressed Jupiter hurling dead darts from a half seen globe as if angry at being left up there in so cold a region with so scant apparel, caused. Yet the sigh might have been heavier had the work been carried through.

To preserve the memory of this undertaking in the absence of any official history, we clip the following from *Harper's Monthly*, in connection with a sketch of Whymper's recent clever and interesting book on Alaska. Whymper was a plucky young English artist who joined the Russian Telegraph expedition in 1865. He has, in addition to the book referred to, executed very elaborate survey maps of the shores of the Northern Pacific, which are as beautiful as valuable. Harper says:

"A glance at the map, or better still at a globe, will give some idea of the stupendous work thus undertaken. Its essential object was to bring London and New York within telegraphic communication. The distance, in a direct line across the Atlantic, is 74 degrees of longitude, a little more than 3,000 miles. Let us follow a dispatch from London to New York over the proposed line. Leaving the British capital it would travel southward and eastward through Germany, thence northward to St. Petersburg; thence a little south of east across the whole expanse of European and Asiatic Russia to Nicolaeveki, at the mouth of the Amoor, on the Sea of Ochotak, having traversed 140 degrees of longitude, and in its southward and northward bends about 20 degrees of latitude. So far the line was already built. Here began the work of the Telegraph Company. They proposed to bend northward around the head of the Ochotak Sea, thence eastward and northward through Kamchatka, till the line struck Bering's Straits, opposite Fort Clarence, in longitude 165° west, and latitude 63° north, almost under the Arctic Circle. Thence it was to run southward through Russian America, British Columbia, Washington Territory, and Oregon to San Francisco; thence across the continent to New York. A dispatch, by this route, from London to New York would thus have traversed 286 degrees of longitude, and taking into account southern and northern deflections, nearly 80 degree of latitude, in all something more than the entire circumference of the globe.

Whether a dispatch sent over so long a series of lines, passing for no small part of the way through a country almost uninhabited, where winter lasts two-thirds of the year, and where for four months there is only from two to four hours of daylight, would be likely to reach its destination very speedily may be considered questionable. Should a break occur in the wire it might sometimes be weeks before it could be discovered and repaired. The Telegraph Company, however, seem to have had no doubts on this point. They equipped a numerous corps, divided into five parties, with a military organization, the whole under the general superintendence of Colonel Bulkley, of the United States army, then on leave of absence for this purpose. The Siberian party was under charge of Major Abasa, a Russian officer. The Yucan party, to which Mr. Whymper was specially attached, was commanded by Major Kennicott.

Mr. Whymper gives a brief but interesting sketch of the proceedings of the Siberian party. The difficulties in the way of building a telegraph line in this region are enormous. During the winter the constructing parties camped out for weeks together when the temperature was often below the freezing-point of mercury. To dig a hole for a telegraph post in ground frozen as hard as a rock was no slight task. Six of these, three feet deep, were thought to be a good day's work. When, as was often the case, the line was through a forest, the trees had to be cut down for some distance on each side; otherwise the fall of one would endanger the wire. Axes and other tools became almost as brittle as glass from the intense cold, and lost their edges when brought in contact with frozen wood. Still the company persevered for eighteen months, and had expended three millions of dollars, when in the summer of 1866 came the tidings that the Atlantic Telegraph Cable had been laid, and was in successful operation. The Western Telegraph Company abandoned its intercontinental enterprise, and recalled its employees. One can hardly wonder that these men dropped in mourning the poles which they had so laboriously set up."

An ordinary magnet loses its magnetism when heated, but molten cast iron surrounded with a helix, through which a strong galvanic current is sent, becomes strongly magnetic and retains its magnetism as long as the current is continued.

It is contemplated to establish large floating vessels between the Scilly isles and Ushant, and at the south entrance of St. George's Channel, and at the extreme points of Ireland, which will be connected with the shore by telegraph cables. These ships will relieve wind-bound vessels, supplying them with food when necessary, and act as a landing place for passengers for transfer to steamers.

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They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York. The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

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(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

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BISHOP'S PATENT COMPOUND WIRE

for out-door use, and office connections.

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Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

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AGENTS FOR THE AMERICAN WALTHAM WATCH.

Watches Repaired in the most thorough manner, and Warranted.

SPECIAL NOTICE.

Since the 1st of September a new and valuable improvement has been attached to all the Watches made by the American Waltham Watch Company, namely: Fogg's Patent Pinion, and also the Sprung Over Regulator.

We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

BENEDIOT BROTHERS,

Agents for the American Waltham Watch,
691 Broadway.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 8, 1868.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the platina point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

The following is an extract from a letter from Mr. Clarence Rathbone, operating city line Albany, N. Y. Referring to the "Nonpareil Relay," he says:

"The only opportunity I have had of trying your relay is on a short line in this city having twelve or thirteen offices. In wet weather with an ordinary instrument it is necessary to change adjustment for each office, but with your relay I have found it always adjusted."

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH OF Dec. 15, 1868.

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Publishers of Prof. J. E. Smith's

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CARBON,

HILL'S,

DANIELL'S,

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BATTERY ALWAYS ON HAND.

D. L. BRADLEY,

No. 7 EXCHANGE PLACE, JERSEY CITY, N. J.,

Keeps constantly on hand and for sale his

IMPROVED TELEGRAPH INSTRUMENTS,

Having adopted the use of

OREIDE METAL,

which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed. His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1885. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-800th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionally stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine.....	\$19 00
Small Box Relays.....	16 00
Same in Rosewood.....	17 00
Medium Box Relays.....	17 00
Same in Rosewood.....	18 00
Large Box Relays.....	8 00
Main Sounders same as the above, with heavy armature lever, without connections.....	75 cents less
Pocket Relays, with all the adjustments of the above and good Lever Keys.....	22 00
Excellent Registers.....	40 00
Pony Sounders.....	6 75
Keys.....	6 50

All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old spools taken at the price of new wire by the pound. Goods sent to all parts of the continent with bill C. O. D. Or, to save expense of returning funds by express, remittance may be made in advance by certified check payable in New York, or Post-office orders, in which case he will make no charge for package.

He has ample facilities for furnishing all other kinds of Telegraph Supplies at the lowest manufacturers' prices.

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET

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MANUFACTURERS AND DEALERS IN

TELEGRAPH MACHINERY AND SUPPLIES,

GALVANIZED AND PLAIN WIRE,

INSULATORS, AND EVERY DESCRIPTION OF

OFFICE AND BATTERY MATERIAL

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INSTRUMENTS REPAIRED AT SHORT NOTICE.

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11 DEY STREET, NEW YORK.

MANUFACTURERS OF

GLASS INSULATORS, ALL PATTERNS,

Zincs, Porous Cups, Platinum, Acids, Quicksilver, Tumbler Coppers, &c. All of the most approved Pattern and Best Quality.

REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

Printed Message Heads and Envelopes

On hand and furnished to order.

WIRE, GALVANIZED AND PLAIN.

AT THE

LOWEST MANUFACTURERS' PRICES.

COPPER AND BRASS WIRE

Of any number required.

OFFICE WIRE.

GUTTA PERCHA or COTTON COVERED

AND

MAGNET WIRE.

REGISTERS,

RELAY MAGNETS,

SOUNDERS, KEYS

CIRCUIT-CLOSERS,

CUT-OUTS,

SWITCH-BOARDS,

BINDING-SCREWS,

PAPER-REELS,

LIGHTNING-ARRESTERS,

REPAIRERS' TOOLS,

&c., &c., &c., &c.

OF EVERY DESCRIPTION.

CABLES

Of any desired Size and Pattern, American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

L. G. TILLOTSON & Co

No. 11 Dey Street, New-York.

THE BISHOP GUTTA PERCHA COMPANY,

The Original and Only Manufacturers in the United States of every description of

PURE GUTTA PERCHA GOODS.

INSULATED SUBMARINE TELEGRAPH CABLES.

INSULATED TELEGRAPH AND ELECTRIC WIRE.

The Insulation of Telegraph and Electric Wire with Gutta Percha has been adopted by the manufacturers of these articles, in Europe as well as here, and in an experience of over TWENTY YEARS has never failed.

We also Manufacture

WATER, BEER AND SODA PIPE,

CHEMICAL VESSELS,

GUTTA PERCHA SHEET OF ALL THICKNESSES,

TISSUE SHEET FOR HAT AND CAP MAKERS' USE &c.

COTTON AND SILK COVERED WIRE,

BRIDGE'S ELECTRIC CORDAGE,

BISHOP'S COMPOUND CORDAGE, &c., &c.

FACTORY, 422, 424, 426 EAST TWENTY-FIFTH STREET. N. Y.

Office and Salesroom,

No. 113 LIBERTY ST., N. Y., WEST OF BROADWAY.

SAMUEL C. BISHOP,

General Agent.

WALTER O. LEWIS, Esq.,

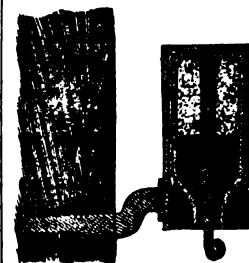
Electrician of the Company.

THE BROOKS

PATENT PARAFFINE INSULATOR WORKS,

No. 22 SOUTH TWENTY-FIRST STREET.

PHILADELPHIA



All varieties of INSULATOR manufactured at these Works are warranted to excel the usual style of Glass and Rubber more than one hundred fold. In view of the error and delay in transmission, waste and consumption of battery material, the result of defective insulation, its fragile

nature and expense of renewal, nothing is more manifest than its economy.

To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.

JOHN POLHEMUS, Printer and Stationer, 100 Nassau St., N. Y.

JOURNAL OF THE TELEGRAPH.

VOL. II NO. 11.

NEW YORK, MAY 15, 1869.

WHOLE NO. 37.

[From the Tribune.]

Rivet the Last Pacific Rail.

BY GEORGE W. BUNGAY.

Rivet the last Pacific rail,
With a silver hammer and golden nail;
For over the hill and over the vale,
The iron horse is swiftly coming.
Along the prairies wild flowers sweet,
With red lips kiss his flying feet,
Wild eagles his wild scream repeat:—
His hymn of praise the bee is humming.
Hail to the day and deed!
Hail to the iron steed!
Hail to the iron rail!
Hail to the West, all hail!

Now the rising and setting sun
Shall see the East and West are one,
Wherever the steed of steam shall run.
The Union shall be forever one.
State linked with State with iron bands,
Hearts linked with hearts, and hands with hands,
Hail to our broad free lakes and lands!
Hail to our free lands!
Hail to our free hands!
Hail to the gold nail!
Hail to the last rail!

Over prairies of gold and green,
Over rivers that roll between,—
Plumed mountains of richest sheen,
The steam horse toils harder and harder,
Now scaring the wild herds and flocks,
Now thundering over granite blocks,
Now climbing the steep shelving rocks,
Now up the Sierra Nevada.
Hail to the plains below!
Hail to the peaks of snow!
Hail to the hammer's stroke!
Hail to the echoes woke!

From ocean to ocean the rail
Runs over the mountain and vale,
Which echo with blows on the nail,
Now heard by the list'ning races.
Hail to the pathway of nations here.
It runs to-day through a hemisphere,
The good time coming must now be near,
It shines on our hope-lighted faces.
Hail to the age of steam!
Hail to the iron team!
Hail to our iron bars!
Hail to our flag of stars!

How Merrily they Ring.

TRINITY CHURCH.

In the morning, at 11½ o'clock, the chimes of Trinity rung out their songs of rejoicing over the new tie that unites the remotest sections of the land. At noon a special service was held in the Church before a large congregation. The services consisted of a "processional hymn," special prayer, "Te Deum Laudamus," Nicene Creed, "Glory to God on High," and a "recessional hymn." At the close of the ceremonies Mr. Aylliffe again played the chimes, performing the "changes," "Hail Columbia," "Red, White, and Blue," "Child of the Regiment," "Scotch Melody," "Easter Carol," "Yankee Doodle," "Watchman, tell us of the Night," "Old Dog Tray," "Star Spangled Banner," "Old Hundred," "Home, Sweet Home."

The Marriage of Oceans.

Eight years ago the oceans were united by electric telegraph. This made communication by rail a national demand. Now, the National Pacific Railroad is completed. Simultaneously with the last clink of the hammer upon the last spike, on Monday, May 10th, the electric wires transmitted the sound to every part of the country. By previous arrangement, the lines of the Western Union Telegraph Company were kept free, and as the hammer struck the spike the completion of the great work was flashed in a moment to all the chief cities of the Union.

THE DAY IN NEW YORK.

This national event was celebrated in this city with all the honors. Throughout the city there was a general display of bunting. Flags floated in profusion from the City Hall, the hotels, business houses, private dwellings, and the shipping in the harbor. The City Hall of Brooklyn was gaily decorated in honor of the day.

ANNOUNCING THE COMPLETION OF THE WORK.

In the afternoon, at precisely sixteen minutes past 3 o'clock, Mayor Hall received the following message:

PROMONTORY POINT, May 10, 1869.

To the Hon. A. Oakley Hall:

The last spike in the rail connecting the Atlantic and Pacific by rail has been driven at 3:10 P. M. to-day.

A. S. BROWN, Mayor.

Immediately a hundred guns belched forth the joy of New York that the Pacific had joined hands with the Atlantic.

The last tie was put down at Promontory Point at about 10:30 o'clock, local time.

THE CHAMBER OF COMMERCE.

At the last meeting of the New York Chamber of Commerce it was voted to send a congratulatory message to the Chamber at San Francisco. Accordingly, yesterday morning, the Committee appointed transmitted the following:

From the Chamber of Commerce of New York to the Chamber of Commerce of San Francisco, on the completion of the Pacific Railway:

NEW YORK, May 10—1869, 10 A. M.

The Chamber of Commerce of the State of New York desires to unite at noon to-day with the Chamber of Commerce of San Francisco in grateful thanksgiving to Almighty God, the Supreme Ruler of the Universe, on the completion of the continental line of Railway, 'spanning the territory of the American Union, and commercially uniting two great oceans of the globe; and in solemn recognition of the manifold benefits and blessings, industrial and commercial, moral and political, national and international, of this great avenue of intercommunication.

The new highway thus opened to man, will not only develop the resources, extend the commerce, increase the power, exalt the dignity, and perpetuate the unity of our Republic, but in its broader relations, as the segment of a world-embracing circle, directly connecting the nations of Europe with those of Asia, will materially facilitate the enlightened and advancing civilization of our age.

By order of the Chamber,

SAMUEL B. RUGGLES,
WILLIAM E. DODGE,
GEORGE OPDYKE
A. A. LOW,

Special
Committee.

An Electric Motive Power.

Mr. Greil, a French military officer, has recently made some interesting experiments with a new system of his own invention, which is totally different from all other applications of electricity as a motive power. This new system is based upon a law of physics which governs the action of currents on currents. Up to the present time all inventors applied the use of the electro-magnet to the construction of their machines, but here one of the fundamental laws of dynamic electricity is put into practice.

If two currents are passed along two parallel conductors, one of which is fixed, in the same direction, an attraction will occur, and if the currents are sent in opposite directions then a repulsion takes place. Take a voltaic battery A, the fixed conductor is a , and the moveable one a' , the result will be that attraction takes place between a and a' with a power f that depends upon the force of the battery A. Take two other batteries, B and C, of equal force to A, with their conductors b, b', c, c' ; the same phenomena of attraction will be observed, equal to a force f for each battery. Unite at one end the movable conductors $a' b'$ and c' , and at the other end the fixed conductor a, b and c , and let the distance between the two ends be the same as that between a and a' . The movable conductor a' will be attracted not only by the fixed one a , but also by the other two fixed conductors b and c . That is, it will be attracted by a force equal to treble that of the primary force, or $3f$; b' and c' will undergo the same change. The movable end of the united conductors will thus be attracted by a force equal to $9f$. The force F thus produced will be equal to $9f$ against a constant expenditure of $3d$, d being the expense in silver for each pair of voltaic batteries. The electric motive power alluded to is based upon this principle. In the first place, the small voltaic batteries are replaced by two large batteries called *generators*, and the bundles of conducting wires by thick bars.

The generator is composed of a large basin of ceramic sandstone of a rectangular shape, containing a porous vase of a complicated shape, in order to expose as much surface as possible. A hoop of amalgamized zinc is placed between the porous vase and the outside basin, with a mixture of acid and water. The porous vase contains a piece of coke, of the same shape, in a bath of nitric acid. The fluids are kept at equal heights by means of reservoirs placed at each end. In fact, Mr. Greil's apparatus is but a Bunsen pile of huge dimensions.

The motion is derived from the electric source. Two conductors, one of which is placed on the positive pole and the other on the negative end, in a crank, by which means the electricity is easily distributed to all parts of the machine, and even the motion can be reversed by changing the current. From thence the electric fluid passes into a movable distributor, by which the current is divided and automatically reversed. The current ends in two conducting bars that take the place of the conductors a and a' previously mentioned. These fixed conducting bars, to

the number of eighteen, are arranged so as to form the generators of a large fixed cylinder, and are bound together by cast iron hoops, from which they are isolated. The electricity passes through them all in the same sense and at the same time. On the inside of this fixed cylinder is a movable one, the generators of which are formed by twenty-four bars of metal corresponding to conductors *a'*, *b'* and *c'*.

When six bars of the movable cylinder are set opposite six bars of the fixed cylinder, the two intermediate bars of the fixed cylinder are opposed to three bars of the movable cylinder, at a distance of five, ten and fifteen degrees of circumference, and, therefore, six series are formed around the circumference of the cylinders.

If the current circulates in the same sense and simultaneously in the bars of the fixed cylinder by causing it to enter by one of the bars of the movable cylinder, which we will call No. 1, and letting it escape by No. 3, two effects will be produced, one of attraction and one of repulsion, which will cause the movable cylinder to revolve one-fifth and place the bar No. 1 of the interior cylinder opposite the nearest bar of the exterior cylinder. The current is then put into No. 2 and let out of No. 4, giving a further motion of one-fifth, and so on. Every series will have the same effect, and being simultaneous the force will be increased.

The functions of the distributor consist in letting the current first into one bar and then into another. All the bars of the same number in the six series are united to a metallic conductor that ends in a movable distributor, giving therefore four different metallic conductors.

The distributor is a drum of wood revolving on an axle, working in prepared bearings; metal hoops are placed on the outside, some of which are entire around the circumference and others interrupted by isolators, such as ivory, &c. On one side these hoops receive the negative and positive conductors from the generator, and on the other the four conductors communicating with the bars of the movable cylinder. The motion is given to the drum by means of cog-wheels that correspond with the movable cylinder, giving it two complete turns to one of the cylinder.

Taking into consideration the question of economy by the use of such a motive power, calculations prove that the expense decreases in proportion to the square of the work produced, so that, presuming the unit to cost twenty-five times more to produce by electricity than by steam, the following table is obtained:

POWER OBTAINED. Horse Power.	EXPENDITURE	
	By Steam.	By Electricity.
2	-	D
16	-	8 D
64	-	16 D
250	-	125 D
2,000	-	1,000 D

Mr. Greil feels confident that his method can be applied very advantageously to railroads, and by means of an electro magnet of his invention, causing the electricity to work from the wheels of the machine on to the rails, he proposes to ascend any grade with the greatest facility.

Filial Piety.

The following conversation, which, had it come to his knowledge, the late Mr. Leech would have used as an illustration of "Life in the Mining Districts," has just been repeated to us: First Collier—there's been a foire (explosion) at Jackson's pits. Second Collier—My feyther worked there. First Collier—Yes, and he's blown all to pieces. Second Collier—By gum; he's got my knife!—*Staffordshire Advertiser*.

CHICAGO.

The New Telegraph Office.

The rooms fitted up for the Western Union Telegraph Company, in the new Merchants' Insurance building, on the corner of La Salle and Washington streets, are now completed, and are among the finest devoted to telegraphic purposes in the United States. On the first floor is situated the

RECEIVING ROOM,

and main business room of this Company. This room has three entrances—one on La Salle street, and two by way of Washington street. It is very capacious, being 35x70 feet, and well lighted and ventilated. In the rear of this room is a large vault having four departments. The room is divided into various compartments by means of panel walls, for the use of book-keepers, clerks, and the other necessary attendees. A principal feature about this room, when furnished, will be the provision made for the messenger boys. Seats are provided for these boys, and ranged along at a convenient point, each seat having a certain number, by which its occupant shall be known. The boys will have no other name than that of the chair they occupy, save on the pay-rolls of the Company. The most perfect arrangements are made for the accommodation of those desiring to write messages, in the outside department provided for patrons.

Another principal feature of this room is the method adopted for sending written messages up to the operator's department, on the fourth floor, for the purpose of being dispatched thence over the wires. A hollow tube has been constructed, to reach from the first to the fourth floor, which is supplied with a leather box. This box fits the tube very loosely. From this hollow tube there runs a short pipe connecting with a circular bellows, at a distance of a few feet. On this pair of bellows is placed a weight, which is acted upon by means of a crank. When this crank is turned the weight is raised, and the bellows expand. The moment the hand is released from the crank the bellows discharge a volume of air, which is conveyed into the hollow tube with such force as to send the box containing the message up to the top of the building with the speed of a pistol ball.

THE SUPERINTENDENTS' ROOM

is on the second floor. It is 50x30 feet in extent, and very commodious and airy. This room it is designed to finish in the most perfect manner. It is to be occupied by the local and general superintendents—Gen. Anson Stager and Col. Wilson, and their attendees. It is supplied with a vault, and has all the conveniences necessary to comfort.

ON THE FOURTH FLOOR

the Company have six rooms, all of which are to be devoted to the purposes of their business. On the north side of the building, and in immediate proximity to the operators' department, is

THE RECEPTION ROOM.

This room is to be reserved exclusively for those who have business with the operators employed by the Company, and also for those who have business at a late hour of night with the operators' department, such as newspaper men and the like. It will be very nicely furnished, carpeted, and supplied with lounges, chairs, etc. This room will communicate with the operators' rooms by means of a window opening therein, where a visitor can make known his business.

The principal rooms on this floor are those devoted to the operators. The

GENTLEMEN'S DEPARTMENT

is a large room in the northwest corner of the building. Here is where the mechanical part of telegraph-

ing is to be performed. Here is where all the wires are to enter and to connect. In this room will be employed, a large number of men, night and day. The wires, to the number of 100, enter the centre of this room, on the Washington street side, and connect with the switch-board, situated a few feet from where the wires come in. The switch-board is very artistic and beautiful in its appearance, and contains 30,000 separate pieces of metal. It is composed of four large brass panels, and is so arranged that the mere tyro could learn how to operate it in a very short time. This is a great improvement, inasmuch as heretofore these boards have been of so complicated a construction that only a few of the most experienced could manage them.

The switch-board stands out by itself, and does not set up against the wall. As the 100 wires enter the window into the room they spread out like a fan. These wires are insulated, both for ornamental and useful purposes, and are covered a much farther distance than has been the case heretofore.

The wires are underneath the floor. The floor of this room, with the boards off, and with the number of wires running in all directions, presents much the appearance of a piano-forte uncovered.

The tables of the operators in this room are also new in most of their features. They are ranged through the middle and along the sides of the room, and are so constructed as to accommodate four at each table. The tables are each divided in the centre by a raised panel of thick glass, to prevent the confusion of sound that would otherwise occur. These tables are of handsome material and beautiful finish. These tables are so arranged as to admit of a gas pipe being cut through their centre from the blow, so that the operator can have his light very near him when he is at work.

It is proposed to have a pneumatic tube connect this room with the Board of Trade room.

In this room are also stationed the local batteries, 100 in number, all complete, and compactly arranged on shelves, with wires communicating underneath the floor to each one of the instruments on the tables.

In the rear of this room, and so arranged as to be thrown into one room, in case of exigency, is

THE LADIES' DEPARTMENT.

This room is to be occupied exclusively by lady operators, and is to be under female management and control. It will be provided with 30 instrument tables. It is a large and airy room, and similar in its general features to the male operators' department. This is the telegraph room that connects with the smaller stations along railroads connecting with Chicago. This department will be under the charge of Miss F. M. Wheeler.

THE BATTERY ROOM

next adjoins the female operators' department, and is one of the most perfect of its kind. The floor is constructed of cement, and the sink of soapstone, to prevent the corrosion occasioned by the use of acids. In the ceiling is a large dome, containing several fans, or "whirligigs," and having ventilating pipes connecting from all parts of the room, to carry off the fumes of the chemical substances used. All the other necessary equipments of a room of this character are in perfect keeping and harmony with the general features here detailed. Everything that is put into this room is acid proof. The battery-stand itself is a perfect masterpiece, containing 350 cups of Groe's battery. The wire used is copper, of the largest size, insulated, and made at the shops of the company at Ottawa.

THE BEST OF THIS FLOOR,

with the exception of two rooms, is devoted to conveniences for the workmen and operators. Taken al-

together, there is not an establishment in the United States which will have such elegant rooms, and splendid arrangements for carrying on its business.

THE OFFICERS

of the company are as follows: Anson Stager, General Superintendent; F. C. Swain, General Department Officer; Col. J. J. S. Wilson, Superintendent First District; R. C. Rankin, General Business Manager of Chicago Office.

H. C. MAYNARD, Night Chief Operator.

OPERATORS.

Geo. C. York,	J. N. Bradley,
F. S. Kent,	Frank D. Giles,
C. M. Greene,	J. H. Gage,
G. E. Hinman,	S. L. Robinson,
C. G. Sholes,	C. W. York,
J. L. A. Valliquet,	E. Dorval,
J. C. Hancett,	Louis H. Korty,
J. E. Pettit,	J. J. Powers,
J. F. Stephenson,	Wm. Stoneback,
A. C. Knapp,	E. P. Whitford,
D. S. Anderson,	D. W. Griffin,
A. A. Honey,	C. R. Mixer,
M. A. Huyck,	M. C. Baldwin,
A. L. Baker,	J. Q. Mason,
W. F. Altemeyer,	E. F. Smith,
J. Lenhart,	A. M. Valentine,
J. E. Angell,	D. S. Foote,

J. Bailey,

FANNIE M. WHEELER, Chief Operator.

LADIES' DEPARTMENT.

Emma Stanton,	Julia J. Wirt,
Addie M. Hobbs,	Josie C. Adams,
Mary H. Kidney,	Fide M. Curtiss.

Receiver—Aug. Curry.

Receiver Board of Trade—Charles Catlin.

Assistant Receiver—Leroy Pennoyer.

Clerks—J. C. Walsh, C. G. Wilson.

Chief Book-keeper—G. W. Pelton.

ASSISTANTS.

S. T. George,	Geo. B. Simpson,
	R. W. Chapman.

Clerks—Wm. Frazier, James O'Conner.

Delivery Clerk W. M. Willis.

ASSISTANTS.

De L. York,	John Quinn,
C. B. Vanpelt,	Samuel Hallfman.
Check Clerk.	W. McMillan.

Office Boys. H. McMillan, H. N. Stone, John Kemp.

Faraday among the Miners.

The famous philosopher and an equally renowned geologist (Sir Charles Lyell) were sent as Government commissioners to watch the inquest upon those who died by the explosion in the Haswell colliery, in 1844. Faraday cross-examined the witnesses very pertinently. Among other questions, he asked "how the rate of flow of air-current was measured." An inspector of the colliery, in reply, took a pinch of gunpowder from a box, as if it were snuff, and let it fall through the flame of a candle. His companion, with a watch, noted the time that the smoke took to travel a certain distance. The method satisfied Faraday, but he remarked on the careless handling of the powder, and asked where it was kept.

"In a bag tightly tied," was the reply. "Yes, but where do you keep the bag?" asked Faraday. "You are sitting on it," quoth the callous collier. The well-intentioned miners, not over-stocked with soft chairs, had given the commissioner their best substitute for a cushion. Faraday's agility in vacating his seat may be imagined, so may his expostulations, which (we are mildly informed) were animated and expressive. For the rest of the inquest he sat without a cushion in his chair.

WASHINGTON.

The New Office of the Western Union Telegraph Company.

THE INTERIOR ARRANGEMENTS.

[From the National Republican, Washington.]

The new office of the Western Union Telegraph Company, on the corner of Fourteenth street and Pennsylvania avenue, Washington, is completed, and occupied by that company as their main office.

The office was planned by General T. T. Eckert, the general superintendent of the companies' lines, a gentleman whose great experience enabled him to anticipate every requirement of a complete telegraph office, and the plans have been carried out by Chas. A. Tinker, the manager of the Washington department, in the most thorough manner. The office wires have been laid, and the instruments (which were manufactured under his superintendence) have been placed in position by Mr. M. V. B. Buell, the electrician of the "northern division."

THE RECEIVING ROOM.

The "receiving room" is located on the ground floor fronting on Pennsylvania avenue. This room is 34 by 15 feet, divided in the middle by a handsome black walnut counter, elaborately paneled and beaded, upon which is a hammered glass screen set in a walnut sash, with two openings, through which messages for transmission are passed to the receiving clerks.

For the convenience of the public, there are solid walnut desks placed on either side the room, where message blanks, pens, ink, &c., are placed for the use of customers. The floor is inlaid with walnut and ash. The portion of the room behind the counter will be occupied by the receiving clerks, Messrs. Reynolds and King, two young gentlemen well and favorably known to the patrons of the telegraph. It has been fitted up to meet every requirement of the business, connecting directly with the delivery department in the rear, and with the operating room on the floor above by dumb waiters, speaking tubes, &c.

The manager has his desk in this room, where he will be at all times accessible to the public. Upon his desk is placed an instrument, and the wires are so arranged that, by communicating with the operating room, he can be almost instantly placed in communication with any city in the United States that is with in telegraphic connection. This is so arranged as to enable parties to hold direct conversation with friends at a distance, without being compelled to go to the operating room, or the operating room being disturbed by the presence of a stranger. As for instance, a business house in New Orleans becomes embarrassed while the principal is in Washington, a telegram summons him to the telegraph office, and takes his seat by the side of Mr. Tinker, and converses with his partners in New Orleans, who are by the operator there, with almost as much freedom and readiness as if they were face to face. The interview closed, Boston, Chicago, St. Louis, or any other city, can be called in at a moment's notice.

Here, too, is Cashier Whitney, the financial man of the establishment, with his new safe, manufactured expressly to meet the requirements of his business.

A letter box opening, ingeniously constructed to work both ways, leads to the office of the Associated Press—which adjoins the telegraph office on the east—through which messages received for the Association are dropped, and through which messages for transmission are also received.

THE DELIVERY AND RECORD DEPARTMENT.

This is also located on the ground floor, in the rear of the receiving room. The messengers' room, adjoining, is comfortably provided with seats for the messen-

gers when not out with dispatches. At the desk fronting the door is the well-known face of John Happ, whose long experience has "delivery clerk" as familiarized him with the residence of nearly every citizen of Washington. Directly at his elbow is a pipe through which messages, recorded and enveloped, are dropped by the clerks in the operating room.

On the right of the delivery desk are the record clerks desks, where the general clerical business of the office is done. Messrs. J. C. Noyes, T. D. Allen, and Edward Curran, are the principal clerks of this branch. This department, too, is provided with speaking and drop tubes connecting with the operating room. Adjoining this room is the one in which are deposited the transmitted messages, old records, and such other papers as may be needed for future reference.

THE OPERATING ROOM.

This is kept entirely closed to the public. Here we also have improvements in keeping with the advances made in the telegraphic art. The monster "switch-board," into which all the wires are received, and by which they can be thrown to any instrument, and into connection with any part of the country, would probably first attract the attention of the visitor. It is placed on one side of the room, and is about six feet high and as many wide, made of hard wood, with narrow brass strips, about two inches apart, running down the whole front. Intermediate rows of "switches" run horizontally across the board. The strips are a continuation of the various "line wires" running into the office. Two, however, connect with the two main batteries.

The instrument tables are somewhat ingeniously arranged. There are eight large tables, about six feet long by three feet six inches wide, put together with iron screw bolts, making them very firm and solid; the top of the table is divided into four equal sections by plates of hammered glass about twelve inches high, with walnut rails upon the top, in which are set the hooks where messages for transmission are filed, and from whence they are taken in order and sent by the operator. The wires leading to the instruments from the switch-board are all conveyed under the floor, and pass up through a pipe to the centre of the table, from which they branch to the four sets of instruments upon each table.

A new feature for lighting at night has been introduced: a small gas-pipe passes up through the middle of the table and above the rail dividing the sections, and one light serves for the four operators. Gleason's noiseless patent lever argand burner is used, with the porcelain chimney and shade, which gives a beautiful, steady, uniform and brilliant light, and yet one peculiarly soft and not trying to the eye. This will be very grateful to the operators, who suffer more from bad lights than almost any other class of people.

At the other end of the room are placed the "combination" printing instruments. Mr. F. W. Royce, the operator upon them, is spoken of as exceedingly skillful and a rapid manipulator.

THE BATTERY ROOM.

The battery tables are made of strips of plank set edgewise in tiers, like a flower-stand; from these strips rise pins or standards, upon the tops of which are placed a small glass insulator, and upon this is placed a wooden cup of the size of the battery tumbler, to be supported by it. This arrangement prevents the possibility of any local connection between the cups or cells by moisture or contact. Two batteries supply the whole number of wires which pass from this office.

After a series of experiments with numerous so-called improved batteries, the company have gone back to the regular Grove battery, which has been in use ever since the introduction of the magnetic tele-

graph, as giving the most steady, reliable, and powerful current. For local batteries the "Daniels," somewhat modified and improved, is used.

The wires of the line all lead into the battery room, and are carried from thence through boxes down the side of the wall, when they are carried under the floor to the switch-board, connecting it with the various instruments. To secure against the possibility of leaks or crosses, where the wires come so closely together at the building, Mr. Buell has shown a good deal of ingenuity in securing a thorough insulation.

OFFICE STAFF.

C. A. TINKER, General Manager.

Leonard Whitney, Cashier.

Morell Marcan, Chief Operator.

W. H. Clarke, Chief Night Operator.

James C. Noyes, Chief Clerk.

MORSE OPERATORS.

B. C. Crapo,

Amos S. Adams,

Robert W. Bender,

Silas C. Burns,

James P. Cassidy,

Albert F. Childs,

R. T. J. Falconer,

David L. Findley,

James A. Swift,

Wm. B. Harveycutter,

Albert H. Kanode,

Wm. E. Kettles,

J. A. Kerbey,

D. Marcan,

Geo. C. Maynard,

Jesse M. Sarvis,

A. C. Snyder,

W. W. Thwaatt.

COMBINATION OPERATORS.

Andrew J. Lombard,

Fred. W. Boyce.

RECEIVING CLERKS.

James H. King,

Charles W. Reynolds.

ENTRY, ERROR, RECORD AND NUMBER CLERKS.

Edward Curran,

John B. Stone,

Theo. D. Allen,

Gustavus Jones,

Lucien Garner,

David B. Kelly,

E. C. Adams,

Wm. A. Stewart,

Cornelius Wells.

Delivery Clerk, John Happ.

Porter, John Bowie; Grinders, Henry Bell, John H. Beeves.

OFFICE BOYS.

Frank T. Avery,

Thomas A. Warren,

Albert Fisher.

How Lines May be Worked Successfully During an Aurora Borealis.

On the evening of the 15th of April a magnetic storm of unusual force prevailed over the entire northern section of the country, which so seriously affected the operation of the wires that, on some circuits, they could only be worked by taking off the batteries and employing the auroral current instead. The effect of this great disturbance of the earth's magnetism was manifested with particular power upon the wires between New York and Boston, and for several hours the lines upon this route depended entirely upon this abnormal power for their working current. During the prevalence of this storm, however, I operated upon two wires between the above cities by a plan which rendered them as free from the effects of these earth currents as a local circuit.

Every one has observed that the auroral current comes in waves of ever-changing polarity, corresponding in length and direction with the scintillations of the visible aurora. Sometimes these waves continue but a few seconds, and sometimes for a longer time, but their constant change of polarity prevents the successful operation of a wire, because at one moment the auroral wave may augment the strength of current on the line, while at the next it entirely neutralizes it. Therefore, it has frequently been found advisable to remove the batteries entirely and work with the auroral current alone. But the operation of the lines in this manner is very unsatisfactory, owing to the uncertain and fitful character of this force; and, therefore, any feasible plan by which the wires may be worked under such circumstances is worthy of adoption.

The plan by which I overcome the difficulties arising from the disturbance of the earth's magnetism was by disconnecting two wires from the earth at Boston, and connecting them together, while I grounded them both at New York, thus forming a loop extending from New York to Boston. As the two wires were both upon the same supports, the auroral wave traveled over each in the same direction, and by uniting the two wires at one end, the auroral influence upon one wire was made to neutralize that upon the other, and thus the wires were left entirely free. The following diagrams will illustrate the idea. The wires are drawn without batteries or any other apparatus:

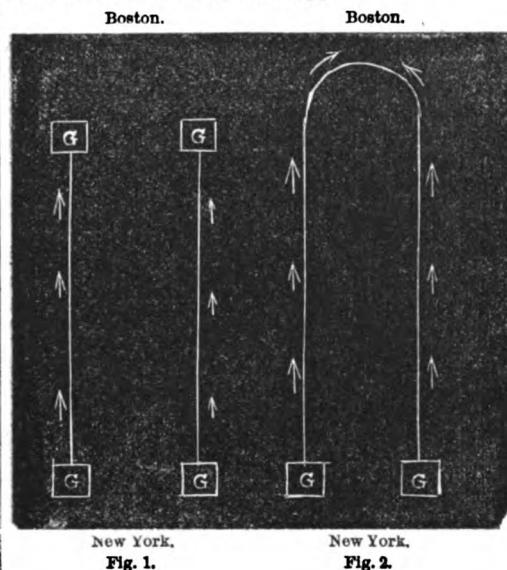


Figure 1 shows two wires extending between New York and Boston, and each grounded at its termini, with the auroral current, marked by arrow heads, flowing over both in the same direction. Figure 2 shows the same wires grounded at New York, but connected together at Boston, and the arrow heads are used to show that the currents arising from the aurora cannot pass over the line thus connected, because that passing upon one wire is neutralized by that which passes upon the other, thus leaving the wire entirely free from any auroral influence. Of course it makes no difference how often the polarity of the auroral current changes, or how much the strength of this current may vary, since the direction of the current, and its strength, change as much upon one wire as the other, and therefore the current upon one always exactly equals and neutralizes the other.

G. B. PRESCOTT.

One More Left!

The American Atlantic Cable Telegraph Company, of New York held its annual meeting at the Bank of the Commonwealth, on Tuesday, and re-elected Mr. Edward Haight, President, with the following Board of Directors:—Charles L. Frost, President of the Toledo, Peoria, and Warsaw Railroad Company; Mr. Chauncey Vibbard, Charles A. Secor, George W. Quintard, P. N. Spofford, John McGinnis, Jr., Arthur F. Willmarth, Wm. O. Stoddard, Colonel George W. Beardslee, and W. S. Worl, electrician and telegraph engineer. The report of the Board of Directors shows that the prospects of the company were highly favorable to the early establishment of an American cable, all the efforts of foreign corporations to obtain concessions from the United States Government, which foreign governments do not accord to American companies, having signally failed. The company was incorporated by the State of New York in 1866, and received its grant from Congress on the 29th of March,

1867, for the sole and exclusive right to lay, land, and operate their cables on the Atlantic coast of the United States for twenty years. Attempts have been made by foreign companies to secure this grant, but the directors are not determined to dispose of it, believing that every interest of the country demands the laying of a rival cable in which, at least, the balance of power shall be held by Americans. The negotiations with the Franco-American Company have ceased, the interests of that corporation, it is understood, having been purchased by the Newfoundland Company. The American Atlantic Company have been prepared for the last six months to lay the first line of their cable to the Bermudas, and have only been deterred from active operations by the delay of the Queen in signing the Bermuda grant, slight amendments to the charter having continually suggested themselves to the British authorities. The last amendment proposed is to the effect that the government shall take virtual possession of the line in case of any dereliction of duty on the part of the company or its officers. To this the company, of course, are not willing to accede. It is believed that the difficulty will soon be overcome, when the work will be immediately pushed forward and the first stretch of six or seven hundred miles of cable to Bermuda completed.—*N. Y. Herald*.

A New Sensation in England.

A late London letter says:

"Professor Pepper, of the Polytechnic, having had a good run of ghosts, has taken to electricity for a new sensation, and has had constructed for him the largest induction coil in the world. The core of iron wire is five feet long, and weighs 120 pounds. The primary wire is 3,777 yards long, and weighs 145 pounds. The induction wire is 150 miles long, its whole length is wound with silk, reinforced with 477 pounds of carbonite. When the galvanic battery was first applied to this tremendous coil, it melted and burnt everything before it. Iron, brass, platinum, were all fused in one mass, and the whole affair needed to be handled with very thick gloves; but by a little coaxing and management, the thunder-storm is now tamed, drives well in harness, and fills Polytechnic audiences with astonishment. The spark, with a battery of fifty cells, is twenty-nine inches long—a burst of lightning, striking with quite a thunderous thud. It will go through five inches thickness of plate glass. Its power in the reduction of metallic oxides is, of course, quite unprecedented, and the most brilliant discoveries are confidently expected."

Don't Like Bare-back Cavalry Service.

FORT McPHERSON, N.B.
April 8th, 1888.

EDITOR JOURNAL OF THE TELEGRAPH:

I send you copy of a telegram received for transmission at this office this morning. The boy is evidently disgusted with the army.

Who can beat it? We challenge all operators.

"MR. — and —"

MARTINSVILLE, MORRAN CO., ILL.

"Please send to Washington and get me discharged in a half minute for I am not able to mount bare back and am left handed in poste haste I will pay en same

B. F. W.,

2nd Cavalry Co. L."

The last poetical story about the auroral display, is that of a correspondent of a New Haven paper, who looked at the telegraph wires and saw "sparks of electricity" along them like infinitesimally small illuminated roads.

The French Cable.

[From the Ocean Wave.]

We little dreamed, at the time when we announced to our readers that there was a possibility of having the French Atlantic Cable landed on our shores, that there then existed the slightest probability of the occurrence of such an event, at least not in our day or generation. We now have it, however, from indisputable authority that the French Atlantic Cable Company will land their shore end at a point of the beach nearly fronting the new Stockton Hotel, under the sanction of the bill passed by the State Legislature at its last session. A company to connect with them, authorized by the same act, was organized at Camden on Saturday, 17th inst., of which A. W. Markley, Senator Robbins, Attorney General Robeson and other well-known gentlemen are directors. Of course there is no telling exactly to what degree Cape May will be benefited by thus converting it into an important seaport, and the grand central point from which the telegraph will radiate north, south and west, but that it will prove advantageous and immensely so, the merest numscull will readily perceive. From Cape May three main lines will deviate, one running across the bay to Lewis, on to Washington, another direct to Philadelphia, while the third is to extend along the shore north to New York. The steamer having aboard the Cable will sail from France in July, so that we may look for its arrival off our coast in the very "height of the season."

By landing the French Cable here, we shall have as one of the advantages to be derived, that now enjoyed by no other city in the United States—hearing first the electric tidings from beyond the Great Ocean.

The Philadelphia Press commenting on the contemplated event, says:—

Now is the time for Philadelphia.—Cape May is but a suburb of our city, and the proper terminus for this new Atlantic telegraph is Philadelphia.—Let us have a cable office here, and at once Philadelphia becomes not a but the newspaper centre of the country. And again, with the channel of European news under our control, we rid ourselves of that overgrown monopoly, the New York Associated Press—an incubus on American journalism.

Further, if we hold under our management the shortest line to Europe—we have no coast line to keep up and be dependent on—Philadelphia will become at once the banking centre for Government securities, and all our railroad and State stocks and bonds which are held largely across the ocean.

The Phila. N. American says:—By landing the French cable at this proximity to our city, we shall have whatever advantages are now enjoyed by New York, and some in addition; and both places will be placed under bonds for their best conduct. Undoubtedly, one of the first results will be a reduction of the onerous tariff that now prevails, and another a concurrent increase of valuable intelligence.

A Trenton daily remarks: It is possible that a better place could not have been selected upon our coast.—It is within ready distance of the great seaport town, a circumstance which may be a partial guarantee of liberal patronage, and it can easily be reached by repairing parties in case of accident.

In this connection, the able speech of Senator Stockton, just before the close of the session of Congress, has an important bearing. He says:

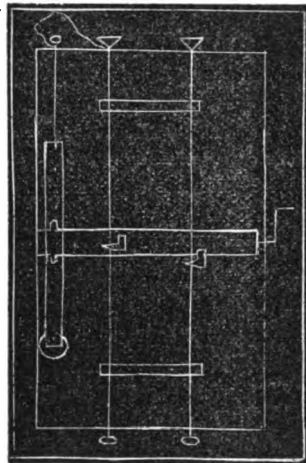
"I am opposed in toto to any legislation on the subject of ocean cables. There is none necessary; there is none needed. There is a general law now in existence which has been on our statute books for more than two years, which permits any company that goes to a State and gets a charter to land its cable. I should like to ask what the Congress of the United States has to do with ocean cables? Why are they

called upon? Do they own the shore, technically, over which the tide ebbs and flows? Is that the property of the United States? Is it the property of the States? The United States have some jurisdiction within a maritime league, for the purpose of protecting their coast; but have they any power, any authority whatever, to authorize or to prevent the landing of an ocean telegraph? The States have chartered companies, have created their own creatures, and they subject those creatures to the power of taxation. Now you propose—what? To take a foreign corporation. You do not propose to make it subject to United States taxation or States taxation; but you propose to take a foreign corporation and let it land their cable on your shores, and give it the right of eminent domain, which you do not possess yourself, to come and land on the shores of a State. Where do you get that power? Certainly not in the Constitution."

All this, of course, makes the City of Brotherly Love very happy, and we think that to keep peace in the family, Boston must have a cable also.

A Phono-electroscope.

A little instrument which I have recently contrived for the purpose of illustrating the heating power of the voltaic current, and which may be fitly called a *phono-electroscope*, consists of a rectangular wooden box, ten inches by five, two steel or platinum wires stretched from end to end, a small spindle carrying two quill plectra, and an eccentric wheel for making and breaking the current through one of the wires. The wheel turns under a brass spring, which plays upon a button. The spring is connected with one electrode of the battery, the button with the wire nearest to it, and this wire with the other electrode. To exhibit the use of the instrument: First, tighten the wires, by means of the milled-headed screws, to unison, to about the pitch of middle C; then turn the spindle so as to sound the two notes in succession before the eccentric wheel makes the circuit. After these have sounded in unison, turn the spindle a little more; the circuit is made by wheel and spring, and presently the plectra play a second time on the wires, which now sound with an interval of a tone or more, according to the quantity of electricity which has passed through one of them. By regulating the time between the instant when the wires sound in unison and the instant when they sound again, and noticing the musical interval caused by one of them becoming flat, we have an audible measure of the expansion of the connected wire, of the temperature to which it has been raised, and of the quantity of electricity which has traversed it to produce that effect. By continuing the movement, the interval between the notes will increase, and at last the wire operated on will become too slack to sound at all. If connection with the battery be now broken, and the heated wire be allowed to cool, its note will be heard to rise by degrees to its original pitch. With a single pair of plates, the phono-electroscope answers well. The experiment is a striking one in a lecture room, very instructive, and easily managed. The apparatus is so simple that any one almost may make it for himself.—EDWIN SMITH, M. A.



The Elements in an Organ Loft.

In the organ gallery of St. Augustine's church each Sunday there is a display of electricity that is a novelty. Thunder and lightning get up the regular music of the daily services. Mr. Thunder, the organist, has secured to his instrument an electro-magnetic action, corresponding with that introduced into the organ of St. Augustine's church, in Paris, not long ago. The Stanbridge Brothers have been overhauling the instrument, and have rendered it as good as new. It has four manuals (key-boards), of which the upper one speaks to the solo organ. This part of the affair is new. The pneumatic pressure upon the valves of the pipes proved too much for the organist, and Messrs. Chester, Partrick & Co. undertook to apply to this part of the organ an electro-magnetic attachment that should make the pipes speak at the touch of the keys without the necessity for pressure. This result has been accomplished.

The work is a very pretty piece of philosophical mechanism. It is interesting to look behind the keys and see the sparks of electricity emitted as each one is touched. To open the pipes attached to the keys of the Cathedral organ a weight of five ounces is required upon each key, and in proportion to its size no organ in the world is played with a less amount of digital fatigue. This solo organ at St. Augustine's responds to the slightest touch, and a full chord is taken by the hand with as little pressure as a single key. The Stanbridges certainly deserve credit for their courage in undertaking the task, while it is not saying too much when the proper praise is given to the electricians who aided these gentlemen in proving for the five hundredth time that what can be done in Paris can be done in Philadelphia also.—*North American*.

The *Mercury* says the Messrs. Chester, Partrick & Co. deserve great credit for their transcendent skill as electricians. The organ of St. Augustine's church, in Paris, is the only one to which this electrical action was ever introduced. These gentlemen are the parties who placed in the Fidelity Insurance Company's building the telegraphic apparatus that registers the whereabouts of the six watchmen, and also the "miracle in a box" that gives the Commercial Exchange and the bankers of this city the gold quotations at the instant of their announcement by a corresponding apparatus in New York. So much for lightning music, sleepy watchmen and Deacon Partrick.

OPHELIA, Ala., April 14, 1890.

EDITOR JOURNAL OF THE TELEGRAPH.

MY DEAR SIR: While I am not an advocate of bad habits (smoking, chewing, drinking, playing billiards, "fighting the tiger," etc).

I must say that I smoke and chew, and eschew the balance, but I have a system by which I govern myself (for my own good) that interferes with no one. For instance, I make it a rule not to chew tobacco until 10 A. M., and not to smoke until after dinner. My reasons for this are,

- 1st. I cannot work and chew, or smoke, at one time, with any degree of comfort or pleasure.
- 2d. If I do smoke or chew, soon after entering my office, I get too nervous.
- 3d. By adopting this plan, I can break myself of the habit.

A telegraph man, or any other man, when occupied at his vocation has no business smoking, i. e., if he is busily engaged. If he has leisure, why it is his privilege to smoke. In large offices though, where there are ten, fifteen, or more operators in one room, there ought not to be any smoking, for one is apt to neglect his duties thereby. For instance (as the case often is), you call up an office, and the operator who answers is a smokist. He will answer, and say "hold," "fill pipe," or "light pipe," as case may be.

Now, Mr. Editor, that continues almost the time of transmitting a message of ten words. On the contrary, he should lay aside his pipe, or cigar, and transact his business, and, by all means, put it out of sight when waiting on a customer.

A MODERATE SMOKIST.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. 50 of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, MAY 15, 1869.

Contract Stamps on Message Heads.

The announcement has been circulated somewhat extensively that the Commissioner of Internal Revenue has decided that the conditions on telegraph message blanks are liable to the stamp tax of five cents imposed upon contracts. The rumor has this foundation only: The Commissioner has been considering and discussing the subject, and although he leans to the view above indicated, he has not reached a final decision, nor made any order in the premises. The first revenue law imposed a stamp tax of three cents on telegraph messages. The mode of paying this tax was found in practice even more onerous than the tax itself. It was therefore subsequently repealed, and, in lieu thereof, a duty was imposed upon the gross receipts of the business. It is very clear that when Congress relieved messages from the three cent stamp, and substituted another tax which could be more easily and certainly collected, they did not intend to leave such messages liable to a higher stamp tax than that which had been previously imposed. This would seem to be conclusive so far as the intention of Congress is concerned. And it will hardly be claimed that taxes should be imposed by possible construction of doubtful technicalities which Congress has repealed by explicit declaration.

We shall be greatly disappointed if the Commissioner does not come to this conclusion.

Electric Organs.

At last we have an organ in America, manipulated by the finger indeed, but the touch given to the keys by the nimble digits of the electric fire.

In 1832 a fine organ was built by Stanbridge Bros., Baltimore, for the church of St. Augustine, Philadelphia. This has recently been remodelled, and a new solo manual introduced, to be used by electro magnetic action. This has been done, for the first time in America, by Messrs. Chester, Partrick & Co., of 38 South Fourth street, Philadelphia, whose ingenuity as electricians, and makers of electric and philosophical apparatus, is well and widely known throughout the country. At a brilliant concert given on the evening of May 6th, the programme of which is before us, the new application of the electric current to discourse sweet music was eminently successful, and excited universal admiration. It is the beginning of a new era in church music. Any one can see that there are possibilities, by the use of key-boards touched by magnetic fingers, which opens up the widest door to the richest combinations. We are glad that our friends have, by their ingenuity, opened that door in America. Pity but that time would permit some similar arrangement on a grand scale in the monster peace concert at Boston. How magnificent would it be to have every organ, throughout that city of organs, pealing out their biggest voices, in perfect time, by the one same single fingers that are appointed to play upon the one hundred cannons which are to supply the base in the National anthem.

One of the great organs of Europe, the St. Augustine, of Paris, is arranged to be performed wholly by elec-

tricity. An organist can now hear his own organ as if played by other hands. He no longer plays as the gazer of a painting does who puts his nose to the canvas. Remote from the instrument, he can sit among the spectators and hear, with pleased ears and without fatigue, the music he himself evokes. He can sit where he chooses. Indeed, we would not be surprised if organists should, when afflicted with gout, or "sewed up" by a Saturday night's debauch, tickle their organs from beside their garret sheet iron stoves, or bolstered up in bed. Organists, indeed, may put their key boards and pedal frames on wheels, splice on a sufficient length of cable, shift their battery, and have a fresh place to play in every Sunday, if it pleases them. One performer has actually discoursed sweet music on an organ *through five miles of wire*! Shade of Jubal, do you hear that?

Now, also, is it possible to dispense with "organ chambers," and place the instrument where it can be seen and heard to greatest advantage. It can also be divided. One part of the instrument can be erected in the chancel, and another at the opposite extreme of the edifice. By thus distributing the parts, one part in the roof, one part beneath an open register in the floor, another in the porch, and the main organ in the chancel, the most splendid combinations are possible, and the whole of a mighty cathedral be made resonant with answering voices, like the calling and the answering of the angels.

The touch of the electric finger-board is the lightest possible. The weakest child can evoke, with its smallest finger, the gentlest tones of the dulciana, the shrill burst of the clarion, the soft oboe, or the deep thunder of the base. The touch is instantaneous, and there is no uncertainty in it. What a luxury must it be for an organist thus to produce a majestic chorus by the merest tickle of his fingers! Every stop can be thus placed under his control, the swell pedal, as well as all the stops. We shall have a cord some day belting the earth, whose course will lie through the world's mightiest organs, and, with some Handel at the keyboard, a circling hallelujah of praise will swell out the grand chorus "Glory to God in the highest, on earth peace, good will towards men!" Amen.

Driving the Spike.

Even to us who are familiar with the possibilities of the telegraph, and ready to believe any wonder which it may yet achieve, the account of the conversation between the operator, who officiated for the Telegraph Company at the driving of the spike the other day, and his fellows elsewhere throughout the Union, is racy and interesting. In all the large cities, New Orleans, Washington, St. Louis, New York, and Boston, a number of interested gentlemen had congregated at the offices, anxious to hear the click which was to announce that the last rail of the Pacific Railroad was laid. It seems to have been arranged to connect the wire with the spike itself as the last blow was given, so that the blow of the hammer itself would communicate its own work throughout the Union. This was easily done. The wire had only to be laid, severed, on the top of the spike, each severed end resting on a piece of paper separating it from the iron, and the hammer swung so as to touch both wires at the same time. Some equivalent arrangement was no doubt made. Of course all were eager to hear the click which married the oceans. Let us give the account of it furnished by the correspondent of the *New York Times*, at Washington:

"At 2:20 P. M., Washington time, all the telegraph offices in the country were notified by the Omaha telegraph office to be ready to receive the signals corresponding to the blows of the hammer that drove the last spike in the last rail that united New York and San Francisco with a band of iron. Accordingly Mr. Tinker, Manager of the Western Union Telegraph office, in Washington, placed a magnetic bell-sounder in the public office of that company, corner of Fourteenth street and the avenue, connected the same with the main lines, and notified the various offices that he was ready. New Orleans instantly responded, the answer being read from the bell-taps. New York did the same. At 2:27 o'clock, offices all over the country began to make all sorts of inquiries of Omaha, to which that office replied:

"To Everybody: Keep quiet. When the last spike is driven

at Promontory Point they will say "Done." Don't break the circuit, but watch for the signals of the blows of the hammer."

"At 2:27 P. M., Promontory Point, 2,400 miles west of Wash-

ington, said to the people congregated in the various telegraph of-

fices:

"Almost ready. Hats off; prayer is being offered."

"A silence for the prayer ensued. At 2:40 the bell tapped

again, and the office at the Point said:

"We have got done praying. The spike is about to be pre-

sented."

"Chicago replied:

"We understand; all are ready in the East."

"Promontory Point: All ready now; the spike will be driven.

The signal will be three dots for the commencement of the

blows."

"For a moment the instrument was silent; then the hammer

of the magnet tapped the bell. 'One, two, three,' the signal,

another pause of a few seconds, and the lightning came flashing

eastward, vibrating over two thousand four hundred miles be-

tween the junction of the two roads and Washington, and the

blows of the hammer upon the spike were measured instantly

in telegraphic accents on the bell here. At 2:47 P. M., Promon-

tory Point gave the signal, 'Done,' and the continent was

spanned with iron."

These signals and conversation came from Promontory

Point, via New York, from whence they divided to Bos-

ton and Plaster Cove, on one side, and to Washington and

New Orleans on the other, without the aid of a single

finger throughout the Union, save the operator at the

scene of the wedding.

The largest electrical machine in this country is that

made for the University of Mississippi, by Ritchie, of

Boston. It consists of two plates, each six feet in diam-

eter. Silliman in his *Physics*, and Ritchie in his catalogue,

claim that this is the largest machine in the world, but

this is a mistake. The machine made for the London

Polytechnic Association has a plate ten feet in diameter,

and is driven by a four horse-power steam-engine. The

size of the plates being as the square of the diameter, it is

obvious that a plate ten feet in diameter is larger than

two plates each six feet in diameter, in the proportion of

one hundred to seventy-two.

ORIGIN OF THE HEAT DEVELOPED IN THE CELLS OF A

BATTERY.—According to Mr. Favre, the heat which is not

found in the galvanic circuit, but confined within the cell,

can only be traced to the intervention of the following

circumstances, alone or united: 1st. The condensation of

hydrogen on the platinum (of a Smee's couple), which

becomes an obstacle to the transmission of the current.

2d. The local action due to the passage of hydrogen from

the nascent to the ordinary state. 3d. The action, also

local, due to the conversion into sulphate of the zinc de-

posited on the platinum of the couples by the electrolysis

of the sulphate of zinc constantly increasing in the liquid

in the cells.—*Comptes Rendus*.

LIGHTING UP THE STOMACH.—We find the following curi-

ous statement in a Canadian paper: "M. Millat, in

France, introduces into the stomach glass tubes of small

caliber, connected with a strong battery, and containing

the electrodes necessary for producing a brilliant galvanic

light. Tumors or ulcers in the abdomen can thus be ob-

served through the skin, and the interior lit up as when

the feeble light of a candle renders the finger translucent.

"CAN cast-iron be rendered magnetic?" Very power-

ful permanent magnets have been made of cast-iron, and

almost any piece of cast-iron will be attracted by a mag-

net. Many specimens of cast-iron fail to become mag-

netic, to any marked degree, by mere insertion in a helix

of copper wire, through which a strong voltaic current is

passing.

DURING the evening of Thursday, May 13th, another

magnetic storm prevailed and was sensibly felt on all the

wires radiating around New York. For the first time,

we believe, the printing instruments were worked by the

auroral currents, and this time on the northern circuit to

Albany which was only feebly affected in the former

storm.

WE beg pardon for another omission of our notice of

Mr. Little's inventions. Next number will fulfil our de-

sign.

Washington and Chicago.

We devote more space than may seem to some due, to the description of the two spacious Telegraph Offices just occupied by the Western Union Telegraph Company at Washington and Chicago. Yet nothing more marks the progress of the Telegraph than these arrangements for the comfort and convenience of those who perform its labor, and the enlargement and adornment of premises for the public reception. They indicate strength, a healthy assurance of the future—success. The place of labor, as well as the place where we eat the bread of labor, should be as cheerful and health-giving as they can be made. Airy, bright, large rooms for our operators cannot fail to effect favorably the service rendered. Labor, thus surrounded, becomes a pleasure. It begets good will and good nature, both of them very important adjuncts of such a service. An operator, having thus round him the evidences of the Company's care for his comfort, will do his labor better, more correctly, more dexterously, with a brighter vim, and find his attachment to the service strengthened. These improvements mark also faith in the future. The telegraph strikes deeper roots daily in the necessities of the nation, and the Company blossoms into these evidences of enlarged public support. It has a widening mission. It has a vast work to do, an immense field yet to occupy. Even these large and spacious offices will some day become too straitened for the occupants, and new premises be necessary for an enlarged service.

For the gratification of the occupants of these magnificent offices, and their friends elsewhere, we give the names of the staff of each. That of Washington has been much reduced since the close of Congress, and does not include the auxiliary stations. The auxiliary stations at Chicago are also omitted. These we may give in a future number.

Presentation.

A few days since we stated that our well-known and genial friend, A. M. Vanduzer, Esq., manager of the Western Union telegraph office, in this city, had resigned his position in order to engage in business at Detroit, Michigan. As soon as the matter became known among the operators, they, together with the other employees of the company, conceived the idea of making him a suitable present in token of their regard and esteem. With this in view, several of the fraternity commenced operations, and in a short time collected money sufficient to purchase a splendid gold-headed ebony cane. The top beautifully engraved to represent the foot of a deer, which is emblematic of fleetness, and very appropriate for the occasion. The presentation took place in the large operating room of the company's office, in the National Bank Building, corner of Superior and Water streets, Friday afternoon, and was a decided success. The matter had been kept a profound secret from Mr. Vanduzer, and when he was requested to repair to the operator's room he did not, even then, expect that any unusual occurrence was about to take place. Imagine his surprise when E. P. Wright, Esq., superintendent of telegraph for this district, stepped up and presented him with the beautiful piece of workmanship before named. Mr. Wright made a few appropriate remarks, but our friend Van. was so completely put out of "circuit" by the occurrence that he could not command galvanic power enough to cause his "recording apparatus" to "tick" out his thoughts. He, however, managed to adjust himself just enough to tender his heartfelt thanks for their token of respect and esteem, and said that he hoped that, although he had for nineteen years lived "on tick," that he should now be enabled to depart from the clatter consequent upon such a life.

A sumptuous lunch was then spread out, and all hands including our reporter, did full justice to the delicacies there displayed.

We understand that Mr. Vanduzer will leave Cleveland in a few days for his new field of action, and the good wishes of his numerous friends, in and out of the fraternity, goes with him.—*Cleveland Herald*.

We regret the departure of Mr. Vanduzer from the

Telegraph service. For nearly 30 years he has shared its toils and fortunes, and commended himself to all as a gentleman of much refinement of heart and manner, and of prompt and vigorous business habits. The recognition of these qualities has led him into new pursuits. We shall be glad to hear of his happiness and success therein.

Sales Western Union Stock.

REPORTED BY J. HORN, JR.

APRIL.

29th—818 from..... 42½ to 43½
30th—1,905 from..... 42½ to 43½

MAY.

1st—1,800 from..... 42½ to 43½
3d—300 from..... 43½ to 53½
4th—1,435 from..... 42½ to 43½
5th—1,428 from..... 42½ to 43
6th—2,110 from..... 42½ to 42½
7th—2,850 from..... 42 to 43½
8th—420 from..... 42½ to 42½
10th—1,100 from..... 42½ to 42½
11th—257 from..... 42½ to 42½
13th—650 from..... 43½ to 43½
14th—2,360 from..... 44 to 44½

EDITOR JOURNAL OF THE TELEGRAPH:

Will you please settle a dispute by stating in how many words you check this message:

"Sell one hundred North Western at ninety-eight."

One party says eight words, the other says only seven.

Your decision to be according to the printed rules of the Western Union Company. I know I shall win the STRAWBERRIES.

There are eight distinct words in the message given.

—ED.

We are glad to learn that the demand for POPP'S MANUAL has been so large that a new edition will be issued in two or three weeks.

DR. RUDOLPH BRENNER has published the first part of the first volume of a series of investigations into Electro Therapeutics. This volume, extending over 250 pages, deals only with his observations on the effects of the electric stream upon the organ of hearing in its healthy and in its diseased state. The aim of his patient labors and numerous experiments is to endeavor to lay the foundation of the means of an exact diagnosis of the very different pathological conditions of the auditory nerves. He hopes to have accomplished this purpose, and to have shown also that the electric stream may be usefully employed as a means of cure in diseases of the auditory nerves.

A NEW EXCITING LIQUID FOR GALVANIC BATTERIES.—A French chemist suggests the following compound liquid for batteries. Twenty parts of protosulphate of iron in thirty-six parts of water, seven parts of sulphuric acid, and one part of nitric acid. He declares this to be a most powerful and exciting liquid, attacking iron, zinc, and other metals without any evolution of hydrogen or binoxide of nitrogen.—*N. Y. Medical Record*.

Married.

May 5th, at the residence of the bride's father, at Newark, N. J., by the Rev. J. C. Burgdorf, Egbert L. Hodskin, of Fairport, N. J., to Miss Libbie A. Butler, formerly telegraph operator at Fairport.

April 29th, at the residence of the bride's mother, by Rev. A. E. Taylor, Mr. William Dyer, of Philadelphia, to Miss Annie V. Wilson, of Georgetown, D. C.

April 27th, at the residence of the bride's father, on Wheeling Island, by Rev. John Moffatt, assisted by Rev. W. M. Mullenix, Mr. A. T. McKelvey to Miss Julia S. Irwin.

Died.

At Allentown, Pa., on Sunday P. M., May 2d, William F. Nunnemacher, assistant operator for the office of the Western Union Telegraph Company.

CHESTER, PARTRICK & CO.,

Manufacturers and Dealers in all kinds of

TELEGRAPH INSTRUMENTS AND SUPPLIES,

38 SOUTH FOURTH STREET, PHILADELPHIA.

Now offer for sale, or will manufacture to order,

REGISTERS,

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LIGHTNING ARRESTERS,

SOUNDERS,

SWITCHES,

And every variety of Instruments now in use. Among the supplies constantly kept on hand, are the following:

Battery Materials of all kinds, Line Wire, all sizes, Brackets, Insulators, Medical Batteries (induced or direct current), Fire and Burglar Alarms for Banking Houses and Private Residences, as well as for Cities and Towns; also, Contractors for the Construction, Reconstruction and Repair of Telegraph Lines throughout the United States.

All the Standard Works on Telegraphy furnished at the lowest prices, among which is the latest work of

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH.

By Frank L. Pope.

Also, Electro-Platers' Batteries and Materials, Blasting Apparatus, Cartridges and Patent Portable Machinery for the manufacture of Nitro Glycerine.

All orders executed with promptness, and satisfaction guaranteed in the quality of articles supplied.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

Agents in New York,

MESSRS. L. G. TILLOTSON & CO., No. 11 Dry street.

THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with its GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the Insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high cost Norway Iron Wire, in the same locality, and strung at the same time, was broken in several places.

Address—

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

ALANSON CARY, Treasurer,

No. 234 West 29th street,

New York.

Or Agents of the Company.

Lightning Freaks.

A story is related in some of the books, of a young lady in full dress, at an evening party, who, when a heavy cloud was passing, went to the window and put out her hand to ascertain whether rain was falling, when the lightning, striking the house, came down by the window, and, taking her golden bracelet in its track, melted it and threw it off her arm. While not prepared to declare that such an incident as this is impossible, we should be very unwilling to vouch for the truth of the story, but prefer leaving each reader to judge of its probability or improbability for himself.

These sudden and violent discharges of large accumulations of the electric agency or force, resulting usually from the rapid condensation of vapors in the air, are far more frequent, or rather are far more frequently observed by mankind, than those faint and gentle illuminations which arise from the gradual flow of the electric force to or from projecting points. For certain reasons, a projecting point tends to draw off the electric force quietly, or convey it away as fast as it is developed, and so to prevent any great accumulation. But the light which is emitted in such cases is of so mild a character that, except under peculiar circumstances, it is seldom observed. The light is too faint to be seen in the midst of other lights; and when it is dark there is seldom any observer at hand. It is probable that if the eye of an observer could be kept near the silver or platinum points of a good lightning-rod during all the dark hours, for a considerable period of time, they would often be seen crowned with stars, or emitting pencils of mild and harmless rays.

HARRISBURG, May 5, 1869.

This morning, in the Court of Common Pleas, Dauphin county, there was tried the case of the Commonwealth vs. The Atlantic and Ohio Telegraph Company. The question at issue was of the liability of the Western Union Telegraph Company, as lessees of the Atlantic and Ohio, for taxes due the State on the dividends of the latter, and on its net earnings. The accounts were from 1864 to 1867. A verdict was rendered in favor of the Commonwealth.

SAND-STORM.—The *Moniteur Belge* of April 9th, mentions that at Naples, Messina, and the whole of Southern Italy, daylight, during the day of March 24th, was so obscured by the sand of the African deserts, that at Reggio, and many other places, lamp-light had to be resorted to as a means of enabling people to perform their daily work; the sand was carried by the south wind even as far as Turin. Professor Palmieri recognized the true nature of this sand by means of the microscope.

NEW YORK, April 19, 1869.

EDITOR JOURNAL OF THE TELEGRAPH.

In relation to the various articles that have appeared in your paper lately on "Velocipedes for Messengers," I would like to say a word or two.

Firstly, and lastly, I advise the Company to try it with one messenger, to see how it works, and if the boy is not brought back dead or wounded before dinner hour, why I think it would be safe to send out a few more the same way. But if a two-blocks' ride in West Broadway or Greenwich street would not settle them, I am not what I sign myself.

A GOOD VELOCIPEDIST,

Yea, verily, Greenwich street is a very poor field for the locomotion of man, beast, or velocipede.

Robert Cunningham, Manager of the New York office of the Franklin Telegraph Company, has resigned his post. Walter Seaming takes his place.

Telegraphers' Mutual Life Insurance Company.

The number of certificates issued is now 545. A letter from a member says: "Am about to change my location and will notify you of my address in a few days. The least word of giving up my insurance starts a 'breeze' in my family. My wife declares she will take in washing by the piece to earn money to keep up assessments sooner than lose policy." Good girl.

ASSESSMENTS NO. 7.—REMITTANCES RECEIVED.

Benj. Stephens,	George Mutter,
J. W. Hay,	F. C. Gay,
S. M. G. Wenck,	W. H. Steigelmaier,
P. P. Hauff,	W. G. Jamieson,
George Walcott,	James Farrell,
A. M. Campbell,	Wm. Ferguson,
A. H. Pearkes,	Fred. Crouse,
G. M. Simmons,	C. Alston Smith,
W. L. Ives,	Samuel Porter,
A. J. Jarvis,	Edward Chapman,
William Arnoux,	C. E. Tweed,
George W. Moore,	S. M. Hunter,
P. J. Casey,	E. T. Ludwig,
T. P. Scully,	D. J. Ludwig.

THE STANDARD AMERICAN WORK ON THE TELEGRAPH.

RUSSELL BROS., 23, 30 and 32 Centre Street,

Have just published

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH.

A Handbook for Electricians and Operators.

By FRANK L. POPE,

1 vol. large 8vo, with sixty illustrations.

This book supplies what has long been recognized as the great desideratum in American telegraphic literature. It is a

THOROUGHLY PRACTICAL TREATISE

And should be in the hands of every Electrician, Superintendent Operator, Line Builder, Repairer, and Batteryman. It contains full descriptions and explanations of all the

MODERN IMPROVEMENTS IN TELEGRAPHING,

Which have stood the test of actual experience. The construction and management of the different Repeaters, Switches, etc., in use in this country, is explained at length. Full explanations are given of the most approved methods of testing lines and locating faults and interruptions upon telegraph lines, accompanied by numerous diagrams. The work also contains the new system of

TESTING BY MEASUREMENT,

Which has been employed with great success upon the Atlantic and other cables, and more recently upon land lines. The mode of working the

ATLANTIC CABLE.

And the apparatus employed will be found fully described in this book. The appendix contains a large amount of useful and practical information, formulae, tables, etc., which have never before been brought together in a convenient and accessible form. The work has been freely illustrated, wherever requisite, with

ELEGANT ENGRAVINGS,

Most of which have been engraved expressly for its pages by the best artists.

ALL TELEGRAPHERS

Who wish to inform themselves in regard to the construction and management of the various appliances used in telegraphing such as

Batteries
Keys,
Relays
Sounders,
Registers,
Switches,
Lightning Arresters,
Repeaters,
Double Transmitters,
Combination Locals.
Insulators,
Cables,
Galvanometers,
&c., &c., &c.

Will find this just the work that is wanted.

Notwithstanding the great expense incurred in the publication of this work, in order to insure its general introduction, and to place it within the means of every telegrapher, relying upon large sales for remuneration, it will be issued at the low price of

ONE DOLLAR AND A HALF.

On receipt of the price of the book, it will, if desired, be forwarded by mail, post paid, to any part of the United States or British Provinces. Orders should in all cases be accompanied by the money to insure prompt attention, and if sent by Post office order or registered letters, will be at the risk of the publishers. Orders may be sent to the editors of THE JOURNAL OF THE TELEGRAPH or of THE TELEGRAPHER; or to

F. L. POPE, Box 6, 188, N. Y. City.

Other agents will be hereafter announced.

THE HISTORY, THEORY AND PRACTICE OF THE**ELECTRIC TELEGRAPH.**

BY GEORGE B. PRESCOTT,

Containing upwards of One Hundred Illustrations of
ELECTRICAL MACHINES,

TELEGRAPHIC APPARATUS, ETC.

IN ONE VOLUME. 500 PAGES. PRICE \$3 50.

Your attention is respectfully invited to the revised and enlarged edition of the above work, written by one who has been engaged for over twenty years as a practical operator and superintendent of telegraph lines, and who is familiar with both the science and art of telegraphing. It is an accurate and exhaustive work on the subject it treats, interesting and valuable at once to the general reader, the man of science, and the practical telegrapher. It presents a concise and reliable history of the invention and progress of the

ELECTRIC TELEGRAPH,

commencing with the first rude apparatus of Lenoir, in 1774, and describing every subsequent improvement made in the art up to the present time. The subject is treated in a scientific, and, at the same time, in a popular manner, the style being divested, as far as possible, of scientific technicalities.

The author is confident that those who wish for a full, yet concise treatise of the

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EDISON'S**DOUBLE TRANSMITTER,****THE MOST PRACTICAL APPARATUS OF ITS KIND IN INVENTED.**

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For further information, address:

THOMAS A. EDISON,

Care CHARLES WILLIAMS, JR.

Telegraph Instrument Makers,

109 COURT STREET,

Boston, Mass.

To the Public.

We call attention to the following, and hope it may lead to the recovery of the property

STOLEN

on the night of the 7th of April:

Western Union Telegraph Coupon Bonds, numbers and denominations as follows:

No. 17,	-	-	-	\$600.00
" 48,	-	-	-	600.00
" 187,	-	-	-	500.00
" 188,	-	-	-	500.00
" 189,	-	-	-	500.00
" 208,	-	-	-	500.00
" 842,	-	-	-	500.00

The public are cautioned against purchasing these Bonds, or the Coupons therefrom, as payment has been stopped.

Parties to whom they are offered are requested to hold the same and notify me; and if offered by persons unknown, or under suspicious circumstances, then to detain the parties offering the same until notice can be given to me.

A reasonable reward will be paid for their return to the owner.

WM. HUNTER,

86 Liberty street, N. Y.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
MAY 15, 1899.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since May 1, the date of the last tariff order. Please note them in your tariff book:

REDUCTION OF TARIFF ON ATLANTIC CABLE BUSINESS.

On and after June 1, 1899, the rates of tariff on Atlantic Cable business will be as follows:

Tariff in gold, to any point in Great Britain and Ireland.

	For 10 words or less, counting address, date and signature.	For each word over 10
From all points in Nova Scotia, New Brunswick and New England States, and from New York City,	\$10 00	\$1 00
From all points in New York (except New York City), New Jersey, Pennsylvania, Delaware, Mary- land and District of Columbia,	10 40	1 04
From all points in Virginia, West Vir- ginia, North Carolina, South Caro- lina, Georgia, Alabama, Missis- sippi, Louisiana, Tennessee, Ken- tucky, Ohio, Indiana, Illinois, Michigan and Wisconsin, from St. Louis, Mo., and from Western Union Co.'s offices in Florida,	11 50	1 15
From Pensacola, Fla.,	12 50	1 25
From all points in Texas, Arkansas, Missouri (except St. Louis), Kan- sas, Nebraska, Iowa, Minnesota, Colorado, Dacotah, Wyoming, New Mexico, Utah, Idaho, Mon- tana, Nevada, California and Ari- zona,	13 50	1 35
From all points in Oregon, Washington Territory and British Columbia,	15 50	1 55

Note particularly that the address, date and signature must be counted and charged.

The additional tariff to places beyond Great Britain and Ireland will remain as heretofore.

NEW OFFICES.

Campbellburg, Henry Co., Ky., tariff same as Eminence, Ky.
Hubbard, Mahoning Co., O., tariff same as Youngstown, O.
Jacksonville, Ala., tariff 2.25 from Washington or Louisville
for offices in Eastern and Central Divisions. Offices in Southern
Division will use the rates to Jacksonville given on their tariff
sheets.

Morley, Scott Co., Mo., offices having "Caton map" will use
"map tariff." Tariff from all others 75c. more than to St. Louis,
Mo.

Orrick, Mo., offices having "Caton map" will use "map tariff."
All other offices will add 1.00 to St. Louis, 1.45 to Chicago, or 90
to Omaha, whichever will give the lowest rate.
Point du Chene, N. B., re-opened, tariff same as heretofore.
Shawhan, Ky., tariff same as Paris, Ky.

NEW OFFICES ON OTHER LINES.

West Amesbury, Mass., tariff 25 and 2 from Newburyport,
Mass. Check Newburyport.
Darlen, Ga., tariff 60 and 4 from Johnson Station, Ga. Check
Johnson.

OFFICES CLOSED.

Missouri City, Mo.

TO OFFICES HAVING "SPECIAL SHEET A."

Tariff to Piqua, O., unless you have been otherwise instructed,
will hereafter be the same as "special rate" to Dayton, O.

GENERAL INFORMATION.

The name of the office heretofore known as Clappville, Mass.,
has been changed to Rochdale, Mass.

Mt. Dallas, Pa., notice of which was given in last JOURNAL will
hereafter be known as Bloody Run, Pa.

WILLIAM OSTON, President.

Hours of Service.

WESTERN UNION TELEGRAPH COMPANY.

EASTERN DIVISION.

All offices in this Division are open for business until 8
o'clock P. M. during the week, and from 9 to 10 o'clock
A. M. on Sundays. In addition to this, the offices named
below are open during the hours indicated. No office
will be closed until the day's business has all been for-
warded, and every office must exchange "GOOD NIGHT"
with the office to which it reports, or to its repeating sta-
tion or terminus of circuits on which it is located. Great
care should be taken to procure every answer possible
before closing.

OFFICES OPEN FROM 5 TO 6 P. M. ON SUNDAY.

Amsterdam, N. Y.	Mount Vernon, N. Y.
Anbun, N. Y.	Murray, N. Y.
Attica, N. Y.	Middleport, N. Y.
Atlantic City (during sum'r), N. J.	Middletown, N. Y.
Allentown, Pa.	Mauch Chunk, Pa.
Altoona, Pa.	New Bedford, Mass.
Bangor, Me.	North Adams, Mass.
Bath, Me.	North Bennington, Vt.
Bennington, Vt.	New Haven, Ct.
Burlington, Vt.	New London, Ct.
Brandon, Vt.	Norwich, Ct.
Bridgeport, Ct.	New Lebanon, Ct.
Balleton, N. Y.	New Milford, Ct.
Batavia, N. Y.	Newburgh, N. Y.
Binghamton, N. Y.	New Rochelle, N. Y.
Bordentown, N. J.	Nyack, N. Y.
Burlington, N. J.	Niagara Falls, N. Y.
Bethlehem, Pa.	Newark, N. J.
Bedford, Pa.	New Brunswick, N. J.
Coches, N. Y.	Northumberland, Pa.
Cambridge, N. Y.	Oneida, N. Y.
Chatham 4 Corners, N. Y.	Oriakany, N. Y.
Cold Spring, N. Y.	Oswego, N. Y.
Catskill, N. Y.	Otisville, N. Y.
Coxsackie, N. Y.	Owego, N. Y.
Caledonia, N. Y.	Olean, N. Y.
Canastota, N. Y.	Poultney, Vt.
Cayuga, N. Y.	Pittsfield, Mass.
Churchville, N. Y.	Providence, R. I.
Clifton Springs, N. Y.	Poughkeepsie, N. Y.
Cuba, N. Y.	Peekskill, N. Y.
Corning, N. Y.	Palatine Bridge, N. Y.
Cape Island (during sum'r), N. J.	Pittsford, N. Y.
Chambersburg, Pa.	Port Jervis, N. Y.
Chester, Pa.	Patterson, N. J.
Columbia, Pa.	Parkersburg, W. Va.
Cumberland, Md.	Richfield Sp'gs (d'ng sum'r), N. Y.
Dover Plains, N. Y.	Rutland, Vt.
Danville, Pa.	Rondout, N. Y.
East Bloomfield, N. Y.	Rochester, N. Y.
Elmira, N. Y.	Rome, N. Y.
Elizabeth, N. J.	Reading, Pa.
Easton, Pa.	Springfield, Mass.
Fall River, Mass.	Stamford, Ct.
Falls Village, Ct.	Sandy Hill, N. Y.
Fort Edward, N. Y.	Saratoga, N. Y.
Fishkill, N. Y.	Saugerties, N. Y.
Fairport, N. Y.	Sharon Springs (d'ng sum'r), N. Y.
Fonda, N. Y.	Sing Sing, N. Y.
Great Barrington, Mass.	Sanborn, N. Y.
Glens Falls, N. Y.	Savannah, N. Y.
Greenwich, N. Y.	Schenectady, N. Y.
Gaspport, N. Y.	Seneca Falls, N. Y.
Greycourt, N. Y.	Skaneateles Junction, N. Y.
Goshen, N. Y.	Spencersport, N. Y.
Great Bend, Pa.	Sprakers, N. Y.
Hartford, Ct.	St. Johnsville, N. Y.
Hoodie Falls, N. Y.	Suspension Bridge, N. Y.
Haverstraw, N. Y.	Syracuse, N. Y.
Hudson, N. Y.	Salamanca, N. Y.
Herkimer, N. Y.	Suffern, N. Y.
Holley, N. Y.	Somerville, N. J.
Honeoye Falls, N. Y.	Scranton, Pa.
Hornellsville, N. Y.	Susquehanna, Pa.
Hoboken, N. J.	Taunton, Mass.
Harrisburg, Pa.	Tonawanda, N. Y.
Huntingdon, Pa.	Trenton, N. J.
Hagerstown, Md.	Verona, N. Y.
Havre-de-Grace, Md.	Westfield, Mass.
Janesburg, N. J.	Worcester, Mass.
Jersey City, N. J.	Waterbury, Ct.
Kingston, N. Y.	West Troy, N. Y.
Lansingburgh, N. Y.	White Hall, N. Y.
Lancaster, N. Y.	Waterford, N. Y.

Little Falls, N. Y.
Le Roy, N. Y.
Lockport, N. Y.
Lambertville, N. J.
Lancaster, Pa.
Lock Haven, Pa.
Meriden, Ct.
Middletown, Ct.
Middlebury, Vt.
Mechanicsville, N. Y.
Manlius Depot, N. Y.

White Plains, N. Y.
West Point, N. Y.
Waterloo, N. Y.
Waverly, N. Y.
West Chester, Pa.
Wilkesbarre, Pa.
Williamsport, Pa.
Wilmington, Del.
Yonkers, N. Y.
York, Pa.

OFFICES OPEN UNTIL 9 P. M. DURING WEEK.

Atlantic City (during sum'r), N. J.	New London, Ct.
Bridgeport, Ct.	Norwich, Ct.
Binghamton, N. Y.	Newark, N. J.
Cambridge, N. Y.	Oswego, N. Y.
Cape Island (during sum'r), N. J.	Pittsfield, Mass.
Chambersburg, Pa.	Richfield Sp'gs (d'ng sum'r), N. Y.
Elizabeth, N. J.	Rome, N. Y.
Easton, Pa.	Sharon Springs (d'ng sum'r), N. Y.
Fall River, Mass.	Taunton, Mass.
Jersey City, N. J.	Trenton, N. J.
Lockport, N. Y.	White Hall, N. Y.
Meriden, Ct.	Wilmington, Del.
Middletown, Ct.	

OFFICES OPEN UNTIL 10 P. M. DURING WEEK.

Burlington, Vt.	Rutland, Vt.
Hartford, Ct.	Springfield, Mass.
New Bedford, Mass.	Saratoga (during sum'r), N. Y.
New Haven, Ct.	Worcester, Mass.
Providence, R. I.	Waterbury, Ct.
Poughkeepsie, N. Y.	

OFFICES OPEN UNTIL MIDNIGHT DURING WEEK.

Baltimore, Md.	Scranton, Pa.
Harrisburg, Pa.	Williamsport, Pa.

OFFICES OPEN UNTIL 2 A. M. DURING WEEK.

Bangor, Me.	Bath, Me.
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OFFICES OPEN ALL NIGHT DURING WEEK.

Amsterdam, N. Y.	Oneida, N. Y.
Anbun, N. Y.	Rochester, N. Y.
Batavia, N. Y.	Schenectady, N. Y.
Little Falls, N. Y.	Syracuse, N. Y.
Niagara Falls, N. Y.	Utica, N. Y.

OFFICES OPEN ALL DAY SUNDAY.

Baltimore, Md.	Troy, N. Y.
Grafton, W. Va.	

OFFICES ALWAYS OPEN.

Albany, N. Y.	Portland, Me.
Boston, Mass.	Philadelphia, Pa.
New York, N. Y.	Sackville, N. B.
Plaster Cove, C. B.	St. John, N. B.
Picton, N. B.	Washington, D. C.

NOT OPEN ON SUNDAY.

William's Bridge, N. Y. (testing station.)

Numerous claims for damages have arisen from failure
to observe the following rules:

1. Both the sending and receiving operators will, in
every case, endorse conspicuously upon every message
in such manner as to be easily distinguished from the mes-
sage itself, their signature, initial or initial letters, and the
time sent or received.

2. On messages received, the number and time must be
placed at the top, and the initial letters of both sending
and receiving operators at the bottom, immediately fol-
lowing the checks of the message. The signature of the
sending operator to be entered first in all cases.

3. To enable operators to comply with these require-
ments, and complete each message before commencing
another, the receiving operator, in answering his call,
will always give his office call and his personal signature
or initial letter, and the sending operator will give his, im-
mediately after the check of each message. Both per-
sonal signatures, or initials, should be noted upon every
message.

4. The letters "O K," with the receiver's initial or per-
sonal signature, must always be given.

5. Whenever the address of the sender of a message is
written, following his signature, it must in every case be
transmitted and copied by the receiving operator.

THOS. T. ECKERT,
General Supt., E. D.

Journal of the Telegraph.

A Telegraph Line for Business Men.

When Franklin experimented with his kite in the clouds, and drew from thence a knowledge of the lightning, his efforts were thought to be as amusing as they were harmless. When Morse harnessed the lightnings, and made of that subtle essence the most tractable and useful of servants, the world looked on in silent yet sceptical wonder. And so when Cyrus W. Field made practicable the boast of Puck, who "would put a girdle around the earth in forty minutes," the human mind had to grow up to the occasion. The subject was too vast for it.

But now all these things have become common. They are recognized as every-day facts. Still science, progress and improvement do not stand still. The Western Union Telegraph Company of this city, in addition to their many other enterprises, will soon be prepared to furnish every business man with his own private telegraph. This project will just suit Chicago, and Chicago residents generally.

The city of New York set the example in the present respect. The two great dry goods princes of that city, Stewart and Claflin, have private telegraphic communications between their private residences and places of business, which keep them advised constantly of whatever transpires.

L. B. Boomer, of this city, has a private telegraph, extending from his office on Dearborn street to his yard at the stock-yards; and the Fertilizing Company have another, extending from their office on La Salle street to their factory at Ingall's station. Many other prominent business and professional men of the city have made application to have the wires put at their private disposal.

As soon as the Western Union Telegraph Company can make the necessary arrangements, they will accommodate all who may desire private lines, putting them up at their own expense, and then charging a certain rental per annum for their use.

An instrument has lately been invented which very greatly simplifies the old process of learning telegraphic sounds and signs. By means of this new instrument, any body will be able to learn the art in a very short period of time.—*Chicago Times.*

The Polytechnic Association on the American Institute.

Dr. Boynton, by invitation of the chair, took the platform, and spoke at some length in explanation of the comparative merits of different metals as conductors of electricity, and their constant value in the manufacture of wire for telegraphic purposes. Silver is the best conductor, but its cost is too great for the uses indicated; copper is the next best, but it is too weak; furthermore, its conductivity is destroyed by a slight alloy with certain other metals, for instance, by two per cent. of antimony. Steel has the requisite strength, but is a very poor conductor. Steel being stronger than iron, and copper having seven and one-half times the conducting power of the latter metal, the speaker claimed that the best results must be obtained by the use of a wire having the respective characteristics of steel and copper, and proceeded to describe a telegraph wire of this kind invented by Mr. M. G. Farmer, of Boston. This is a compound wire, weighing one hundred and thirty pounds to the mile, and is stated to have been used with success on the Pacific telegraph line, under circumstances where several other varieties of wire had failed. Its mode of manufacture was described as follows: Fine steel wire, cleaned in the usual way with acid, is coated

with tin by being drawn through a molten bath of that metal. Pure copper, previously prepared in thin strips, is lapped around the wire by machinery made for the purpose. After this the copper is cleaned with dilute muriatic acid, and the wire is again drawn through the bath of melted tin, which not only coats the copper with tin, but brazes it to the steel wire or core. It was asserted that not only is the conductivity of this wire several times greater than that of ordinary telegraph wire, but that from its tinned surface it is inoxidizable, and consequently durable in the extreme.

We are glad to see by our Pittsburgh papers that the charges of mismanagement of the Alleghany City Fire Alarms, under the superintendence of our old friend S. D. McCandless, has been refuted, and the irregularities found to have been caused by discontented parties tampering with the connections. We believe in our old boys, and in the good old times. There will never be better. The Alleghany City Council have passed resolutions of confidence in the management of the City Fire Alarm in its present hands. We vote "aye" on such every time.

SHAWK & BARTON,

Manufacturers of
ELECTRICAL INSTRUMENTS,
And Dealers in
TELEGRAPH SUPPLIES.

Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
Office Wire,	Mercury,	Lightning Rods,
Insulators,	Relays,	Induction Coils,
Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials
Acids,	Switches,	Philosophical Apparatus,
&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

WESTERN UNION STANDARD PATTERNS,

and shall keep up with the times in all valuable improvements.

Customers can obtain at our depot a

COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

embracing such instruments of other manufacturers as are good and serviceable.

We are prepared to take contracts on liberal terms for the construction and equipment of

TELEGRAPH LINES

of any required length, in any part of the United States, for individuals or for corporations.

NO. 98 ST. CLAIR STREET, CLEVELAND, O.

G. W. SHAWK,

E. M. BARTON.

STICKWELL & CO'S

EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE.

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the places. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES.

S. S. STAFFORD,
Sole Proprietor, N. Y.

CHARLES WILLIAMS, JR.,

109 Court Street,

BOSTON, MASS.,

MANUFACTURER OF

TELEGRAPH INSTRUMENTS,

BATTERIES,

AND MATERIALS OF ALL KINDS.

WM. KIDD,
A. BOODY.

C. H. PEIRCE
C. S. OTIS

KIDD, PEIRCE & Co.,

BANKERS,

19 BROAD STREET AND 57 EXCHANGE PLACE,

NEW YORK.

Stocks, Bonds, Gold and Government Securities bought and sold on Commission.

S. S. STAFFORD'S

COMBINED

WRITING AND COPYING FLUID,

Labeled by me, for the last ten (10) years, *ARNOLD'S FLUID* Superior to any Fluid used. It is Greenish Blue in color, turns Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33½ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

For sale by all Stationers and Druggists, and at No. 11 Cedar street, New York.

S. S. STAFFORD,
Chemist, N. Y.

A. S. CHUBBUCK,

HOTEL STREET,

(Adjoining the Post Office,)

UTICA, N. Y.

Manufacturer of

Telegraph Instruments, Batteries,

and every description of

TELEGRAPH SUPPLIES.

INVENTOR OF THE

"PONY SOUNDER," REGISTER AND KEY.

Every Article Warranted of the

BEST MATERIAL AND WORKMANSHIP.

The Oldest Establishment in the United States.

CHAS. T. & J. N. CHESTER,

104 CENTRE STREET, N. Y.,

TELEGRAPH ENGINEERS.

And Manufacturers of

INSTRUMENTS, BATTERIES,

AND EVERY DESCRIPTION OF TELEGRAPH SUPPLIES.

Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

Telegraphers' Mutual Life Insurance Association.

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, falling to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

J. D. REID, Treasurer.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

New Galvanic Battery.

A new battery is announced as arranged by M. P. Guyot, which may be useful for telegraphic purposes and electrical alarms. It consists of a porous earthen vessel filled with finely-powdered iron ore, in which is plunged a cylinder of gas retort charcoal and an ordinary vessel filled with concentrated solution of common salt, in which is placed a slip of zinc. The only care required to keep such a battery in order is to keep the latter vessel always full of concentrated solution. Further, the solution may be replaced by sand impregnated with it, or by salt in crystals, the humidity of the atmosphere being always sufficient to serve as a solvent. If the latter form be found to answer, the battery would be extremely convenient on shipboard, in trains, or wherever there is motion.

SPECIAL NOTICE.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

AND

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.,

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK,

General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York.

The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their

SUBMARINE TELEGRAPH CABLE

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

BENEDIOT BROTHERS,

No. 601 BROADWAY,

BETWEEN AMITY AND FOURTH STREETS,

JEWELERS,

KEEPERS OF THE CITY TIME,

FINE WATCHES, CHAINS, DIAMONDS,

AND

SOLID SILVER WARE.

AGENTS FOR THE AMERICAN WALTHAM WATCH.

Watches Repaired in the most thorough manner, and Warranted.

SPECIAL NOTICE.

Since the 1st of September a new and valuable improvement has been attached to all the Watches made by the American Waltham Watch Company, namely: Fogg's Patent Pinion, and also the Sprung Over Regulator.

We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

BENEDIOT BROTHERS,

Agents for the American Waltham Watch,

601 Broadway.

DURANT'S

NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 8, 1868.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the platinum point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

Mr. Geo. E. Seibert, Western Union operator, 145 Broadway, New York, says:

"I have worked Durant's Self-adjuster on the Cincinnati wire for two days, and can testify to its being a self-adjuster in every respect."

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Dec. 15, 1868.

Goods sent to all parts of the Continent with bill C. O. D. Parties remitting in advance by certified check, payable in New York, or by Post Office order, will save the expense of returning funds by express.

Agent for the sale of the Nonpareil Relay on the Pacific Coast, Mr. STEPHEN D. FIELD, San Francisco, Cal.

Address all orders to

CHARLES DURANT,

Office and Factory, 96 Nassau Street,

New York City.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

MANUFACTURERS OF
TELEGRAPH INSTRUMENTS

AND

MATERIALS OF EVERY DESCRIPTION.

General Agents for the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

The Compound Wire has now stood every test to which it can be subjected. Over twelve hundred miles of it are now in operation with the most satisfactory results.

General Agents for the Bishop Gutta Percha Co.'s

TELEGRAPH CABLES,

GUTTA PERCHA AND OTHER INSULATED WIRES.

General Agents for

PURE NITRIC AND SULPHURIC ACIDS,

Manufactured by the Lodi Chemical Works.

Importers of the best manufacture of

ENGLISH GALVANIZED WIRE

Publishers of Prof. J. E. Smith's

MANUAL OF TELEGRAPHY.

GROVE,

CARBON

HILL'S,

DANIELL'S,

And every description of

BATTERY ALWAYS ON HAND.

DR. L. BRADLEY,

No. 7 EXCHANGE PLACE, JERSEY CITY, N. J.,

Keeps constantly on hand and for sale his

IMPROVED TELEGRAPH INSTRUMENTS,

Having adopted the use of

OREIDE METAL,

which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed. His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the *helix*, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-800th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine.....	\$19 50
Small Box Relays.....	16 00
Same in Rosewood.....	17 00
Medium Box Relays.....	17 00
Same in Rosewood.....	18 00
Large Box Relays.....	8 00
Main Sounders same as the above, with heavy armature lever, without local connections.....	75 cents less
Pocket Relays, with all the adjustments of the above and good Lever Keys.....	22 00
Excellent Registers.....	40 00
Pony Sounders.....	6 75
Keys.....	6 50

All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old spools taken at the price of new wire by the pound. Goods sent to all parts of the continent with bill C. O. D. Or, to save expense of returning funds by express, remittance may be made in advance by certified check payable in New York, or Post-office orders, in which case he will make no charge for package. He has ample facilities for furnishing all other kinds of Telegraph Supplies at the lowest manufacturers' prices.

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET

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MANUFACTURERS AND DEALERS IN

TELEGRAPH MACHINERY AND SUPPLIES,

GALVANIZED AND PLAIN WIRE,

INSULATORS, AND EVERY DESCRIPTION OF

OFFICE AND BATTERY MATERIAL

ALWAYS ON HAND.

INSTRUMENTS REPAIRED AT SHORT NOTICE.

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New York.

GEORGE H. BLISS,

Chicago.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

MANUFACTURERS OF

GLASS INSULATORS, ALL PATTERNS,

Zincs, Porous Cups, Platinum, Acids, Quicksilver, Tumbler Coppers, &c. All of the most approved Pattern and Best Quality.

REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

Printed Message Heads and Envelopes

On hand and furnished to order.

WIRE, GALVANIZED AND PLAIN,

AT THE

LOWEST MANUFACTURERS' PRICES.

COPPER AND BRASS WIRE

Of any number required.

OFFICE WIRE,

GUTTA PERCHA or COTTON COVERED

AND

MAGNET WIRE.

REGISTERS, RELAY MAGNETS,

SOUNDERS, ETC.

CIRCUIT-CLOSERS,

CUT OUTS,

SWITCH-BOARDS,

BINDING-SCREWS,

PAPER-REELS,

LIGHTNING-ARRESTERS,

REPAIRERS' TOOLS,

&c., &c., &c., &c.

OF EVERY DESCRIPTION.

CABLES

Of any desired Size and Pattern, American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

L. G. TILLOTSON & CO.

No. 11 Dey street, New-York.

THE BISHOP GUTTA PERCHA COMPANY,

The Original and Only Manufacturers in the United States of every description of

PURE GUTTA PERCHA GOODS.

INSULATED SUBMARINE TELEGRAPH CABLES.

INSULATED TELEGRAPH AND ELECTRIC WIRE.

The Insulation of Telegraph and Electric Wire with Gutta Percha has been adopted by the manufacturers of these articles, in Europe as well as here, and in an experience of over TWENTY YEARS has never failed.

We also Manufacture

WATER, BEER AND SODA PIPE,

CHEMICAL VESSELS,

GUTTA PERCHA SHEET OF ALL THICKNESSES,

TISSUE SHEET FOR HAT AND CAP MAKERS' USE

COTTON AND SILK COVERED WIRE,

BRIDGE'S ELECTRIC CORDAGE,

BISHOP'S COMPOUND CORDAGE, &c., &c.]

FACTORY, 422, 424, 426 EAST TWENTY-FIFTH STREET.

OFFICE AT FACTORY.

SAMUEL C. BISHOP,

General Agent.

WALTER O. LEWIS, Esq.,

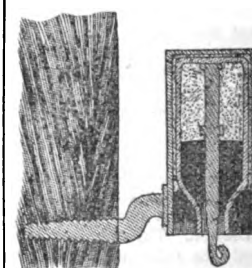
Electrician of the Company

THE BROOKS

PATENT PARAFFINE INSULATOR WORKS.

No. 22 SOUTH TWENTY-FIRST STREET.

PHILADELPHIA



All varieties of INSULATORS manufactured at these Works are warranted to excel the usual style of Glass and Rubber more than one hundred fold. In view of the error and delay in transmission, waste and consumption of battery material, the result of defective insulation, its true nature and expense of renewal, nothing is more manifest than its economy.

To RAILROAD COMPANIES relying upon the efficiency of their telegraph departments it is of great value.

JOHN POLHEMUS, Printer and Stationer, 102 Nassau Street, N. Y.

JOURNAL OF THE TELEGRAPH.

VOL. II. NO. 13.

NEW YORK, JUNE 15, 1869.

WHOLE NO. 39.

(For the Journal of the Telegraph.)
Epithalamium.

"THE LAST SPIKE."

A blow was struck—and the echo was heard
In vales, and o'er mountains covered with snow :
The oceans were joined in a lasting embrace,
(A figure of Metaphor here finds a place)
And "a kiss was returned for a blow."

—HENRY A. COOPER.

Decision by the Attorney-General.

A STATE CAN NOT GRANT TO A FOREIGN COMPANY THE
PRIVILEGE OF LANDING A TELEGRAPH CABLE ON
OUR SHORES.

WASHINGTON, June 7, 1869.

To PETER COOPER, Esq., President of the N. Y., Newfoundland
and London Telegraph Company.

SIR: I have considered the question on which you ask my legal opinion, have given it a careful examination, and am now prepared to state the conclusion to which I have arrived. That question is, "Whether, if the New York, Newfoundland and London Telegraph Company should undertake, without authority of Congress—although the State of Maine has given its assent thereto—to lay its lines of cable westerly from the shores of Newfoundland, and to land the same upon the shores of the United States, or to connect its cables with those of any other company chartered by one of the States of the United States, it would, under the Constitution and laws of the United States, have a right to do so?" In the first place, I can have no doubt that any act of concession or charter by any foreign nation can give no rights to a company to exercise any franchise within the territory of the United States. This territory extends, by the law of nations, for the purposes of sovereignty and jurisdiction, to at least the distance of a marine league from its shores. No right, therefore, within the United States could accrue to the New York, Newfoundland and London Telegraph Company in the case you suppose by virtue of the charter granted by British authority. The other branch of your inquiry concerns the distribution of powers between the National Government and the several States of the Union under the Constitution of the United States. By the eighth section of the first article of the Constitution of the United States, it is provided that the Congress shall have "power to regulate commerce with foreign nations and among the several States." By the first clause of the second section of the third article of the Constitution, it is declared that the judicial power of the United States shall extend "to all cases of Admiralty and Maritime jurisdiction." The Admiralty and Maritime jurisdiction thus conferred has always been held to be exclusive in the national tribunals. Martin agt. Hunter, 1 Wheat., p. 337; Slocum agt. Mayberry, 2 Wheat., p. 9; Gelston agt. Hoyt, 3 Wheat., p. 246; Waring agt. Clarke, 5 How., p. 451, 466; Cohen agt. Virginia, 6 Wheat., p. 314. If, therefore, telegraphic communication with foreign countries can properly be held to be included within the power to regulate commerce, or the laying a telegraphic cable upon the shores of the sea between high and low water mark to be a subject of maritime jurisdiction, it must follow that the power of Congress to regulate and control the same is supreme. It was said by Chief-Justice Marshall, in delivering the opinion of the Supreme Court of the United States in Gibbons agt. Ogden (9 Wheat., p. 188) that "commerce undoubtedly is traffic; but it is something more, it is intercourse. It describes the commercial intercourse between nations and parts of nations in all its branches, and is regulated by prescribing rules for carrying on that intercourse;" and, on page 193, that "it has been universally admitted that the words of the Constitution comprehended every species of commercial intercourse between the United States and other nations." The power to regulate includes the power to prohibit in such cases as the public interest may require, as is seen in the case of an em-

bargo. Telegraphic communication is a new means of commercial intercourse which the discoveries of modern science have supplied. Being, however, an instrument of commerce, and a most efficient instrument of commercial intercourse, the fact that it is a new one, does not, in my judgment, prevent the application to it of the Constitutional provision. I am of the opinion that the control of telegraphic communication with foreign nations, so far as it is exercised by means of cables leading from the shores of the United States, is within the constitutional authority of Congress to permit, regulate or prohibit, in such cases and under such circumstances as their judgment shall direct; and that consequently there can be no security for such enterprises while no authority or protection for them has been derived from the acts of Congress. In other words, that the jurisdiction of the United States Government to regulate commerce with foreign nations, including every kind of commercial intercourse, is complete and supreme, that it can be exercised and asserted whenever, and in such manner as Congress shall think fit, and that no action of the Government of any *ex parte* State of the Union can confer any rights upon any person or corporation to carry on intercourse with foreign nations by a telegraphic cable, which will afford any permanent security for the value of their continuous enjoyment, unless the previous assent of Congress has been obtained. The separate States may grant the enjoyment of their own rights of soil and of privileges within their control, but they can not grant rights which interfere with or limit the exercise of the authority of the National Legislature so far as that authority is derived from the Constitution of the United States. Although not yet the subject of Judicial determination, this Constitutional power has been repeatedly asserted and exercised by Congress. Thus on the 3d of March, 1857, Congress passed an Act entitled "An Act to expedite telegraphic communication for the use of the Government in its Foreign Intercourse," assuming the right to control this intercourse. On the 5th of May, 1856, Congress passed an Act entitled "An Act to convey communication between the United States and the Island of Cuba, and other West India Islands and the Bahamas," by which the *sole exclusive* privilege was granted to the Ocean Telegraph Company "for a period of 14 years, to construct, land and operate telegraph cables from the shores of Florida," thereby assuming entire control of this subject over the entire Florida coast. On the 24th of July, 1856, Congress passed an Act entitled "An Act to aid in the construction of telegraph lines, and to secure to the Government the use of the same for postal, military and other purposes." By this Act, any Telegraph Company, organized under the laws of any State in the Union, may, upon certain conditions construct lines over any portion of the public domain, or across the navigable streams or waters of the United States; but no authority whatever is granted to connect with cables coming from a foreign country. By the Act of March 30, 1857, Congress granted to the American Cable Telegraph Company of New York the right (after the Company had acquired the necessary land therefor) to lay and operate a cable or cables on the Atlantic coast of the United States ("except the coast of Florida") for the period of 20 years, including the right to lay and operate such cables within any bays, harbors or waters of the United States upon the Atlantic coast, except the coast of Florida. In addition to these instances of legislation, several bills and resolutions have been reported, after the most full and careful discussion, by the Committee on Foreign Relations of the Senate, including some of our eminent lawyers and statesmen, which distinctly recognize the doctrine above set forth. But aside from the question of the power of Congress to regulate commerce, I can have no doubt that the connection of this country with a foreign nation by means of telegraphic cable, is a means of national communication so vital and important, both in peace and in war, to the national interests, and under some circumstances, possibly, even to the national existence, that it is in its own nature, a subject for national control, which it would be impossible for the Government or people of the United States to allow to exist under the separate control of a single State, or to depend upon the arrangements made by one of the States with a foreign power, its citizens or subjects, acting either in a private or corporate capacity. These statements seem to me to contain a sufficient answer to the question which you have submitted.

E. R. HOAR.

Responsibility of a Telegraph Company.

A suit against the Western Union Telegraph Company, involving an interesting point of law, was argued at Nashville, Tenn., last Friday. The plaintiff had received a proposition for the purchase of goods from parties at Franklin, Ky., which was to be accepted by telegraph at or before a specified time. The telegram accepting the trade was deposited in the telegraph office at Nashville before the specified hour, but was not received at Franklin until after the time. The parties at Franklin declined the trade, whereupon the plaintiff sued the telegraph company for his consequent loss on account of the non-delivery of the telegram. The Judge charged that the fact of the telegram being deposited here by or before the time specified was a completion of the contract, whether it was forwarded or not, and that plaintiff's recourse was upon the parties at Franklin, not upon the telegraph company.—*N. Y. Tribune*, June 3.

Annual Rainfall in Different Portions of the Earth.

A correspondent asks us to give the amount of water, rain, hail and snow falling upon an area of 100 square feet, during a year of twelve months, taking the average from one year to another. The form of this question is so indefinite that no satisfactory answer can be made to it. It suggests, however, some remarks in regard to the subject which may not prove uninteresting to our readers at large, and which will probably contain the information desired by our correspondent.

There are great variations in the quantities of water precipitated upon equal areas situated on different parts of the earth's surface. In some places scarcely a day passes without rain, others exist where rain scarcely ever falls. Striking a mean of all the water precipitated in any form over zones of moderate width, parallel to the equator, it will be found that the fall diminishes from the equator toward the poles. The fact is easily explained by the general principles of rainfall, which may be thus stated: Rain, hail and snow are water frozen or otherwise precipitated from the atmosphere. The amount that can fall at any locality depends, principally, of course, upon the amount of water contained over that locality. There are certain places where local influences prevail to such an extent, that the latter proposition does not apply to them, but they are exceptions to a general law, which do not affect the truth of the statement. The amount of water contained in a given amount of air is, all other things being equal, proportioned to its temperature. The hotter it is the more water it will contain, and *vice versa*. As the average temperature of the atmosphere decreases from the equator toward the poles, its capacity for moisture also decreases; hence the inference that less rain would fall in high latitudes than in lower is perfectly legitimate. It has, moreover, been confirmed by observation.

At London the fall is 25 inches; at Bordeaux it is

25.8; at Madeira it is 27.7; at Havana it is 91.2; at St. Domingo, 107.6. It has been estimated that in the northern part of the United States the average number of rainy days in each year is about 134, in the southern part is about 103. The lesser number of rainy days in warmer climates is more than counterbalanced by the amount of water which falls in a given time, the tropical rain storms being proverbially very heavy. Prof. Silliman gives the following estimate of the mean annual number of rainy days for different latitudes:

N. Latitude.	No. Rainy Days.
From 12° to 43°	78
" 43° to 46°	103
" 46° to 50°	134
" 50° to 60°	161

He also estimates the amount of rain at special points as follows:

"The greatest annual depth of rain occurs at San Luis Maranhão, 280 inches; the next in order are Vera Cruz, 278; Grenada, 126; Cape François, 120; Calcutta, 81; Rome, 39; London, 25; Uttenberg, 12.5. The rainfall in New Hampshire is about 38 inches; in New York State, 36; Ohio, 42; Missouri, 38.26. The average for the United States is about 39.23. In the torrid zone the mean fall is 95 inches. In the temperate zones it is 35 inches. The mean fall for the two temperate zones and the torrid zone is 55 inches. An inch of water upon a square foot of surface will weigh about five and one-fifth pounds; on one hundred square feet it would be 520 pounds; which, multiplied by the mean depth of fall over the surface of the torrid and two temperate zones, 55 inches, gives 14.3 tons. In round numbers the mean amount of rain falling upon each acre of these zones is 5,500 tons.—*Scientific American*.

On Some Applications of Electricity to Naval and Military Purposes.

BY F. A. ABEL, F.R.S., FOR. SEC. C.S.

(From Chemical News.)

(Continued from page 148).

A class of electrical instruments has been created within the last three years which bids fair to supplant even these very powerful and efficient frictional machines. The instruments in question, of which different forms have been devised by Wheatstone, Wilde, Siemens and Ladd, have received the generic name of *dynamo-electric machines*, because dynamic force becomes through their agency a direct and powerful source of electricity. In the machines of Siemens, Wheatstone and Ladd, mechanical power is transformed into electric force without the intervention of permanent magnets. The action of the most simple form of these instruments may be described as follows: The residual magnetism existing in an electro-magnet suffices to develop an induced current in a rapidly revolving coil armature; this current, reacting upon the electro-magnet, determines the development of powerful magnetism in the latter by the inductive action of its insulated coils; the currents developed by the electro-magnet are consequently in their turn greatly increased in power, and react again upon the armature; and thus an immense accumulation of electric force is accomplished with great rapidity until, when that accumulation has reached the maximum attainable without detriment to the insulation of the wire coils, a simple interrupting arrangement causes the current to be diverted from the machine to conducting wires, by whose medium it is utilized. The details of the machines vary according to the different plans adopted by the several construc-

tors, but the above explanation applies more particularly to the machines of Messrs. Siemens and Halske, who have been the first to produce a small instrument of this class thoroughly applicable to mining purposes, and which almost equals in power the ebonite frictional electric machine. Fifty charges, arranged in simple circuit, have been repeatedly exploded, without any failures, by one of these machines; it therefore provides with certainty the power necessary for the most extensive mining or submarine operations, and is at the same time quite free from all disturbing atmospheric influences. Its mechanism is simple, and less easily susceptible of derangement than that of any magneto-electric apparatus, and as it is independent of everything but the application of manual power for the development of its action, it is far superior to the most perfect of these, independently of the fact that it surpasses them all greatly in power. For many important military and mining operations the hand dynamo-electric machines, constructed by Messrs. Siemens and Halske, are therefore unquestionably superior to all other existing apparatus which furnish electricity of tension. This class of instrument, however, shares, to some extent at any rate, one important defect of the frictional-electric machines, which is consequent upon the powerful charges of high tension electricity sent into conducting wires by their agency. It was observed, in the earlier experiments of the Austrians with frictional electricity, that if two or more insulated wires which led to distinct mines were situated side by side, in moderately close proximity, even only for comparatively short distances, the charge sent from the machine into one of the wires, with the view of only exploding a particular mine or series, might develop in neighboring wires, not connected with the machine, a charge of induced electricity of sufficient power to explode the mines connected with those wires. Some results obtained at Chatham, and many experiments recently instituted at Woolwich, have not only confirmed those observations in Austria, but have shown that means do not at present exist of avoiding this serious defect of powerful charges of high tension. If, therefore, it is necessary to lead separate wires from the point of operation (from the exploding instrument) to different mines or groups which it is desired to explode independently of each other, it is impossible to employ the frictional electric machine as the exploding agent without great risk of failure, even though the wires, laid upon or imbedded in earth, are separated as widely as possible, as they must unavoidably extend in proximity to each other to a distance from their points of union with the machine, which, if the latter be highly charged, may prove sufficient to determine the development of induced "exploding" currents in the wires leading to mines not intended to be fired. If the wires lead to submarine mines or torpedoes, and are therefore submerged, the unintentional explosion of mines becomes much more certain, and the frictional machine is consequently inapplicable to submarine operations in all instances where mines are arranged in separate circuits. The dynamo-electric machines share this serious defect to some extent; still, with proper experience in their use, they are not altogether inapplicable to such services as above specified. If Siemens' dynamo-electric machine be highly charged by very rapid revolutions of the armature, the inductive action of the charge will be similar in power to that exerted by the charge of the frictional machine, but, by revolving the armatures slowly, it is possible to charge the machine sufficiently to fire a mine or a small group with certainty, while the inductive action of the charge sent into the wire will not influence neighboring wires to an extent sufficient to cause the explosion of mines connected with them.

The subject of the application of electricity to the

explosion of submarine mines for purposes of defence and attack received some attention from the Russians during the Crimean war, and was practically developed in its most simple form in 1859, in the hands of the Austrian government, when a system of submarine mines, to be fired through the agency of electricity by operators on shore, was applied by Baron von Ebner to the defense of Venice, which, however, never came into practical operation. The subject of the utilization of electricity for purposes of defense did not, however, receive serious consideration in England or other countries until some years afterwards, when the great importance of submarine mines as engines of war was demonstrated by the number of ships destroyed and injured during the war in America. Twenty-five vessels belonging to the Federal navy were destroyed and nine others injured by the explosion of torpedoes, while the Confederates lost three vessels by accidentally coming into collision with their own torpedoes, and one which was attacked by means of a torpedo and destroyed by the Federals.

Soon after the commencement of that war the attention of the English government was called to the importance of practical inquiry into the value of submarine obstructions, both passive and active, as auxiliary agents of defense, and a committee was appointed at the suggestion of Colonel Jervois, C. B., R. E., to report on the use which might be made of floating or sunken obstructions and of submarine mines, in the defense of channels, harbors and rivers. The labors of this committee have recently terminated, and they were enabled, by the aid of systematic investigations conducted for them at Woolwich during the last four years by one of their members, Mr. Abel, and of practical experiments carried on chiefly at Chatham under the direction of another of their body, Colonel A. A. C. Fisher, C. B., R. E., to elaborate the subject of the application of electricity to submarine mines and torpedoes, to such an extent that a solid foundation of information and instruction is now available for those who may at any time have to be entrusted with the actual arrangement and employment of these important means of defense. Continental governments have also devoted much attention to this subject, and especially the Austrian government, for whom Baron von Ebner devised an ingenious and elaborate system of electric torpedo defense, exhibited in detail at the Paris Exhibition of 1867, which received application during the recent war, though its efficiency was not actually put to the test except in the way of experiment.

The application of electricity to the explosion of torpedoes was very limited during the American war, but arrangements for the extensive employment of that agent as the exploding power were far advanced in the hands of both the Federals and Confederates at the close of that war. It appears that only in two instances of the entire number of vessels destroyed and injured was the explosion of the torpedoes effected by electric arrangements, the others having all been exploded by mechanical agency.

The explosion of submerged charges of gunpowder by mechanical contrivances, either of a self-acting nature or to be set into action at desired periods, was accomplished as far back as 1583, during the siege of Antwerp by the Duke of Parma. The English employed self-acting torpedoes against the French ships off Rochelle, in 1628, and from that period to 1854 devices of more or less ingenious and practicable character have been proposed from time to time, and even applied to some small extent in different countries for the explosion of torpedoes either by clock-work at fixed periods, or by coming into collision with a ship. The Russians were the first to apply self-acting mechanical torpedoes with any prospect of success.

and there is little doubt that had the machines which were applied to the defense of the Baltic been of larger size (they only contained 8 or 9 lbs. of gunpowder), their presence would have proved very disastrous to some of the English ships which came into collision with and exploded them. Various mechanical devices for effecting the explosion of torpedoes by their collision with a ship were employed by the Americans during the recent war, a few of which proved effective. But although, in point of simplicity and cost, a system of defense by means of mechanical torpedoes possesses decided advantages over any extensive arrangements for exploding submarine mines by electric agency, their employment is attended by such considerable risk of accident to those at whose hands they receive application that, under many circumstances which are likely to occur, they become almost as great a source of danger to friend as to foe. Thus the operations of lowering and mooring torpedoes, the explosion of which depends upon the application of a blow, thrust, or pull to some portion of the machine, which is so placed and arranged as to be in a favorable position for the application of mechanical action by a passing ship, are attended with very great danger to those employed, unless some means are adopted for rendering the exploding mechanism inactive until after the torpedo has been placed in position. But the employment of a safeguard of this kind involves a considerable amount of uncertainty as to the torpedo being rendered active, by its removal after the operation of mooring is completed, because this very removal is frequently a dangerous operation. Again, when once the mechanical torpedoes have been placed in position and rendered active, they are as dangerous to friendly ships as to the enemy; consequently their employment for the defense of a particular tract of water completely closes it until the torpedoes have been exploded or removed, and their removal obviously constitutes one of the most dangerous services upon which men can be employed. Several instances have recently occurred in America of the destruction of ships in waters defended during the war by mechanical torpedoes, of which it was believed that the subsequent removal had been completely accomplished. Some improvements have recently been made in mechanical and chemical appliances of a self-acting nature for torpedoes by the employment of which the mooring arrangements can be completed with perfect safety, and the torpedoes afterwards rendered active, by the performance of a simple and safe operation when it is desired to close the defended water. But the complete exclusion of friendly vessels, and the difficulties attending the raising of the torpedoes when no longer required, still constitute formidable objections against the use of mechanical torpedoes, excepting in the case of tracts of water which are not ordinarily navigated, but the passage of which in times of war might be attempted by vessels of light draft.

The most important advantages secured by the application of electricity as the exploding agent of submarine mines and torpedoes are as follows: They may be placed in position with absolute safety to the operators; they may be rendered active or passive at any moment from the shore; the waters which they are employed to defend are therefore never closed to friendly vessels until immediately before the approach of an enemy; they can be fixed at any depth beneath the surface (while mechanical torpedoes must be situated directly or nearly in the path of a passing ship), a circumstance which very considerably simplifies the arrangements for their application in tidal waters; lastly, electric torpedoes may, when no longer required, be removed with as much safety as attended their application.

(To be Continued).

The Great Induction Coil.

One of the greatest scientific wonders, even in this wonder-producing age, is unquestionably the great induction coil—or inductorium, as the German physicists term it—at the Polytechnic Institution. It is an instrument of remarkable power and capacity, and possesses the highest scientific interest. In designing this induction coil, which is about six times as large as any previous production of the kind, Professor Pepper's object was to obtain an easily controlled source of electricity, combined with a degree of tension sufficient for the scenic requirements of the Polytechnic. In carrying out this object, the Professor enlisted the services of Mr. Apps, of the Strand, who has himself effected many important improvements in induction apparatus, and to whom is due the construction of the present powerful machine; but, although so extremely powerful, it is nevertheless perfectly safe to the manipulator, so carefully has every contingency of accident been guarded against. The machine consists of an ebonite barrel, 9 feet 10 inches in length, supported at each end on two ebonite pillars. The barrel was made at the Silvertown Works, and is the largest ever turned out there. It contains the compound coil, and of itself weighs 477 pounds, the whole machine weighing 15 cwt.

The primary wire is of copper of the highest conductivity, 0.0925 inches diameter (B.W.G., No. 13), and 3,770 yards in length; the number of revolutions of the primary wire round the soft iron core is 6,000, its arrangement being three, six and twelve strands. The total resistance of the primary coil is 2.201400 British Association units; and the resistances of the primary conductors are respectively for the three strands, 0.733800; for the six, 0.366945; for the twelve, 0.1834727 B. A. units. The soft iron core is composed of straight wires of very soft iron, each wire being five feet in length, and 0.0625 inches in diameter. The diameter of the bundle of core wires is four inches, and their weight 423 pounds. The secondary wire is 150 miles in length, 0.015 inches (B.W.G., No. 29), diameter, and is covered with silk. The total weight of the wire is 606 pounds, and its electrical resistance 33,560 B. A. units. This secondary coil is four feet two inches long, and the insulation is calculated for safety at 95 per cent. beyond absolute requirement. The secondary wire is insulated from the primary by an ebonite tube eight feet in length, and one-half inch in thickness. The condenser is made with sheets of varnished paper and tin-foil, arranged in six parts, each containing 125 feet super, or a total of 750 feet super.

The machine was originally tried with a contact breaker detached from the great coil, and having an independent electro-magnet; up to ten Bunsen cells with the great inductorium, this worked well, but when the battery was increased to thirty or forty cells, it became unmanageable. A Ruhmkorff break, with platinum amalgam and alcohol above it was substituted, which saved the points, but the spirit was now and then violently ejected and set on fire. Professor Pepper then proposed a modification which has proved successful, remaining in perfect working order during a series of experiments extending over eight hours. The commutator regulating the admission of the battery current is provided with a locking apparatus, and the whole coil is most carefully and effectually insulated from the floor and surrounding apparatus, as are also the separate portions of the apparatus from each other. The battery power is at present supplied by forty Bunsen cells, each containing a pint of nitric acid. It is, however, intended to substitute for this, a Grove's battery of the largest size ever made, and which is in course of construction. It will consist of pipe-clay cells, 2 feet square upon the sides, and four inches wide, with walls one-eighth of an inch thick.

In working the great induction coil, the sparks obtained from it with five Bunsen cells are twelve inches in length; ten cells give sparks fourteen inches in length; fifteen cells give seventeen and a half inch sparks; twenty cells give twenty-one inch sparks; twenty-five cells give twenty-three inch sparks; thirty cells give twenty-three and a half inch sparks; thirty-five cells give twenty-six inch sparks; forty cells give twenty-seven and a half inch sparks; and with fifty cells, sparks from twenty-eight inches to twenty-nine inches in length were obtained. After eight hours working, the coil gave, with fifty cells, a spark twenty-five and a half inches in length. It was also found that of the proportions of the condenser used, one-half gave the longest spark. The spark is not such as is generally produced under similar circumstances, but is a thick wire of light, surrounded by a wide waving flame two inches or three inches thick, and which can be blown aside from the spark. The spectroscope gives a perfectly continuous spectrum, like the light of day, only that it is barred with the bright lines of the substances in combustion. The flame of the spark, with a very slight blast of air, rises to at least twelve inches in height when it is passing about the same distance horizontally.

Beside the gigantic Grove's battery, there is also a Leyden battery in course of construction, the present one being inadequate to represent the full power of the coil. The first part of this battery, consisting of 250 feet super of coated glass, is now nearly completed. There is also a very large and elegant arrangement of Gassiot's cascade in course of construction, which is also to work with the great induction machine, and which will embody several important improvements that have been suggested by Mr. Gassiot. The most recent experiments with the coil have shown that as yet no limit as to the quantity effects can be established, and it is exceedingly probable that by a very few minutes' working, the large coil would charge at least 1,000 Leyden jars of very large size. The coil, too, is probably destined to throw a new light upon scientific research, and to solve the problem—what is ozone? In reference to the amount of this element, and the density at which it may be produced, very few experiments have as yet been made. But enough is seen in the extraordinary reddening effect of the flame of the spark on litmus paper, to show that we are likely very soon to solve the ozone problem.—*Mechanics' Magazine*.

Banquet to Professor Morse in New Jersey.

The residence of Mr. N. D. C. Moller, at Summit, N. J., formerly the property of Chancellor Kent, was the scene last evening of a very pleasant affair, in the form of a banquet tendered to the illustrious Professor Morse, of electric telegraph fame, by Mr. Moller. Among the other distinguished guests present were Governor Randolph, ex-Congressman Coleman, F. S. Lathrop, Austrian Vice-Consul Bolewski and Mr. E. N. Fuller. There were also present many ladies.—*Evening Telegram, May 21st*.

Telegraphs in China.

"Memorandum of 29 articles which it has been decided to add to the treaties between China and foreign nations; final decision on three of them (Nos. 14, 15 and 21) is reserved until the return of the Ambassadors:—

"15 (Undetermined). It is proposed that foreigners shall be allowed to construct railways and telegraphs in the 11 provinces and in Tibet. As these works are eminently calculated to further commercial and military operations, not only shall Chinese offer no obstruction, but they shall give every assistance in their power."

The Simultaneous Transmission of Messages over a Single Wire in opposite Directions.

CONTRIBUTED BY G. B. PRESCOTT, ESQ.

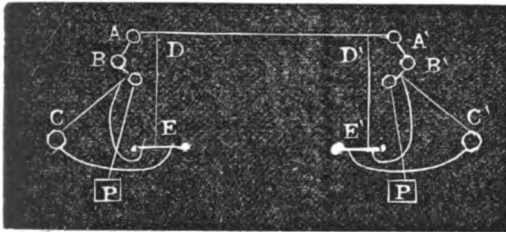
[From the London Telegraphic Journal, May 14, 1864.]

The transmission of messages over a single wire in opposite directions at the same instant, had occupied the attention of the scientific, both in Europe and America; and the problem has been solved, in as many different ways, by no less than five individuals. The following drawing illustrates the method devised by Dr. Gintl, of Germany, which seems to be very simple, and proves, upon trial, to work with entire success.

The apparatus used is that of Professor Morse. The arrangement of the circuit is that technically known as the open circuit.

Let me premise that in transmitting a dispatch by this system, the electro-magnet of the transmitting station does not work—only that of the receiving station is operated by the current. When the key, or transmitter, is at rest, a spring closes the connecting point at the back end, and when it is pressed down by the operator in transmitting a message, the back connection is broken, and the front one established.

I have represented a section of line between London and Liverpool. *A, A'*, are two rheostats in the offices of London and Liverpool, which represent, each of them, the exact resistance of the line wire between these two points. *B, B'*, are electro-magnets of peculiar construction, being so arranged that a current may traverse either half or the whole of the coils, or may traverse one coil in one direction, and the other coil in the opposite direction. *C, C'*, are the batteries; *E, E'*, the keys; and *P, P'*, the ground plates.



Let us now suppose that London wishes to send to Liverpool. The operator at London presses down his key, and the current from the battery, *C*, passes through the key *E*, through the main wire, and thence down the branch wire, *B'*, through the key *E'*, to magnet *B'*, thence through the ground plates, *P'* and *P*, to the magnet *B*, and thus back to its starting point in the battery at *C*. When the current passes through the coil, *B'*, at Liverpool, it operates the apparatus there in the usual manner. But I have not described the entire course of the current. When it reached the junction, *D*, one half of it passed through the rheostat, *A*, through the upper half of the magnet *B*, and thence to its starting point at the battery. It will thus be seen that one-half of the current having passed in one direction through one of the coils, *B*, and the other half in the opposite direction through the other coil, *B'*, that its effect is neutralized, and that no action takes place in the magnet at the transmitting station.

Now let us suppose that London and Liverpool both press their keys down at the same moment, each sending to the other. The current from the batteries, *C* and *C'*, would meet at the junction *D* and *D'*, and neutralize each other, and, consequently, no current would pass over the wire. It would, in fact, be the same as if the wire were actually broken between these points during the time that both keys were pressed down. Under these circumstances the current from the battery, *C*, returns through the rheostat, *A*, through one half of the coil *B*, and thence back to the battery *C*. What takes place at London, of course occurs at Liverpool under the same conditions. Thus

the writing upon the London and Liverpool instruments is actually performed by their own respective batteries, but as this record depends upon the closing of the key at the distant station, it amounts to the same as if done by the battery of the other.

Having now shown how the record is made while the receiving station has his key in its ordinary position of rest, as well as where it is pressed down in the act of transmitting, let us now consider what will be the course of the current when it is in neither of these positions, that is to say, when the back connection has been broken by pressing the lever to make a letter, but before the front contact has been established. We will consider that Liverpool's key is in this position, and that London is writing. In this case the current, on arriving at *D*, does not pass down the branch wire, as there is no outlet for it, but passes on through the rheostat, *A'*, thence through both coils *B'*, to the ground plate *P'*. The current in this case passes not only along the line between London and Liverpool, but also encounters a resistance at *A'*, of equal extent; but this is equalized by passing through both coils of the electro-magnet, *B'*, so that the adjustment of the instrument remains the same throughout.

If this apparatus has not been generally used, it does not arise from its inutility. With a line well constructed and properly insulated, there would be no difficulty in working it. It could not be relied upon where there is heavy escape, and to have entire success the resistance coils should exactly equal the resistance of the line wire, and the magnets be well constructed.

Signals.

F. N. Gisborne, who has for years past made himself conspicuous by his signals for use on board ship, in mines, factories or dwelling houses, has now brought out a method which, for simplicity and efficiency, excels all his previous inventions. First, he used galvanic-electricity, then pneumatic tubes, and compressible air-chambers, both costly and liable to derangement. Now, with a balance-weight and a chain, he accomplishes all he desires with his system of signals. A captain standing on the bridge of a steamer can, by touching the indicator, send an order to the steersman or the engineer, and see at once whether they obey, without changing his position. And that which can be done in a ship can be done in a house, workshop, or mine, and by a simple mechanical arrangement, which can hardly fail to be received with favor. It has been already adopted in the five leading navies of Europe; and the great Prussia iron clad, *König Wilhelm*, now building on the Thames, is fitted with a set of Gisborne's signals, finished in a style which may truly be described as royal.

A magno-exploder, constructed by Breguet of Paris was shown, which will fire a fuse, and consequently a cannon, at any distance from two feet up to two hundred miles.

Clerk Maxwell exhibited a "Wheel of Life," containing what he calls dynamical diagrams, and these, when the wheel is set agoing, produce many remarkable phenomena of curves and their intersections. Thus, in the hands of a philosopher a toy becomes a means of illustrating the laws of curvilinear motion. Teachers of geometry and natural philosophy would find it useful.

N. J. Holmes, who is among the foremost of English telegraphists, exhibited his new magneto-alphabetical telegraph, which is one of the cheapest, if not the cheapest and simplest yet constructed. It comprises two circles of buttons, and the operator has only to touch button after button, and spell out his message as rapidly as he pleases. With this and other instruments before them, government will have a sufficient variety to choose from when they assume control of the telegraphs.

Testing the Continuity.

Among our Chicago items is the following rather suspicious one. Who are these worthy cable layers? Does any body know?

"Among the many parties of visitors from other points in the West was one body of good looking young men, who appeared to be deeply interested in telegraphy, in the first place, and to have participated in the Atlantic cable celebration, in the second. For a long time they remained on a street corner, near the court house, earnestly discussing the question of land and marine telegraphy, and waiting patiently in the meantime for something—Macawber like—to 'turn up.' As a final resort, the entire crowd adjourned to a 'convenient' saloon, and possessing themselves of a few feet of rope, the enterprising young men instituted a series of very pleasing and instructive experiments. They would first stretch a few feet of the rope from chair to chair, as if in the act of laying a telegraph wire; and then would unanimously adjourn to the bar, for the purpose of 'testing the continuity' of the current. A little more rope would be laid down, when it would again become necessary to 'test the continuity.' This highly edifying line of conduct was continued for some time, when all the 'wire' having been satisfactorily adjusted, the amateur operators confined their entire attention to the question of the 'continuity.' At last accounts the 'testing' was being prosecuted with unabated zeal, and with no probable prospect of a speedy termination, inasmuch as the gentlemen engaged in the labor were individually, collectively and unanimously expressing the determination that 'We hic w-hic-out g'home till mor-hic-ing.'"

Telegraph Wires in the Tunnel.

The Western Union Telegraph Company is still continuing the work of improvement in their telegraphic lines leading in and out of the city. The latest improvement proposed is in the wires running westward, and which cross the river to and through the West division. These wires, which formerly ran through the water mains, now run through the tunnel. Over the ventilator, at either end of the river tunnel, a neat tower has been built. The new poles of the company are extended close up to the river bank, and the wires are stretched from them into the top of the tower, where they are fastened to cross arms by insulators, and thence pass down the centre of the tower through the ventilator, and then, turning an angle, are again fastened by a new patent insulator to an iron framework erected by the company, thence along the top of either arch of the roadway, up the ventilator tower shaft, and out to the poles on the West side. Between the arches at the large head lamp of the roadway, an iron frame is constructed, to which the wires will in future be fastened. The wires running through here are at present less numerous than they will be. It is expected that seventy-two wires will be run through the tunnel when everything is completed.—*Chicago Times*.

ALL terrestrial power is drawn from the sun. He is the real magician upon earth. He keeps the sea liquid and the atmosphere a gas, and all the storms which agitate both are blown by the mechanical force of the sun. Thunder and lightning and the *aurora borealis* are his transmuted strength. His energy is poured freely into space, and our world is but a halting place where this energy is conditioned. Here the Proteus works his spells—between his entrance and departure the multiform powers of our globe appear; they are the moulds into which his strength is temporarily poured in passing from its source through infinitude.

Telegraph Base Ball Clubs.

An interesting game of base ball took place on Saturday the 5th instant, at Hamilton, Ohio. The contesting clubs on the occasion being the Night Owls of the Western Union Telegraph office, Cincinnati, and the Resolutes of the former city. Owing to the heavy rains the night previous the grounds were in bad condition for good fielding.

At 1 P. M. the innings having been tossed for and won by the Night Owls, Finlay opened play for the Resolutes by a hot grounder to Spink, which was beautifully stopped but poorly thrown to first, thus giving the striker a life. He and the next two strikers tallied, when Campbell and Laurie were disposed of on tip bounds by Neil, and Boli thrown out at first by E. Baker. Gould was first to the bat on behalf of the Night Owls, but was disposed of at first by Hamill and Moore. Spink, E. Baker and Neil tallied, when Kern and Newton (of "O K" slippers fame) were put out at first by Hamill and Finlay. Score 4 to 3. In the second innings Kern, by two difficult fly catches, disposed of Milliken and Boli, and Potter was captured on foul fly by Spink after the Resolutes had scored seven runs. The Owls in this inning scored five tallies, the outs being Gould on the fly to Laurie, Neil on a tip bound, and Newton at first by Finlay. Score 10 to 8. Game close and exciting. In the next inning by good batting, assisted by some wild throwing, the Resolutes were enabled to pile up nine runs, ere Moore was disposed of on foul bound by Spink, and Milliken and Hamill by flies well taken by E. Baker and Scott. The Owls in this inning could only secure one run, Spink and Neil suffering on first base at the hands of Dick, Imlay and Moore, and Webb being beautifully caught out on the run by Laurie in centre field. One run also was all the Resolutes could obtain in the fourth inning Laurie and Boli being disposed of at first by E. Baker, and Scott and Potter on a foul bound to Neil. One run was all also the Night Owls could get owing to W. Baker's striking out, Newton's being thrown out at first by Milliken, and Webb's being put out while trying to steal home. In the fifth inning, after Boli had been disposed of at second by Spink, and Hamill had been flied by E. Baker, the Resolutes secured five tallies, when Moore tipped out to Neil. In this inning the Owls reached home plate three times, the outs being Neil and Kern on flies to Imlay and Dick, and W. Baker who again struck out. In the sixth inning Potter tipped out, Hamill was disposed of at first by Spink and Scott, and Finlay died on the same base by a beautiful pick up and throw of Kerns, the consequence being a white-wash for the Resolutes, who tried hard to return the compliment but Newton reached home ere Webb was flied by Imlay, Gould and E. Baker being put out at first by Imlay and Moore, leaving the totals 25 to 15 in favor of the Resolutes. The popular superintendent of the district umpired the game admirably, and was greeted with three rousing cheers at the finish. Too much praise cannot be given the Hamilton boys for their gentlemanly treatment of the Owls, an elegant lunch being one of the features of the day. Appended is the score:

RESOLUTES.	O. R.	NIGHT OWLS.	O. R.
Imlay, 2b.....	1 5	Gould.....	3 2
Moore, 1b.....	2 2	Spink.....	1 3
Dick, ss.....	0 4	E. Baker.....	1 3
Milliken, 3b.....	0 2	Scott.....	0 2
Campbell, cf.....	1 4	Neil.....	3 1
Lawrie, cf.....	2 3	W. Baker.....	2 1
Boli, rf.....	4 1	Kern.....	2 1
Potter, c.....	3 2	Newton.....	3 1
Hamill, p.....	3 2	Webb.....	3 1
	18 25		18 15

INNINGS.

1. 2. 3. 4. 5. 6.

Resolutes.....3. 7. 9. 1. 5. 0.—25.
Night Owls.....4. 5. 1. 1. 3. 1.—15.
Scorers.—Messrs. Miller and Brewers.

VOYAGEUR.

Death of C. J. Gaines, of Richmond, Va.

RICHMOND, Va., May 30, 1868.

D. R. DOWNER, Esq., Secretary Telegraphers' Mutual Life Insurance Company, New York.

DEAR SIR: It is my painful duty to announce to you the death of Mr. C. J. Gaines, a clerk in this office and a member of the "Mutual," which occurred at his residence in this city at 9 o'clock A. M., on the 28th instant, after a protracted and severe illness of six weeks' duration, in the 35th year of his age.

Prompt and earnest in the discharge of every duty, and provident for the care of those dependent on him, he was one of the first in this section to avail himself of the benefits of the "Mutual," and while at each recurring death in the institution he mourned the loss of the good and true of our profession, yet he was ever ready to respond at once to the call thus made upon him for the relief of those left without a human helper.

It is thus made both the privilege and the duty of those of us who survive him, and who so deeply lament his demise in the full flush of manhood, to respond with equal readiness and alacrity to the claims of his bereaved ones.

I therefore hope you will inform me at your earliest convenience what forms (if any) are necessary to secure his insurance for the widow. She is left very poor, without the means even to meet the expenses of his burial.

Very respectfully, &c.,

R. M. J. PAYNTER,

Manager.

P. S.—In anticipation of the call you will make upon the members, I enclose you one dollar from each of the members named below:

J. R. Dowell,	E. McCarthy,
Joe. McGovern,	Geo. McGovern,
Wm. S. Taylor,	Geo. B. Gaines,
G. R. Pace,	R. M. J. Paynter.

Monopoly vs. Monopoly.

Mr. Dunn, of Philadelphia, offered the following resolution at a meeting of the National Typographical Convention:

WHEREAS, The Associated Press has virtually decreed that no more newspapers shall be published in the United States, and that those in existence who do not obtain their news through the Associated Press shall be suppressed, thereby lessening the demand for our labor; therefore,

Be it Resolved, That we, the delegates to the Seventeenth session of the National Typographical Union, held at Albany, N. Y., June 7, 1869, representing — States and — Unions, do earnestly ask the Congress of the United States, should the postal telegraph bill come up for action at their next session, that they give it their favorable consideration, thereby increasing the demand for our labor, equalizing the business interests of the country and destroying one of the worst monopolies in existence.

Mr. Troup denounced the Associated Press as the greatest and worst monopoly in the country; and this monopoly was not alone injurious to the printer but injurious to every workman. He wanted these resolutions adopted, and he with others would carry them before the entire workmen of the country and break down this gigantic monopoly. They would go to the Congress of the United States and demand a relief from this great monopoly.

Mr. Corcoran, of Troy, asked if the Associated Press could not bring the same charge against this Union? Are we not ourselves great monopolists, working for our own interests?

Mr. Troup said that this Union did not prohibit any honorable man from coming into it.

Mr. Corcoran.—Does the Associated Press prohibit any honorable man from joining it?

Mr. Troup.—Yes, sir. Mr. Charles A. Dana and others proposed to start a cheap two cent paper in New York, but they were denied admission to the

Associated Press and were obliged to buy the *Sun*, already in the Association, and pay for it \$100,000.

Mr. George, having the chair, said he agreed with all that had been said against the Associated Press, but he doubted the wisdom of endorsing the postal telegraph proposition, which had engaged the attention of the wisest men in the country for years and failed to secure their approval.

Mr. Troup said he would have no objection to refer the matter to a special committee.

Mr. Getchel moved its reference to a committee of five. Carried.

Mr. Corcoran is a sensible man. He put a pin in a bladder and it was no more. To some men every thing is a monopoly which they can not control. Even in religious matters some men are Episcopalians because, as the sailor said, "There is a chance to jaw back." The idea of a postal telegraph helping the Typographical Union is very spiritual, a decidedly elevated idea. The buying of the *Sun* was a ten strike for Mr. Dana, and the payment of \$100,000 does not prevent that paper making money at two cents.

Scintillations from Scientific Authors.

BY MADISON BUELL.

Lava has been known to flow over a layer of ashes, underneath which was a bed of ice. The non-conductivity of the ashes saved the ice.

The heat emitted from the sun in a year is equal to that which would be produced by the combustion of a layer of coal seventeen miles in thickness!

Every force upon earth, electricity, magnetism, light, heat, &c., is definitely and equivalently convertible into each other, and where experiment does not give a full equivalent, it is because the initial force has been dissipated, *not lost*, by conversion into other unrecognized forces.

Electricity is that affection of matter or mode of force which most distinctly and beautifully relates other modes of force, and exhibits, to a great extent in a quantitative form, its own relation with them and their reciprocal relations with it and each other.

M. Arago was the first to observe that a wire, when traversed by a powerful current, and plunged into iron filings, retained around it a considerable quantity, which formed a cylindrical mass of the thickness of a quill.

Magnets, whose coils are long, discharge their magnetism much less easily and slowly than those whose coils are short.

The good conductor of heat is the good conductor of electricity, and the bad conductor of heat is the bad conductor of electricity.

Molecular motion can travel with equal and even greater velocity than light, and is shown by the rapidity with which electricity traverses a metal wire where each particle of metal is undoubtedly affected.

It has been observed that wires which have for a long time transmitted electricity, have their texture changed and are rendered brittle. In this observation, however, though made by a skillful electrician, M. Peltier, the effects of exposure to the atmosphere, to changes of temperature, &c., have not been sufficiently eliminated to render it worthy of entire confidence.

Any force arbitrarily selected can mediate or immediately produce and be merged into the others.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1897. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address— JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JUNE 15, 1869.

Telegraph Statement and Dividend.

The Western Union Telegraph Company have declared a dividend of two per cent. from the earnings of the six months ending May 1, payable on and after July 20th. The transfer books close June 21. The dividend is at the rate of ten per cent. per annum on the present market value of the stock. The actual earnings during the year have exceeded six per cent., over two per cent. of which has been used to reduce indebtedness, and extend the company's lines. During the past six months the indebtedness has been reduced \$150,000, and during 1868 5,000 miles of wire have been added to the company's property.

Some, no doubt, in looking over the statement of business which will be found elsewhere, will express disappointment that the advance in receipts is no greater than appears. It should be a cause of increased confidence that, notwithstanding the large reduction on many of the most important tariffs, the receipts exceed those of the previous year. The general commercial business of 1867-8 was unusually active and vigorous. It illustrated its vigor in a large and free use of the telegraph. The telegraph is the barometer of the national industry. The past year has not been marked with the same animation. It has been a year free from speculation or excitement. It has been a year of careful husbandry of the fruits of former successes, yet of fair, healthy, careful enterprise. The use of the telegraph has been in correspondence with this state of industrial care and health. Yet its sphere has been greatly enlarged. Five thousand miles of wire have connected hundreds of new offices, and added conveniences to the old. The reduction of many important tariffs has led to wider and more liberal employment of its wires. The Company stands to-day stronger, better in hand, in closer correspondence with public sentiment, in healthier fulfillment of its public trust, in well and broad based prosperity than ever. The simple instincts of self-interest, the truest and most powerful motive which governs enterprise, even admitting the soullessness of corporate bodies, is steadily adapting this vast web of wires to the multiform necessities of the nation on principles of justice and liberality.

It is asked, "why do the expenses of the year show an increase proportionally greater than that of the receipts?" The causes are various. In the opening of new lines to reach new communities, the receipts increase only with the education of the people to the use of the telegraph. At the first, in newly opened regions, expenses almost always preponderate. Some of the most productive offices a few years ago scarcely paid expenses. These new and distant communities must be reached even at an initial loss. The character of the whole enterprise demands this as an act of good faith to society. In this policy the Company is fixed and united. Its triumph is in the widest offer of its wires to all communities. The telegraph does not precede civilization, but it must attend it, for it is, in itself, one of its most potent agents. The money thus spent returns in time four-fold. Thus enterprise and liberality shake hands with self-interest and success.

During the last half year, also, a large share of the usual outlay assigned to the Fall months has been consumed in an energetic renewal of large stretches of imperfect line, preparatory to the Fall business, which it is proposed to

have done easier, better, more promptly than ever. Everywhere has work been prosecuted with reference to this determination. The skill of the General Superintendents has been backed by the energy of the executive, and never have telegraph lines entered the Summer solstice with equal capacity for enlarged and liberal use of their wires.

The telegraphic property in the United States January 1, 1869, as compiled from the most authentic sources, was as follows:

MILES OF LINE.

Western Union Telegraph Company.....	50,760
Lines working in connection therewith.....	6,417
Other lines.....	6,773

MILES OF WIRE.

Western Union Telegraph Company.....	97,216
Lines working in connection therewith.....	8,077
Other lines.....	9,100
Skilled persons in the employ of the Western Union Telegraph Company.....	6,389
Offices.....	3,331

There is every indication of a growing confidence in the stability of the Western Union Telegraph Company and a clearer perception of its policy. Its stock is finding its way into the hands of men who appreciate its value, and whose influence is a guarantee of stability and success.

Induction.

A critic who signs himself "Induction," but whose identity, by no process of induction known to us are we able to recognize, undertakes to expose the fallacy of Mr. Prescott's recent article on the working of wires during auroral or magnetic storms. It is very important that a critic should clearly perceive the subject of his criticism, lest he be found discussing a case which has not been presented, and has no existence save in his own imagination. This is exactly what "Induction" has done. We have no particular business to tell him of it, but the marked personality of his criticism, its wasted use of good English to prove that Mr. Prescott has stultified himself in theories he never presented, seems to call for our interference in a brief article, and gives us an opportunity to say a word on the general subject.

If "Induction" will again read Mr. Prescott's article, he will find that no theory has been advanced at all, but an experiment stated. The only point which at all seems like theorizing is a reference to one of the simplest facts known to every boy who knows how to put a battery together, or arrange them in connection with the wires they charge. That is, while two wires, earthed at two distant cities, with main batteries on each, and with like polarity, will work with perfect harmony and without interference, the instant the termini of these wires at one of the cities, or at both, are disconnected from the earth and connected with each other, action ceases, the batteries neutralizing each other. Is there anything mysterious in this? What has such a statement as this to do with a shunt? This well known fact was applied in the illustration of the Auroral waves, which by depriving the wires of one earth connection by uniting two wires in the manner described, neutralized their action, if any action was possible, except in the very limited degree to which all ferruginous matter is excited which has contact with electric atmosphere. It simply took the circuit from them, they had no medium for return, and the action was nil. There was no action at all.

We cannot find occasion to change our own statement that the Auroral action on the wires is caused by solely terrestrial electric disturbance, and that earth connections are essential for their exhibition. Humboldt says: "Recent experiments have failed to show a connection between polar light and atmospheric electricity, since, during the finest Auroras, no change has been detected in very sensitive electrometers. On the other hand, all of the three manifestations of terrestrial magnetism, the declination, inclination and force, are affected in a very sensible manner, the same end of the needle being sometimes attracted and sometimes repelled in the course of the same night." The luminous phenomenon is regarded by Humboldt as the restoration of the equilibrium temporarily disturbed, the termination of a magnetic storm.

The Aurora is to be regarded as the result of a state of telluric activity—excited to the production of a luminous phenomenon. Wires without earth connections are not appreciably affected by them.

"Induction" seems to intimate that wires have been worked by atmospheric electricity without earth connections. We would be glad to learn of one clearly defined case, except that there is a slight current observable in wires whose termini have different altitudes. That current is too slight to affect the general statement. The Auroral current we believe to affect the telegraph wires more or less at all times when they are in their usual condition with their ordinary earth connections, and not otherwise to any appreciable extent. Metallic circuits are not appreciably affected by lightning.

We take occasion to say to critics that in the treatment of subjects in which so much has yet to be learned, it is both wise and manly to be modest in the claim of superior knowledge, or in the assertion of its absence in others.

Rights of Foreign Companies to Land Cables on the Shores of the United States.

By the decision of Attorney General Hoar, which will be found elsewhere, the claim of exclusive admiralty and maritime jurisdiction by the Federal Government asserted by Congress is maintained. The jurisdiction is, by the language of the Constitution, exclusive, and has been uniformly sustained in all the great cases where the question has entered into judicial proceedings. Interpreting "Commerce between nations" to mean, according to Chief Justice Marshall, not merely traffic, but intercourse, the authority of Congress "to regulate commerce" is decided by the Attorney General to apply to cables as a means of intercourse. Thus, with exclusive maritime jurisdiction for at least a league from shore on the one hand, and the regulation of commerce with foreign nations on the other, it is made obvious that no cable can be landed on the shores of the United States, from the shores of any foreign nation, without Congressional authority. It is equally clear that no State can grant this right. The Attorney General, also, regarding the means of international intercourse by cables as of vital public importance, in the use of which the question of even national existence may sometimes depend, emphasizes the right of Congress to deal exclusively with all applications to land cables on our shores in the clear, simple, terse decision which we commend to our foreign friends. It seems hard for Europe to learn that this is a compact nation having national rights and federal unity. No American would dream of landing a cable on the English coast without an Act of Parliament in his hand to show his right so to do; but, these Europeans have, somehow, imbibed the notion that, in America, it is only necessary to buy an acre of sand coast at Cape Cod or Cape May, and get consent of a State Legislature, and all is right. We welcome a free and wide intercourse with all the world, but we want it on a good, permanent, national understanding and consent.

Ha! Ha!! Ha!!!

From several sources we have received the following and have enjoyed a good laugh over it.

One day last week the manager of the telegraph office at Piqua, O., sent a message addressed to a person who resided near another office, which, from motives of delicacy we do not name, directing it to be dropped in the post office, probably because too distant for delivery. What was Piqua's amazement on receiving the following office message, we leave to all who read:

"Piqua, O., Office—

"No such post office in Delaware county as Dropin Post Office. Please give better address!"

Don't you believe the boys along that wire had a laugh that day over the Dropin Post Office?

"Do you charge for marriage notices?" writes a happy man to us. We answer no, we are only too happy to announce the formation of clubs for the perpetuity of the race of all good telegraph men. Nay more, if after a reasonable time, not sooner than the legal period, our happy advertisers are able to announce a dividend, however small, we shall be most happy to announce the same to a smiling world. If the dividend be double, we promise a special note thereof.

The Atlantic Cables.

We are glad to welcome home our friend Cyrus W. Field, Esq. The effects of the injuries received just before his departure for Europe have almost entirely disappeared, and Mr. Field looks less like "retiring to a farm" than ever.

We are indebted to him, among other things, for the details of the Atlantic Telegraph business under the various tariffs which have been adopted, the result of which must be especially gratifying. The revenues have not been materially increased by three successive reductions of tariff, but the public use of the cable, as will be seen, has been greatly enlarged. To appearance, nothing more can now be desired. Yet time reveals her own necessities, and greater things are no doubt in store for us. In this we have confidence, that as, steadily and carefully, the tariff has been reduced to meet the widened and widening demand for international communication, without injury to the enterprise as an investment, so, in the future, we believe wisdom and liberality will continue to guide the counsels of those who manage its affairs. The marvellous condition of the cables themselves, and their increased perfection as conductors, encourages the exercise of great liberality.

Number of Messages and Receipts Accruing to the two Cables between Valentia and Heart's Content under the different tariffs.

STATISTICS OF TRAFFIC.

Number of Messages per Month.	Daily Average No. of Messages	GROSS RECEIPTS.	Average Am't per day.
1104 837 881	29	Aug., 1866, under £20 Tariff *£560 Sept. " " " 456 Oct. " " " 491	£506
1530 1582 1686 1764 2147 2624 2262 1843 1432 1693 1860 2506 2292	64	Nov. " £10 " 502 Dec. " " 493 Jan. 1867 " 466 Feb. " " 549 March " " 666 April " " 722 May " " 705 June " " 597 July " " 542 Aug. " " 401 Sept. " " 515 Oct. " " 715 Nov. " " 671	£579
3901 4739 5128 4507 4920 3838 2684 3217 3740	131	Dec. " £5.5. " 642 Jan. 1868 " " 756 Feb. " " 860 March " " 707 April " " 718 May " " 550 June " " 447 July " " 490 Aug. " " 553	£636
5063 6341 6977 6662 6638 6853 7329 6760 7239	218	Sept. " £3.7.6. " 501 Oct. " " 614 Nov. " " 670 Dec. " " 635 Jan. 1869 " 645 Feb. " " 746 March " " 696 April " " 680 May " " 699	£653

"On the 1st of June, 1869, the tariff on Atlantic cable messages was reduced between any telegraph station in Great Britain and Ireland and New York, from £3. 7s. 6d. for ten words, and 6s. 9d. for each additional word, to £2 for ten words, charging for address and signature, and 4s. for each additional word. An important reduction was also made for newspaper press messages, and all political and general news conveyed from either side of the Atlantic made half rates, thus practically reducing press messages from 6s. 9d. to 2s. a word.

* During this month the N. Y. Herald transmitted an average of over £100 per day, and many persons sent messages as it was a novelty.

† During this month the U. S. Government messages averaged over £100 per day.

‡ During these months there was extraordinary excitement in cotton, which fluctuated over 100 per cent. in Liverpool.

General Smith, President of the International Oceanic Telegraph Company, is now in England and in treaty with the Government and eminent electricians for the laying of submarine cables between Cuba, Jamaica and Aspinwall on the one hand, and Cuba, Hayti, St. Thomas, Barbadoes and Demerara on the other.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
JUNE 5th, 1869.

EXECUTIVE ORDER NO. 74.

ANSON STAGER,
THOS. T. ECKERT,
JNO. VAN HORNE. } General Superintendents.

Franks of this Company, limited to territory North of and bounded by the Ohio River, will be treated as including the Cities of Louisville, Ky., and St. Louis, Mo.

(Signed) WILLIAM ORTON,
President.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
JUNE 2, 1869.

Notice is hereby given, that the Annual Meeting of the Stockholders of The Western Union Telegraph Company will be held at the Executive Office of the Company (145 Broadway), in the City of New York, on the second Wednesday (14th) of July, 1869, at twelve o'clock, noon, of that day.

Notice is also given, that the Board of Directors have this day declared a dividend of two dollars a share on the Capital Stock of the Company, from the earnings for the six months ending June 30th, instant, payable at the office of the Treasurer, 145 Broadway, on and after July 20th, 1869. The transfer books will be closed on the afternoon of the 21st instant, and opened on the morning of the 21st July.

Stockholders can apply for their dividends personally, or checks will be sent them upon their written request, or they can draw for the same through the banks where they do their business.

By order of the Board,
O. H. PALMER,
Treasurer.

Rule 28½.

We are requested to call attention to Rule 28½, in the Revised Regulations of the Western Union Telegraph Company. The route of a message from a connecting line decides its tariff, and unless the name of the connecting office is given, the check is not only liable to be incorrect, but the wrong office may be checked. All these irregularities cause correspondence and multiplied labor, which can be avoided by attention to the rule referred to. When a message is received from a connecting line to be forwarded, state distinctly the name of the office at which it was received.

While we are about it, we take occasion again to direct attention to a request, often made, that messages for large cities should have a full address. This is especially needed in messages coming to seaboard cities. Unless this request is heeded, delay and disappointment are always liable to occur. Demand and send a full address. He that hath ears to hear let him hear—and she also.

Recreation.

Health is happiness. So said George Combe. We believe him. Health is wealth. Health is better to some men than the Dictionary or a collegiate education. It gives sense. Good bowels give good judgment and healthy theology. We are in favor of and admire health wherever it is visible. The laugh of a healthy man is better for a dyspeptic to inhale at both ears until it starts reciprocal cachination, than any number of grosses of Brandreth's Pills or Plantation Bitters 1860 X, taken in between the teeth.

So we are glad to hear from our old friend "Voyageur," that the telegraph boys are at base ball again. It is a good thing to do. It is exercise for mind and muscle. Superintendent Williams, of Cincinnati, approves it, and therein shows himself a scholar. We are told he knows how to hold a bat himself. Of course he can, he is an Owl. Base ball makes us restive in this easy chair, and causes it to feel very like a plank. We wish we were an Owl also. Tumble in boys; good play will insure good work. The Telegraph Company needs sound men. Base ball is a prime juvenator and restorer.

UNPARALLELED SUCCESS.

THE FIRST EDITION DISPOSED OF IN FOUR WEEKS.
SECOND EDITION NOW READY.

THE STANDARD AMERICAN WORK ON THE TELEGRAPH.
MODERN PRACTICE

OF THE
ELECTRIC TELEGRAPH.

A HAND-BOOK FOR ELECTRICIANS AND OPERATORS.

1 Vol., 8vo.

PROFUSELY ILLUSTRATED.

BY FRANK L. POPE.

This book supplies what has long been recognized as the great desideratum in American Telegraphic Literature. It is a THOROUGHLY PRACTICAL TREATISE,

and should be in the hands of every Electrician, Superintendent, Operator, Line Builder, Repairer and Batteryman. It contains full descriptions and explanations of all the

MODERN IMPROVEMENTS IN TELEGRAPHY, which stood the test of actual experience. The work also contains the new system of

TESTING BY MEASUREMENT,

which has been employed with great success upon the Atlantic and other cables, and more recently upon land lines.

The Appendix contains a large amount of useful and practical information, formulas, tables, &c., which have never before been brought together in a convenient and accessible form. The work has been freely illustrated, wherever required, with

ELEGANT ENGRAVINGS,

most of which have been engraved expressly for its pages by the best artists.

WHAT LEADING ELECTRICIANS AND TELEGRAPHERS SAY OF IT.

Prof. S. F. B. MORSE writes: "I have had time only cursorily to examine its contents, but this examination has resulted in great gratification, especially at the fairness and unprejudiced tone of your whole work. Your illustrative diagrams are admirable, and beautifully executed."

"I think all your instructions in the use of the telegraph apparatus judicious and correct, and I most cordially wish you success."

Gen. ANSON STAGER, General Superintendent of the Central Division of the Western Union Lines, writes:

"I feel assured that it will prove of great value to all interested in the science or practical details of the Electric Telegraph, and supply a deficiency that has long existed. A familiarity with its pages will, I have no doubt, render your work standard authority among practical telegraphers in this country on all matters concerning the Electric Telegraph of the present day."

Many other highly complimentary letters have been received from Mr. J. VAN HORNE, General Superintendent of the Southern Division, Western Union Co., and others, which want of space prevents publishing.

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(From the N. Y. Herald).

"This is an admirable work. * * * We know of no other work of the kind so well adapted as this is to all who desire to become intimately acquainted with the wonderful science of the Electric Telegraph."

(From the N. Y. Sun).

"An excellent work by FRANK L. POPE, a gentleman whose long experience fully qualifies him for the duty he has performed. * * * The book will be exceedingly valuable to all who are studying electrical science and the art of telegraphing."

Packard's Monthly says his book is full of that kind of information most prized by practical operators, and will find its legitimate place in the working offices.

The work has been very generally and favorably noticed by the press.

Notwithstanding the great expense incurred in the publication of this work, it is offered at the very low price of

\$1.50.

On receipt of the price of the book, it will, if desired, be forwarded by mail, post-paid, to any part of the United States or the British Provinces. Orders should in all cases be accompanied by the money, to insure prompt attention, and if sent by Post-office Order or Registered Letter, will be at the risk of the Publishers.

Orders may be sent to FRANK L. POPE, Box 6133, or to the Editors of the JOURNAL OF THE TELEGRAPH, THE TELEGRAPH, or RUSSELL BROTHERS,

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TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
JUNE 15, 1889.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since June 1, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Allegheny Springs, Va., tariff same as Christiansburg, Va.
Booneville, Mo. Offices having Illinois and Mississippi maps will use map tariff, all other offices will add 80c. to St. Louis, 1.30 to Chicago or 1.05 to Omaha, taking as the rate the lowest amount after adding.

Cresson Springs, Pa., re-opened, tariff same as heretofore.
Cromwell, Iowa, tariff same as Osceola, Iowa.
Denver, Ill., tariff same as Carthage, Ill.
Elliston's, Ky., tariff same as Falmouth, Ky.
Jordan's white Sulphur Springs, Va., tariff same as Winchester, Va.

Neponset, Mass., tariff same as Harrison Square.
Inwood, Ind., tariff same as Bourbon, Ind.
Norris, Ill., tariff same as Bement, Ill.
Norris, Ill., tariff same as Farmington, Ill.
Martinsville, Ind., tariff 5c. more than Indianapolis from offices East and North thereof, and 5c. less from offices West and South.

Oakland, Md., re-opened, tariff same as heretofore.
Princeton, Ark., tariff same as Pine Bluff, Ark.
Bynd Farm, Pa., tariff same as Rouseville, Pa.
Point of Rocks, Wy., re-opened, tariff same as heretofore.
Sharon Springs, N. Y., re-opened, tariff same as heretofore.
Shortsville, N. Y., tariff same as Geneva, N. Y.
Sparta, Ky., tariff same as Midway, Ky.
Trenton Falls, N. Y., re-opened, tariff same as heretofore.
Walton, Ky., tariff same as Butler, Ky.
Worthville, Ky., tariff same as Bagdad, Ky.
Bethlehem, N. H., re-opened, tariff same as heretofore.
Boar's Head (Hampton Beach), N. H., re-opened, tariff same as heretofore.

Crawford House, N. H., re-opened, tariff same as heretofore.
Glen House, N. H., re-opened, tariff same as heretofore.
Profile House, N. H., re-opened, tariff same as heretofore.
Jackson, N. H., re-opened, tariff same as heretofore.
Rye Beach, N. H., re-opened, tariff same as heretofore.

OFFICES OPENED ON OTHER LINES.

Clifton House, Niagara Falls, tariff 35 and 2 from Buffalo, N. Y. Check Buffalo.
Harwood, Ont., tariff 35 and 2 from Buffalo. Check Buffalo.
Pequot House, Conn., tariff 25 and 2 from New London, Conn. Check New London.

OFFICES CLOSED.

West Point, Ark.; Jacksonville, Ala.; Summit, Miss.; Fort Steele, Wy.; Black Buttes, Wy.; Trempleau, Wis., and Cranford, N. J.

TO OFFICES "HAVING SPECIAL SHEET A."

Royal Centre, Ind., same as Logansport, Ind.
Seneca Falls, N. Y., same as Clyde, N. Y.

GENERAL INFORMATION.

Greensburg, Pa., in last JOURNAL should be 45 instead of 50c. from New York, and Weola, Iowa, should read Neola, Iowa.
The tariff to Dunmore and Hyde Park, Pa., will hereafter be same as Scranton, Pa.

WILLIAM ORTON, President.

Married.

May 17th, at the residence of the bride's step-father, D. C. Chidney, by the Rev. Dr. Massey, Sam J. Hoffman, of the Western Union Telegraph Company, to Miss Emma E. Pierce of Mobile.

On Tuesday afternoon, May 25, 1889, at the First Presbyterian Church, Des Moines, Iowa, by the Rev. A. A. Dinsmore, Mr. Anthony P. Prichard, Manager of Western Union Telegraph Office, Granville, O., formerly Superintendent of Telegraph and Train Dispatcher Ky. C. R. B., to Miss Louisa A. Leas, daughter of Hon. Charles A. Leas of Fanchal, Madeira Islands.

In Germantown, Ohio, June 2d, by Rev. J. Stierwalt, Mr. John W. Ford, Manager, Office of Western Union Telegraph Company, Fort M'Pherson, Neb., to Miss Celia Kaucher of Germantown, O.

Telegraphers' Mutual Life Insurance Association.

ASSESSMENT No. 8.

The death of our brother C. J. Gaines, of Richmond, Va., as announced in the letter of Mr. Paynter, the manager of the Richmond office, calls for a remittance of one dollar from every member whose certificate dates previous to May 25th, at which time the number of certificates issued was 550.

The case of Mr. Gaines' family is one which again illustrates the usefulness of the association in providing for those who are left without any means to provide even the decencies of burial. Too many are just in this condition, even where the heads of the family are temperate and consistent in their expenditures. Brothers! here is another deserving family to whom you have ministered in their darkest hour. The instant the death was known, three hundred dollars was at once remitted, and the balance of nearly \$200 soon afterwards. Let your remittances be made promptly, addressed D. R. Downer, Secretary, 145 Broadway, N. Y., Box 3,393.

ASSESSMENT NO. 8.—ASSESSMENTS RECEIVED.

D. A. Van Ham,	John C. Thomas,
C. C. Crow,	John Coyne,
J. Horne, Jr.,	L. P. Crum,
Mary E. Houseman,	Judson Babcock,
William Macintosh,	J. H. Dixon,
J. C. Christie,	W. J. Bodell,
C. E. Smith,	G. W. Bullock,
D. P. Livermore,	Jas. McGovern,
J. M. Nye,	W. S. Taylor,
William Cook,	G. R. Pace,
J. R. Dowell,	E. McCarthy,
C. B. Munday,	Geo. McGovern,
Madison Buell,	Geo. B. Gaines,
Harry H. Henry,	R. M. J. Painter.

ASSESSMENT NO. 7 RECEIVED TOO LATE FOR LAST PAPER.

Thomas Dolan,	A. A. Howard,
D. H. Fitch,	Wm. Blanchard,
	G. M. Hubbard.

The sale of "Pope's Practice" continues as brisk as ever, and has proved a very practical success. To those who desire it, we send copies on the receipt of the price—\$1.50.

The New Tariff Book.

Managers and receivers will be glad to hear that the new tariff book containing tariff to all Western Union and "other line" offices, together with rates to Europe and Cuba by the cables, is nearly completed and will be issued very soon.

The Future American.

What will be the size, color, religion and physique of the future American, not even the gifted seer, who reveals the future at the moderate price of fifty cents a revelation, can even wildly guess. Mormonism in Utah, Paganism in California, Calvinism in the Eastern States, and Don't-care-a-darn-ism in the Middle States, will make a tremendous jumble when the materials, as they inevitably shall at some future time, become somewhat mixed. Shall stubtoes and almond eyes affect our belles as now do the golden locks and Hottentot protuberance? Will the Oriental blood, destined to be mixed with the Anglo-Saxon-Celt-Indian Negro puddle, color our future legislation, and tone down the angularities of our institutions? Physiologists of the old-granny school are in the habit of reiterating at every opportunity that the average American is abnormally a busy individual, and needs rest for his overstrained nerves. Perhaps the vast importation of biped Asiatic languor is a wise dispensation of Providence, meant to allow us that habitual laziness which we can not now enjoy.

However, thank Heaven! before the crop of Chinese Americans begins to exercise a perceptible influence on our national institutions, we of the present day will be far above or below all these brain bewildering enigmas.

CHESTER, PARTRICK & CO.,

Manufacturers and Dealers in all kinds of

TELEGRAPH INSTRUMENTS AND SUPPLIES.

38 SOUTH FOURTH STREET, PHILADELPHIA.

Now offer for sale, or will manufacture to order,

REGISTERS,

RELAYS,

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LIGHTNING ARRESTERS,

SOUNDERS,

SWITCHES.

And every variety of Instruments now in use. Among the supplies constantly kept on hand, are the following:

Battery Materials of all kinds, Line Wire, all sizes, Brackets, Insulators, Medical Batteries (induced or direct current), Fire and Burglar Alarms for Banking Houses and Private Residences, as well as for Cities and Towns; also, Contractors for the Construction, Reconstruction and Repair of Telegraph Lines throughout the United States.

All the Standard Works on Telegraphy furnished at the lowest prices, among which is the latest work of

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH.

By Frank L. Pope.

Also, Electro-Platers' Batteries and Materials, Blasting Apparatus, Cartridges and Patent Portable Machinery for the manufacture of Nitro Glycerine.

All orders executed with promptness, and satisfaction guaranteed in the quality of articles supplied.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

Agents in New York,

MESSRS. L. G. TILLOTSON & CO., No. 11 Dey street.

THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with a

GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high one Norway Iron Wire, in the same locality, and strung at the same time, was broken in several places.

Address—

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

ALANSON GARY, Treasurer.

No. 234 West 29th street,
New York.

Or Agents of the Company.

FINANCIAL REPORT

OF

THE WESTERN UNION TELEGRAPH COMPANY.

Treasurer's Office, 145 Broadway,
New York, June 15, 1869.

To the Stockholders of the Western Union Telegraph Company:

The Treasurer being required by the By-Laws of the Company to make a report to the Stockholders at the annual meeting as to the financial condition of the Company, has prepared his annual statement from May 1, 1868, to May 1, 1869, in advance of the Stockholders Meeting to be held on the 14th of July next, and submits the same herewith for the convenience of such of the Stockholders as may not be able to attend the meeting in person, viz.:

No. 1.

PROFIT AND LOSS ACCOUNT, YEAR ENDING MAY 1, 1869.

	Gross Receipts.	Reconstruction.	Net Profit.
May, 1868.....	\$597,374 47	\$349,165 41	\$248,209 06
June, 1868.....	579,911 00	353,375 50	226,535 50
July, 1868.....	601,730 61	396,163 66	205,566 95
August, 1868.....	602,304 73	375,452 03	226,852 70
September, 1868.....	630,665 36	372,197 50	258,467 86
October, 1868.....	680,311 81	410,604 17	269,707 64
November, 1868.....	607,728 05	383,024 46	224,703 59
December, 1868.....	634,630 11	398,342 96	236,287 15
January, 1869.....	606,051 90	349,578 70	256,473 20
February, 1869.....	575,249 07	354,855 72	220,393 35
March, 1869.....	594,279 84	373,645 09	220,634 75
April, 1869.....	602,827 30	383,844 17	218,983 13
	\$7,313,064 25	\$4,501,249 37	\$2,811,814 88
Net Profit 12 months to May 1, 1869, as per table...			\$2,811,814 88
Surplus as per published report, May 1, 1868.....			897,308 88
Value of Supplies on hand for Distribution, May 1, 1868.....			129,028 81
Total.....			\$3,838,152 57

Of this total there has been appropriated for :

DIVIDEND ACCOUNT.

Dividend No. 26, July, 1868..	\$807,850
Dividend No. 26, Jan., 1869..	811,476
Back Dividends on United States Stock.....	1,676
American Dividend of Sept., 1865, to Southern Stockholders.....	1,224 1,622,226

SINKING FUND.

Twelve months @ \$30,000 per

month..... 240,000

INTEREST ON BONDS.

On Western Union Bonds of

1875.....\$322,659

On American Bonds of 1873.. 6,265 329,924

BOND AND MORTGAGE.

Payment on account of Hol-

lister Building, Buffalo.. 5,000

NEW PROPERTY.

Construction Account.....\$441,757 56

Purchase of Sundry Telegraph Stocks..... 145,170 60

Purchase of Real Estate.... 26,580 55 613,508 71

Sundry uncollectible accts.

charged to Profit and

Loss..... 24,976 43

Total appropriations.. 2,838,636 14

Balance, unappropriated profits, May 1, 1869.....\$1,002,517 43

No. 2.

TABLE OF ASSETS AND LIABILITIES, MAY 1, 1869.

	Assets.	Liabilities.
Cash.....	\$262,321 07	
Loans on Call.....	469,514 81	
Bonds and Bills Receivable.....	60,697 70	
Government, Press & Express Accts.	21,986 78	
Due from Russian Ext. Co.(advances).	226,450 64	
Due from Railroad & Telegraph Co.'s.	8,040 87	
Due from Offices and Supt's.....	143,771 16	
Commercial News Department.....	5,031 10	
Sundry Personal Accounts.....	6,166 38	
Supplies on hand, undistributed....	141,818 07	
Due on Dividend Account.....		\$45,806 43
Due on Interest Account.....		172,172 50
Due Railroad & Telegraph Co.'s....		62,154 37
Due for Internal Revenue Tax....		16,326 99
Due Offices and Superintendents...		3,694 41
Due on Miscellaneous Accounts....		13,642 50
Sinking Fund. Balance unexpended		29,983 95
		\$343,281 15
Balance Assets over Liabilities, equal		
Balance Unappropriated Profits, per		
Table 1.....	\$1,002,517 43	
	\$1,345,798 58	\$1,345,798 58

No. 3.

CAPITAL STOCK.

Capital Stock issued May 1, 1868, as per Published Report.....

\$41,022,700

SINCE INCREASED.

By Exchange for 41 Shares American Stock. \$12,300

do 396 Shares U. S. Stock..... 26,400

By Fractions Converted..... 1,700 \$40,400

Total Capital Stock issued May 1, 1869..... \$41,063,100

Of this there is owned by the Company.... 502,000

Balance on which Dividends are payable... \$40,561,100

No. 4.

BONDED DEBT.

Bonds outstanding May 1, 1868..... \$4,890,500

Bonds of 1875, since purchased and canceled..... 256,400

Balance of Bonded Debt, May 1, 1869.... \$4,634,100

Maturing as follows ;

In 1873..... 89,500

In 1875..... \$4,544,600 \$4,634,100

No. 5.

PROPERTY ACCOUNT.

Total Property Account,

May 1, 1868, as per

published report....

\$47,877,350 61

SINCE ADDED.

By exchange of stocks

as per Stock Account \$38,700

Less Company's Stock

issued in exchange for

Fractions canceled.. 600

\$38,100

By application of Profits:

For Construction..... 441,757 56

For purchase of Tele-

graph Stocks..... 145,170 60

For purchase of Real

Estate..... 26,580 55

613,508 71

651,608 71

Total Property Account, May 1, 1869.....\$48,528,959 32

STOCK, BOND AND PROPERTY BALANCES, MAY 1, 1869.

	Assets.	Liabilities.
Telegraph Lines, Equipment, Franchises, etc.....	\$47,854,408 65	
Western Union Telegraph Stock owned by Company, cost.....	488,530 50	
Productive Stock in other Telegraph companies, cost.....	53,261 81	
Real Estate, cost.....	132,758 36	
Capital Stock.....		\$41,063,100
Fractional Shares.....		12,810
Bonded Debt.....		4,634,100
Bond and Mortgage, Buffalo Property.....		10,000
Profits used for purchase of Property and Redemption of Bonds		2,808,949 32
		\$48,528,959 32

O. H. PALMER,
Treasurer.

The New Atlantic Cable.

"The French Cable," as it is familiarly called, has been made, and will be laid from English ships, by Englishmen, the Telegraph Construction and Maintenance Company having undertaken the contract, Sir Samuel Canning being the engineer-in-chief of the expedition, and the Great Eastern having been chartered for the work.

The present cable is some twelve hundred miles longer than either of its predecessors; it is divided into several sections, and has been manufactured at the rate of 150 miles a week ever since the contract was accepted.

The Great Eastern carries 2,752 miles, or about 400 more than when it left with the Anglo-American Cable—its vast receptacles being made still vaster, and its main tank considerably enlarged. With this cargo the great ship designed to leave her present resting place in the Medway about the 10th of June, and proceed to Portland. Here a few days will be spent in taking in coal, after which she will go to an appointed spot some five and a half miles from Brest. One of the vessels of the expedition (the Chiltern) will in the meantime have laid the heavy shore end, and this will be buoyed out at sea at the distance named. The Great Eastern will, somewhere about the 20th of June, pick it up, and after splicing and testing, will set about her regular work of cable-laying, under Sir Samuel Canning and his staff. She will be accompanied by the Scanderia, a fine vessel of 1,800 tons and 370 feet long, now lying alongside her in the Medway, and by the Chiltern, both ships being fitted up with grappling irons, buoys, and picking-up machinery, which are identical in every respect with those on board the Great Eastern herself. It will be remembered that in Mr. Deane's narrative of the expedition of 1866 the parts played by the ships Albany and Medway, during the search for and grappling with the lost cable of the preceding year, were of the greatest importance. It is intended that the Scanderia and the Chiltern shall be equally serviceable in case of need.

Some eighteen days will be occupied by the Great Eastern in the voyage from Brest to St. Pierre; and immediately on the line being laid between these two places, the other cable-laying vessel will carry on the remainder of the work. For in addition to accompanying the monster vessel as an escort, and giving her assistance should she require it, the Scanderia, the Chiltern, and another ship, the old William Cory, will each bear portions of the cable across the Atlantic. The latter proceeds to St. Pierre early in June, and having laid a shore-end there will buoy the course and wait the arrival of the Great Eastern. This over, Sir Samuel Canning will leave the latter ship, which will return to England forthwith, and will take his place on board the William Cory. Another shore-end, of course in direct communication with the line to Brest, and one hundred and seventy-four miles of cable will be laid. Then Sir Samuel Canning changes ships again, and splicing this portion with that on board the Scanderia, proceeds on board the latter vessel to lay 450 miles more on the way to Boston. The Chiltern and her cargo are called into requisition next, and another splice made. The 152 miles added now carry the cable direct into Boston, and the line will be thus made complete between the latter place and the French port.

After St. Pierre the real work is over. The rest is shallow water, the whole of which has been sounded, and the greatest depth of which is ascertained to be 360 fathoms. Between Brest and St. Pierre the depth of the line in which the cable is to lay is less accurately known, and there are variations between the soundings taken at various times. These are, however, being verified and corrected, and full information will be secured before the expedition starts.

We have said that the Great Eastern has more cable on board her by some hundreds of miles than she has ever held before. In all essentials for sea-going the great ship is in better trim than ever. Her bottom is freer from rubbish and impediment than has been the case since she was new, and the work bestowed upon her while on the gridiron at Liverpool has been already proved to have an appreciable effect upon her power.

Her rudder is now worked by steam, and in place of the twelve men who formerly were engaged below the deck aft, one seaman stands upon the bridge connecting

the paddle-boxes, and from here manoeuvres the great ship as easily as if she were a toy, obeying each word of captain or pilot literally by a turn of the finger.

Sir Daniel Gooch, Bart., M. P., will go out in the Great Eastern as chairman of the company which makes and lays the cable; and several of the French directors, and a selection of English electricians, including Sir William Thomson, will be also on board. There will be no ladies, however, and so far as is known, no one without a distinct task to perform. Mr. Willoughby Smith will, as formerly, act as the electrician of the company. It should be mentioned that the electric tests of the cable have been, and are, continuous, and that not a single fault has been discovered in it from the commencement of its manufacture until now. In addition to the task before her, the Great Eastern leaves for Bombay with the British Indian cable, together with Sir Samuel Canning and his staff, early in November next.

It seems we were imposed upon in publishing the notice of marriage, B. H. Alston of Patona, Ala., to Miss Hudson. Practical jokes of this character are mean and offensive to the parties concerned, and no gentleman will ever be guilty of their perpetration.

SHAWK & BARTON,

Manufacturers of
ELECTRICAL INSTRUMENTS,
And Dealers in
TELEGRAPH SUPPLIES.

Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
Office Wire,	Mercury,	Lightning Rods,
Insulators,	Relays,	Induction Coils,
Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials
Acids,	Switches,	Philosophical Apparatus,
&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

WESTERN UNION STANDARD PATTERNS,

and shall keep up with the times in all valuable improvements.

Customers can obtain at our depot a

COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

embracing such instruments of other manufacturers as are good and serviceable.

We are prepared to take contracts on liberal terms for the construction and equipment of

TELEGRAPH LINES

of any required length, in any part of the United States, for individuals or for corporations.

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STICKWELL & CO'S

EXTRA MUCILAGE

THICK, CLEAR AND ADHESIVE.

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

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They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

Journal of the Telegraph.

France.

Brest, June 11.—A grand banquet was given on board the steamship Great Eastern last evening to celebrate the successful loading of the new French cable. Many notables were present. Speeches were made and toasts drunk, and altogether much enthusiasm was manifested. Among the toasts were "England," "America" and "France," which were appropriately responded to by representatives of the several nations. The festivities were continued till a late hour.

The Great Eastern has gone to Portland, England, for her supply of coal, and will leave that port to-morrow for Brest, whence she will soon proceed to lay the cable to the United States.

The contracts for telegraphic news service between the New York Associated Press and the New York State and the New England Associated Press organizations have been signed.

West Point, June 9, 1869.—Yesterday the Field Telegraph Corps was reviewed and exercised on the parade ground. At five o'clock the heavy wagon of the corps—not unlike an ambulance in appearance—drove upon the ground. A party of cadets, in the usual dress of gray coats and white trousers, preceded it. Two, provided with pickaxes, made holes in the ground, into which two more thrust the longer slender poles, another having just before adjusted the wire to the top. In a very short space of time the line is erected quite around the parade ground. The working apparatus occupies a convenient shelf in the telegraph wagon, and is under the supervision of two cadet operators. All this is, of course, a comparatively new feature in military education, but its importance has been fully demonstrated in all recent wars.

On the evening of June 10th, the weather rainy and the atmosphere damp most of the distance, the wires to Plaister Cove from New York, 1260 miles, worked in a direct circuit without the aid of repeaters.

We print and circulate 8,000 copies of the present edition of the JOURNAL.

The China Telegraph Enterprise.

A Washington dispatch to the Associated Press states that Governor Curtin, as President of the East India Telegraph Company, having requested the Navy Department to extend such aid to that enterprise as might seem proper, Secretary Borie has instructed Admiral Rowen, commanding the United States Asiatic squadron, to give full protection and render all the assistance within his power to the work of laying the cable of the above named company, and to manifest to the Chinese authorities the deep interest which this government feels in the success of the enterprise. Post Captain Alexander is detailed to proceed to China and give the benefit of his aid and experience in making the preliminary survey and soundings.

St. Domingo.

Mr. Hartmount, an Anglo-American banker, has received a charter for a railroad and telegraph line from Monte Christo to the great interior vega of Santiago. Prof. Gabb, the State Geologist, has nearly completed the survey of the gold fields of Columbus; and his Assistant, Mr. Curtis, is occupied in mapping out the principal mining sites, which are to be offered in Europe and the United States on lease.

No force, strictly speaking, can be initial, as there must be some *anterior* force which produced it. We cannot create force or motion any more than we can create matter.

South America.

A contract has just been signed for establishing a line of telegraphs to connect all the important points in the four provinces nearest to the city of Buenos Ayres. The contractor is Edward A. Hopkins, from the United States, and long a resident in these countries. His experience in public enterprises, his energy and the favorable terms given by the Government, make this enterprise certain of success. It will do much to fasten together these provinces.

The Nonpareil Relay.

We are glad to learn that Mr. Durant's ingenious self-adjusting relay has proven to be a decided success. Numerous testimonials prove its excellence and acceptability, and, better still, the increasing reception of orders for its manufacture. No one better deserves success.

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General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

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SUBMARINE TELEGRAPH CABLE—

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of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

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Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

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We cheerfully recommend these additions, as they are desirable improvements to this celebrated Watch.

The Patent Pinion prevents injury to the Watch in case the main spring should break. The additional charge is only two dollars.

We again call attention to the fact, that in ordering a Watch by letter, the name and address must be written plainly.

We furnish a free Price-List of these Watches, which please compare with that of any other House before purchasing.

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NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 8, 1868.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the platina point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

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which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed. His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them.

Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1865. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-900th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionally stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine	\$19 50
Small Box Relays	16 00
Same in Rosewood	17 00
Medium Box Relays	17 00
Same in Rosewood	18 00
Large Box Relays	8 00
Main Sounders same as the above, with heavy armature lever, without local connections	75 cents less
Pocket Relays, with all the adjustments of the above and good Lever Keys	22 00
Excellent Registers	40 00
Pony Sounders	6 75
Keys	6 50

All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old spools taken at the price of new wire by the pound. Goods sent to all parts of the continent with Bill C. O. D. Or, to save expense of returning funds by express, remittances may be made in advance by certified check payable in New York, or Post-office orders, in which case we will make no charge for package.

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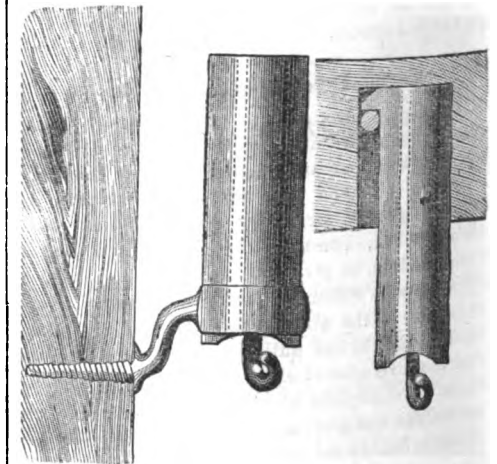
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1st. A current resistance in rain or fog, or in rain and fog combined of 100,000,000,000 Ohms.

2d. To insulate a conducting wire of any length in rain or fog or rain and fog combined, to its full working capacity, or the capacity of a similar wire or conductor placed upon any other insulators under the most favorable circumstances of weather?

3d. Strength, not to break or part by any strain by, or that a No. 8 wire will bear.

It is not injured by missiles in the general acceptance of the term.

It does not depreciate from exposure to smoke, soot and the gases from combustion to one hundredth part of the extent of ordinary insulators.

It is not injured by atmospheric discharges. It is a protection to the poles from the same effects, there not being an authenticated instance of a pole being injured where these insulators are used.

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WALTER O. LEWIS, Esq.,

Electrician of the Company

JOURNAL OF THE TELEGRAPH.

VOL. II. NO. 14.

NEW YORK, JULY 1, 1869.

WHOLE NO. 40.

The First Locomotive.

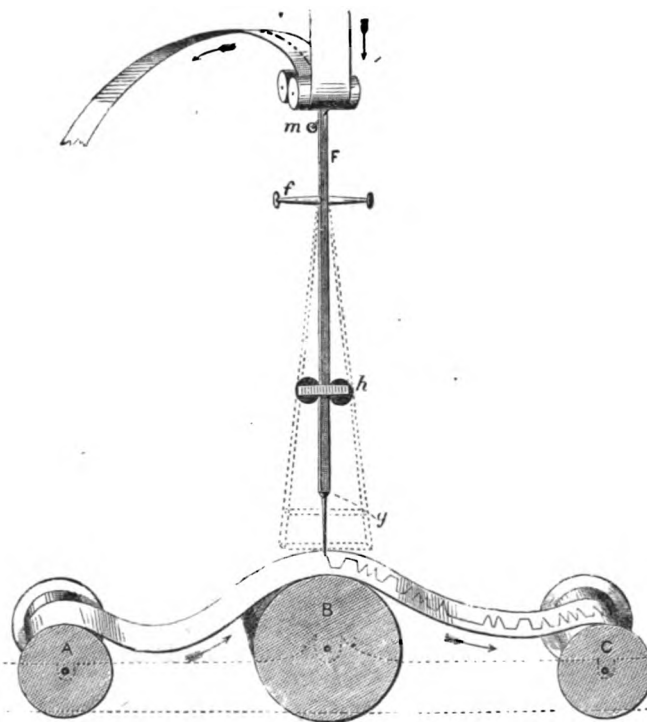
Pen-y-darran, Wales, is chiefly remarkable for its connection with the first tramway—for which an act of Parliament was obtained in 1803 for the first locomotive ever tried—and with the able inventor, Trevethick, who there made his first essay. The first run of the locomotive occurred in February, 1804. Previously there had been a whisper in the scientific world of the use of steam and of its employment in propelling vehicles, and abortive attempts having been frequent. Samuel Homfray by some means was brought into connection with Trevethick, and the result was that this able but eccentric man visited Methyr and in conjunction with a self-taught mechanic, one Rees Jones, whose homely portrait can be seen in the Kensington Museum, began to build his locomotive. Building is not an inappropriate word in this case, for the stack was actually built up of bricks the same as an ordinary chimney, and the whole affair was peculiarly odd. The stack was tall and clumsy, the body dwarfed, perched on a high frame-work, so as to approximate to the spider fashion; the cylinder, in addition, was upright; the piston worked downwards, and at every revolution of the wheels there was a monstrous clang produced which, heard now-a-days with the asthmatic puffs of steam, would provoke the gravest mechanic to laughter. When completed, Homfray introduced his friend Richard Crawshay to the novelty, doubtless much to that individual's amusement, certainly to his incredulity as to its being fit for anything, for he readily accepted a wager with Homfray for £1,000, maintaining that it would not convey a load of iron from Pen-y-darran to the navigation—a distance of nine miles. The eventful day arrived for the trial, and never had there been so much excitement. The sturdy Englishmen were there, and natives from every Welsh county lined the road, and mounted every eminence that commanded the tramway; and when Trevethick jumped on his iron steed, and began slowly to move onwards amidst clanging iron and puffing steam, the uproar was terrific. By the arrangements made no one was allowed to assist the dauntless Cornishman, and for a time he did not seem to want it. Surrounded by a host, he passed down the valley, making about five miles per hour, when a sad misfortune happened—the clumsy stack came in contact with a bridge and was ruined! Trevethick stood for a moment amongst his bricks, but only a moment. Fertile in resource, he was soon steaming onward again, and not only conveyed his load of iron to the navigation, but a crowd of exultant passengers along with it, who to their latest day prided themselves on their glorious ride. It was fortunate for Homfray that the wager was a loose one. The iron was taken down and the bet won; but Trevethick failed to bring his empty trains back, and for some time the new in-

vention as a mode of transport remained in abeyance. —*London Engineer.*

Is the "Modern Telegraph an English or an American Invention."

In a review in an English Magazine of the excellent work "History and Progress of the Electric Telegraph" by Robert Sabine, C. E., London, we find the following passage, after first giving just commendation to the work in question:

"We do not wish to diminish one iota the credit due to Morse for the invention of the simplest, most perfect and most universal telegraph in existence; but we protest against his being allowed priority of claim."



MORSE'S DOUBLE REGISTER OF 1835.

We do not object to his immortality. If ideal conversations are to rank as inventions then should Galileo be called the inventor of the telegraph.

"Morse acknowledges having first received the conception of a telegraph in 1832; Wheatstone had been studying the subject years before this. Cooke and Wheatstone's telegraph was patented in the early part of 1837, and Morse's in the latter part of the same year. The first line of telegraph was erected by them in 1838, and the first line constructed in the United States was put in operation in the month of June, 1844. Cooke and Wheatstone's first 'hatchment' telegraph was a beautiful and practical instrument; Morse's first relays weighed 158 pounds, and required two men to carry them.

"We contend that the author's lights in meting out immortality have not been sufficiently luminous. We

say Cooke and Wheatstone first, Morse a good second, Steinheil a bad third, and the rest nowhere."

We have a few words to say on these remarks of the English reviewer. While there is no dispute between us that the universal verdict of the world is that "Morse's invention is the simplest, most perfect and most universal telegraph in existence," we are obliged to dissent in toto from the inconsistent protest of the reviewer against what he styles "Morse's priority of claim." What does he mean by "priority of claim?" Is it a claim of priority? This only redeems the expression from ambiguity. But what has Morse claimed to which he is not entitled? We do not find in the whole history of his invention that he has ever claimed to be the inventor of *communication at a distance*, a result which has long been accomplished from time immemorial by various modes; but he does claim to be the inventor of a particular *mode*, which is correctly called by the name of the *Telegraph*; since his mode completely fulfils the definition of the word, which was never before fulfilled. He does not claim to have first applied electricity to communication at a distance, but he claims to have first applied electricity to create a *Telegraph*. This is his claim, and no one has yet established a prior claim. He is not singular in putting forward this claim. Three of the judges of the United States Supreme Court, in their official decision, take the same view of the matter; and their decision has been published for more than fifteen years. We gather some of these facts from a publication of Morse recently made in Paris, in which he clearly defines the difference between a *Telegraph* and a *Semaphore*. Mr. Sabine, the learned author of the excellent work on Telegraphy which the reviewer has under examination, in a late article in an English journal, discussing this very subject says, "If the word *Telegraph* means a *system of writing at a distance*, Prof. Morse is perfectly right, for in the earliest systems *no writing* was done, at least by the instrument." This remark concedes all that is necessary to define

and establish Morse's priority. The conditional "if" can be decided only one way, for the word "Telegraph" does mean "a *system of writing at a distance*," and this is a *mode of communicating at a distance*, first devised and accomplished by Morse. Mr. Sabine admits that in this "Morse's reasoning is sound," and he adds, "I perfectly agree with him in the distinction which he draws between electric *Semaphores* and electric *Telegraphs*," and in this connection Mr. Sabine combats the confused and erroneous idea that Morse claims the magnetic *Semaphore*. He says "it is not the electro-magnetic *Semaphore* that Morse claims the invention of, but the electro-magnetic *Telegraph*." The reviewer seems not to have comprehended the essential difference between them, or he never could have made such an erroneous chronological classification.

He states it thus—

“Cooke and Wheatstone—first,

“Morse a good—second,

“Steinheil a bad—third,

“And the rest nowhere.”

Let us analyse this statement—“Cooke and Wheatstone's invention was an improvement upon a previously existing needle Semaphore, which needle system they were indeed the first to improve and make practical in 1837, and they patented it in the same year. Morse originated and invented the first real Telegraphic system in 1832, showed its practical operation in 1835, and patented it in 1838, specifying it in caveat in 1837. Steinheil invented a needle Telegraph (not a Semaphore), in 1837. It was never patented nor practically introduced. Now each of these several inventions being essentially different, each of the inventors may justly claim priority for their own class of inventions, regarded as inventions; but in their chronological relations to each other, that is, the order of time in which these several systems were invented, patented and established, and confining ourselves to the three mentioned by the reviewer, the following table correctly shows the facts:

TELEGRAPHIC.	SEMAPHORIC.
<i>Date of Invention.</i> Morse's, 1832. Steinheil, 1836, 1837.	<i>Date of Invention.</i> Cooke and Wheatstone, 1836, 1837.
<i>Date of Specification and Patent.</i> Morse's, 1837, 1838. Steinheil specified, 1837, 1838. Never patented.	<i>Date of Specification and Patent.</i> Cooke and Wheatstone, 1837.
<i>Date of Practical Establishment.</i> Morse, 1844. Steinheil never practically established.	<i>Date of Practical Establishment.</i> Cooke & Wheatstone, 1836-1837.

The reviewer's paragraph of dates is a strange mixture of incorrect assertion and irrelevant facts.

There is no evidence that Morse “received the conception” of a Telegraph from any one—it is clear that it originated in his own mind in 1832.

Wheatstone had not “been studying the subject years before.” The date he himself gives of his first studies in electricity having any reference to telegraphy is 1834. The Telephonic instrument in 1828 which he attempted to make, was not a telegraph; had nothing to do with electricity, and was an acknowledged failure. The date of the respective Patents of Morse, and of Cooke and Wheatstone, decide nothing as to the date of their respective inventions, but supposing them to be the same inventions (which is not the case), Morse's was specified before theirs.

Neither does the date of the first establishment of a telegraphic line decide anything as to priority of invention. An invention may exist, and often does exist, years before its establishment.

The form or the weight of the first relay of Morse's (a portion only of his invention), so persistently misconceived and misrepresented in some of the histories of the telegraph, has no conceivable bearing on priority of invention. Whatever the weight of the relay, it was effective for its purpose, for we find it was practically used on the first line from Washington to Baltimore; and it is a noticeable fact, that after all the subsequent improvements and attempts at improvements in reducing the size and weight of the relay (many of which, by the by, were early made by Morse himself), the fundamental principles embodied in that first relay, that of using large wire instead of small for the helices, is being reverted to in the more modern construction of the relay.

We confess to not understanding the application of the remark—“If ideal conversations are to rank as inventions, then should Galileo be called the inventor of the telegraph.” If Galileo ever had any such “ideal conversation” respecting a telegraph it is news to us, nor do we know of any claimant of the telegraph who bases his claims upon any “ideal conversations;” certainly Morse makes no such claim. On this subject the reviewer is somewhat foggy.

On Some Applications of Electricity to Naval and Military Purposes.

BY F. A. ABEL, F.R.S., FOR. SEC. C.S.

[From Chemical News.]

(Concluded from page 159).

There are two distinct systems of applying electricity to the explosion of torpedoes. The most simple is that in which the explosion of a torpedo is made dependent upon the completion of the electric circuit by operators stationed at one or more posts of observation on shore. The particular mode of arrangement and the operation to be adopted depend in great measure upon the nature of the locality to be defended by torpedoes. If this be a river or channel, the plan of arranging and exploding torpedoes is comparatively simple, but will serve sufficiently to illustrate the general nature of this system of applying torpedoes. The mines are arranged across the river or channel in rows or lines, converging towards a station on shore, to which the conducting wires are led which are to connect each torpedo with the exploding instrument. The operator at this station has it in his power, therefore, to explode any one of the torpedoes at will, by completion of the circuit through the particular cable and the earth. Some other position on shore is selected as a second station, which commands points of view intersecting the lines of torpedoes. The operators at the two stations are placed in telegraphic communication with each other, and when a ship is observed by the operator at the second station to approach the direction of any one of the torpedoes, he will signal to the man who looks along this line of torpedoes, and the latter will complete circuit as soon as the vessel appears over the particular torpedo specified. Should the vessel alter her course in approaching the torpedoes, the operator at the observing station will inform the man at the firing station, who will alter his arrangements accordingly. Or, the man at the observing station, when he perceives a vessel to approach in a line with any of the torpedoes, places the cable of that torpedo in electric connection with the operator at the other station, and the latter will complete the circuit through the earth to the torpedo as soon as he sees that the vessel is over the first line of torpedoes. Other more or less elaborate modifications of these modes of observing and exploding have been proposed; they all depend for efficiency upon the experience, harmonious action, and constant vigilance of the operators at the exploding and observing stations. They are, moreover, entirely useless at night, and in any but clear weather. They are therefore not to be compared, in general efficiency, with self-acting electric torpedoes, which are either exploded by their collision with a ship, whereby electric circuit is completed within them, or by the vessel striking a circuit-closing arrangement moored near the surface of the water, whereupon either the torpedo, moored at some depth beneath, is instantly exploded, or a signal is furnished at the station on shore, which indicates to an operator the particular torpedo to be exploded. The object to be attained in these circuit-closing apparatus, which are so moored as to be within range of a passing ship, is to oppose in the path of a vessel a contrivance which will not be affected by the motion of the water, but which will complete electric circuit between the conducting cable and the fuse, if struck in some particular part, or thrown into a particular position, by the advancing ship. Numerous ingenious contrivances have been proposed for this purpose and experimented with, but in only two or three instances have satisfactory results been attained, the conditions essential to success being numerous, and their combined fulfilment not easy of

attainment. Simplicity of mechanism and a combination of sufficient, but not excessive, delicacy of action, with permanence during long immersion, are among the most important objects to be aimed at in the construction of these circuit-closing or signalling machines or self-acting torpedoes, which, if efficient, must contribute most importantly to the success of any arrangements for defense of a water by electric torpedoes.

It has been shown that magneto-electric instruments cannot be relied upon for submarine operations, on account of the perfect insulation of the conducting wires, joints, &c., required to ensure success with machines of that class. On the other hand, frictional machines and also dynamo-electric machines leave little to be desired as regards power to effect even the simultaneous ignition of numerous submarine mines through cables in the insulation of which, from long-continued use, some defects exist. These instruments, therefore, are available as most efficient instruments when any extensive submarine operations have to be accomplished; but the frictional machines cannot be used as the exploding agents in connection with any system of defense by torpedoes, which depends for its efficiency upon the explosion at the proper moment of only the particular torpedo over which a vessel passes, while all surrounding torpedoes still remain intact; because, for the reason which has been given, the explosion of the proper torpedo will almost invariably be attended by the accidental explosion of others which it is not desired to bring into operation. The same objection applies, at any rate to some extent, to the dynamo-electric machines. These two classes of instruments are therefore only susceptible of certain special applications in connection with submarine mines. There is, moreover, another general objection to the use of any source of electricity, the action of which is entirely dependent upon an operation to be performed at the instant that an electric discharge is required. This consists in the fact that, although the torpedoes may be self-acting, their efficiency is still dependent upon the vigilance and presence of mind of an operator on shore.

The only sources of electricity which thoroughly fulfil the conditions essential to its application with perfect confidence in connection with self-acting torpedoes, are constant voltaic batteries. By substitution of the Abel fuse for the old platinum wire fuse, it has become possible to use batteries which were previously inapplicable to the explosion of mines, because, even when employed in considerable numbers, the quantity of electricity furnished by them is not sufficient to effect the ignition of platinum wire. Thus, a number of elements of a Daniell's battery or a sand battery, quite incapable of heating a platinum wire to redness, fires an Abel fuse with perfect certainty. The heat developed in the latter by the passage of a current from such a battery amply suffices to raise to its igniting point the readily explosive priming mixture which serves as the conductor in the fuse. Moreover, the resistance presented by the fuse is so considerable in comparison with that offered by the longest cables which are likely to be used in actual practice, that a current from a battery which possesses tension sufficient to overcome the resistance of the fuse will explode the latter with as much certainty, through cables of great length, as when it is close to the battery. A number of cells of a Bunsen's battery, sufficient to ignite a piece of platinum wire several inches in length, when close to the battery, the current of which possesses also sufficient tension to ignite an Abel fuse, will be incapable of rendering a very short piece of thin platinum wire even moderately warm, if four or five hundred yards of ordinary conducting wire be introduced into circuit; but its power of exploding an Abel fuse will not have become at all affected. It is evident

from this illustration that the necessity for greatly adding to battery power, when mines are to be exploded through considerable lengths of wires, which exists with the use of the wire fuses, is obviated by employing the new fuse; and thus one great objection to voltaic batteries, as exploding agents in mining operations, is set aside. Again, the sand batteries, or Daniell batteries, which are used for telegraphic purposes, and which when once charged, continue, with very little attention, in constant and good working action for several months, may now be substituted for the batteries (e. g., Grove's or Bunsen's) which it was formerly necessary to employ in order to attain sufficient quantity of current, and which only continue in good action for a few hours. Sand batteries have been repeatedly employed at Woolwich for the explosion of fuses, after having been in action four or five months, with the occasional addition of a little water to compensate for evaporation.

It will be seen, from the foregoing, that constant voltaic batteries combine more thoroughly the essential qualifications of efficient exploding agents, in connection with any system of submarine defense, than all other sources of electricity at present known. They are simple of construction, inexpensive, require but little skill or labor in their production and repair, and very little attention to keep them in constant good working order for long periods. Their action is quite independent of any operation to be performed on shore at the last moment; it is only necessary to place the cables leading to the torpedoes in connection with the battery when it is desired to close a defended water—the circuit-closing portion of the torpedo, upon being struck by a ship at any time, will then cause the instantaneous explosion of the charge. The defense by torpedoes thus becomes as effective by night as by day; moreover, the efficiency of the constant batteries is not more prejudicially affected by the existence of defects in the insulation of the cables than that of the frictional electric machines; and they may be used without incurring any risk of the unintentional explosion of torpedoes by induced currents.

Simple and powerful forms of batteries are readily extemporized, and there is no more portable, simple or economical description of exploding instrument than the ordinary volta-pile, for the construction and employment of which it is only necessary to provide a piece of hard timber, some zinc and copper sheet, an old blanket, and some vinegar and common salt. A pile, composed of 120 elements, the plates being 2½ in. diameter, is very portable, and suffices to explode a mine in single circuit, or three or four arranged in branch circuit. It will remain in good action for at least twenty-four hours, and is readily and expeditiously cleaned and re-charged. This apparatus has become a favorite exploding instrument with sailors, being easily constructed and charged anywhere, and very handy for boat operations (in connection with the employment of torpedoes as an arm of attack), in which service more delicate instruments speedily lose in efficiency. Larger piles constructed on precisely the same plan are now being used in some ships of war for the simultaneous discharge of guns, and a very small form of pile, with water only as the exciting agent, is the most convenient instrument for testing the fuses and cables of torpedoes after they are in position. It is a matter of great importance that a positive knowledge of the efficiency of a torpedo and its conducting wire should be obtained from time to time by electric tests, and there is now no difficulty in including the fuses themselves in the test. Signals may, in fact, be readily passed from one firing station to another through the fuse in a submerged torpedo, which is arranged to be fired at will from the shore.

It does not come within the scope of this discourse to enter upon a discussion of numerous important

subjects connected with the actual use of electric torpedoes, or of the considerations involved in the question as to how these formidable agents of defense may be most efficiently applied, in addition to, or in the absence of, artillery defenses. The object of the discourse will have been attained if it has been satisfactorily demonstrated that electrical science is destined to contribute most invaluably to the efficiency of a country's defenses.

Electricity in Metallurgy.

One of the tendencies of inventive skill at the present time is to supplant old mechanical appliances by new applications of nature's subtler forces, among which electricity is at once the most important and the most available. Some years ago, the experiments of Becquerel made the world familiar with the possibility of successfully treating silver and other ores by electric action, but were looked upon as of interest from a theoretical rather than from a practical point of view—the proportion of metal reduced being found to be much less than by the best amalgamating processes. Later than this, some ten years since, new attempts in the same direction were made, in which it was sought to dispense with the preliminary roasting incident to Becquerel's method. This was done by dissolving the sulphuret of silver in a solution of chloride of sodium—common salt—and bringing the liquid in communication with the positive pole of a galvanic battery—the result being that the chloride of silver formed by the combination of the silver with the chlorine of the salt was decomposed, and the metal deposited upon the negative electrode; this being greatly facilitated by the presence in the solution of copper in the form of a chloride, formed either through the addition of blue vitriol—sulphate of copper—to the liquid, or by other suitable means.

This theoretically promising method did not fulfill all the conditions requisite in the proper reduction of ores, but it was made the groundwork of much experiment by more than one ardent projector. One of the most perfect of these trials was carried on substantially as follows: The finely pulverized ore is placed in a double solution of common salt and blue vitriol, and is agitated by rotating arms or stirrers, to which were attached strips of copper extending down in contact with a layer of quicksilver in the bottom of the receptacle holding the solution. The quicksilver and consequently the copper on the stirrers was brought in connection with the negative pole of a strong battery, while the positive pole was made to connect with the copper lining of the receptacle. The receptacle being covered over, steam was admitted, and the stirrers caused to rotate, thereby throwing the particles of the sulphurets against the positive electrode, by which to be decomposed. The fallacy of this treatment of the ores lay simply in this, that the particles must not only come in contact with the electrode, but such contact must continue sufficiently long for the decomposition to occur. For this the simple stirring proved insufficient. To remedy the defect, a still later method has been patented in this country, which we thus describe:

The sulphurets in a solution of common salt are placed in a swinging vessel, which may be made of wood, and the horizontal gudgeons of which work in insulated bearings, in order to prevent the loss of electricity. The wires of the battery are made to communicate by appropriate devices with the apparatus, and provision is also made for the admission of steam. By these means a vigorous electro-lytic action is made to take place, the agitation of the pulp by the movement of the vessel being just sufficient to keep the particles in contact with the copper positive pole-plate for the requisite length of time. The decomposition

of the metal is of course upon this pole-plate, and the action of the chlorine of the salt upon the latter insures the proportion of chloride of copper essential in the operation. The process may, moreover, be hastened somewhat, when desired, by the addition of blue vitriol to the solution.

It is proposed to use the same apparatus in extracting gold from auriferous pyrites; but in this case iron or carbon must be substituted for copper in the positive electrode, and for economical reasons magneto-electro machines must be used in the place of a battery. The process thus briefly sketched promises, if successful, to mark an era in the treatment of pyritous ores, and even to those who may have no share in the industry to which it relates, must be of considerable interest for the reason that it so ingeniously combines ordinary mechanical and chemical means with the more subtle agency of the electric fluid, and also, because of the manner in which this matter of the electrical treatment of ores has been made, by successive steps, to reach a condition so strongly promising practical success.—*American Artizan*.

Brevities.

OMAHA, June 15, 1869.

EDITOR JOURNAL OF THE TELEGRAPH.

The completion of the Chicago and Rock Island Railroad gives the Western Union another wire between Chicago and Omaha, making in all four.

Material has been shipped from Omaha by river for the construction of a line from Fort Benton to Helena, Montana, distance about 160 miles.

Steps have been taken looking to connection with the United States and Mexico line running from Cheyenne via Denver to Santa Fe, N. M.

The new line built by Assistant Superintendent Conway, between Omaha and Salt Lake, works admirably, fully as well as the Chicago circuit, half its length.

Superintendent Hibbard has just returned from a trip West, where he has been looking after the interests of the Company which he so ably represents.

Business between the Atlantic and Pacific States has nearly doubled since the opening of the railway.

Omaha is filled with excursion parties from both East and West, who invariably express themselves pleased and astonished with the condition of the Union Pacific Railroad, its management, as well as with the country through which it passes. TODD.

EDITOR JOURNAL OF THE TELEGRAPH.

DEAR SIR: Noticing in your excellent paper some discussion on Self-closing Keys, I thought I would tell you my experience. I sent my key to be repaired and while off for that purpose I had to use an old key which had a weak spring. I thought it was worse than no spring, so I removed the spring, making in effect a self-closing key. It answered the purpose very well and I had no trouble about students leaving circuit open. It certainly is a sure way to close a circuit. Yours, &c., S.

TOBACCO has ruined thousands. It tends to the softening and weakening of the bones; it greatly injures the brain, the spinal marrow and the whole nervous fluid. One who in any way uses large quantities of tobacco generally lacks muscular and physical as well as mental power. We would warn young men who want to be anything in the world to shun tobacco. —*Peninsular Herald*.

Scintillations from Scientific Authors.

BY MADISON BUELL.

When, as is constantly done in common parlance, a house is said to be *struck*, windows *broken*, metals *fused* or *dissipated* by the electrical fluid, are not the expressions used such as if not sanctioned by habit would seem absurd? In all cases of injury done by lightning there is no fluid perceptible. The so-called sulphurous odor is either ozone developed by the action of electricity in atmospheric air, or the vapor of some substance dissipated by the discharge. It seems more consonant with experience to regard these effects as produced by force, as analogous effects are produced by admitted forces in cases where no one would invoke the aid of a hypothetic fluid for explanation. Glasses may be broken by electrical discharges; so may they by sonorous vibrations; metals electrified or magnetized will emit a sound; so they will if struck, or if a musical note with which they can vibrate in unison be sounded near to them.

In all phenomenon the more closely they are investigated, the more are we convinced that, humanly speaking, neither matter nor force can be created or annihilated, and that an essential cause is unattainable. Causation is the will, Creation the act of God.

A species of voltaic pile may be formed by a series of slices of muscle, so arranged that the external part of one slice may touch the internal part of the next.

Electricity produces heat so intense that it cannot be measured, as every sort of matter is dissipated by it.

A change takes place in the temper of glass when submitted to the influence of powerful magnets.

The hypothesis of matter without weight presents in itself fatal objections to the theories of electrical fluids, which are entirely removed by viewing electricity as force and not as matter.

Science is rapidly progressing toward the establishment of immediate or direct relations between all forces. Where at present no immediate relation is established between any of them, electricity generally forms the intervening link or middle term.

The ratio which the attractive magnetic force produced bears to the electric current producing it, has been investigated by many experimentalists and mathematicians. The data are so numerous and so variable that it is difficult to arrive at definite results. The definite size of the coil and the iron, the temper or degree of hardness of the latter, its shape, or the proportions of length to diameter, the number of coils surrounding it, the conducting power of the metal of which the coils are formed, the size of the iron in which magnetism is induced, &c., complicate the experiments. The most trustworthy general relation which has been ascertained is, that the magnetic attraction is as the square of the electric force.

The ancients, when they witnessed a natural phenomenon, removed from ordinary analogies and unexplained by any mechanical action known to them, referred it to a soul, a spiritual or preternatural power; the amber and the magnet were supposed by Thales to have a soul.

An electric current appears to have a magnetic action in a direction cutting its own at right angles; or, supposing its section to be a circle, tangential to it. If then we reverse the position and make the electric current form a series of tangents to an imaginary cylinder, this cylinder should be a magnet. This is effected in practice by coiling a wire as a helix or spiral, and this to all intents and purposes a magnet. A soft iron placed within such a helix concentrates its power.

The Aurora Borealis, or Magnetic Storm.

The brief statement which I made in the JOURNAL of the 15th of May, respecting the plan by which I successfully worked for several hours, two wires between New York and Boston, during the great auroral display on the evening of the 15th of April, has caused a good deal of discussion in certain quarters; one writer, taxing his ingenuity to prove the absurdity of the theory, and commencing with the assertion that I never made the experiment alluded to, while concluding with the singular announcement that the illustration which I made of a wire connected so as to form a loop, with a source of electricity of the same polarity attached to each end, constituted a shunt!

Mr. Pope discusses the subject more intelligently, but has inadvertently fallen into some errors which require correction. Mr. Pope says: "all electrical currents are invariably caused by a difference of electrical tension between two points, and the passage of the current, as it is termed, tends to equalize these varying tensions. Under ordinary conditions the current used in operating a telegraph wire, is caused by the difference in electrical tension between the two poles of the battery employed."

This statement is singularly inaccurate. The passage of the current has nothing to do with the difference in electrical tension between the two poles of the battery, for the tension is the same at one pole of a battery as at the other. The tension of a battery depends upon the number of cells employed, and the amount of tension required depends upon the resistance to be overcome in the circuit.

The passage of the current is due to the electric discharge which ensues on the connection of the opposite poles of a battery, and is a consequence of the union of the two electricities—the positive and negative—at either end of the battery.

The cause of earth currents, which are flowing over the lines all the time, although generally inappreciable with our ordinary apparatus, is to be found in the difference in polarity between the two places where the wire enters the earth. During an aurora borealis, or magnetic storm, as it is generally designated, these currents become very powerful, and are not unfrequently experienced simultaneously over the greater part of the earth, and are sometimes so powerful that the earth at New York has been found to be + or — to the earth at Boston, to the extent of 200 cups of Grove's battery. While working with the Bain or chemical telegraph, between New York and Boston from 1849 to 1852, I frequently knew these currents to be strong enough to burn through several sheets of the prepared paper upon which we received the dispatches.

These currents do not change suddenly, like electric signals, but go gradually over from positive to negative. I have never known an earth current to change from maximum positive to maximum negative in a shorter period than 60 seconds, and the change is often spread over an interval of several minutes.

It was to overcome these earth currents and magnetic storms that Mr. Varley invented his condenser, which is attached to the Atlantic Cable. The principle upon which the success of this device depends, is that of the gradual change of polarity of the earth currents. The cause of the difference in polarity of various sections of the earth, which gives rise to these earth currents, has been variously surmised. It is very likely due to the inductive action of the electrified clouds; and if so, not only the earth, but all that lies under the clouds, would be inductively charged by the same influence, and it does not appear clear to my mind why the auroral influence should not appear upon a metallic circuit, as well as upon one grounded, except upon the theory presented in my previous article.

During an aurora the earth at certain places being charged positively, and at other places negatively, it follows that if you extend a wire from the + point to the — point, and insert the two ends of the wire into the earth, a current will flow over the wire; but if you extend the wire from the place where the earth is + to the place where it is —, and then bring it back to the starting or + point, making no connection with the earth at the — point, but grounding both at the + point, that no current from this source will flow over the line. This is precisely what I did on the 15th of April, and for more than three hours I worked the loop between New York and Boston without the slightest trace of the auroral current, although my apparatus was so delicate that a single cup of battery would have made a distinctive record.

If Mr. Pope will read my article, he will observe that I said nothing about "the influence passing into the two wires and neutralizing itself at the loop." Under my arrangement of the wires, no influence could pass into the loop any more than a current could pass over a line, when both ends of it were connected with the same pole of a battery. It is difficult to represent by illustration the absence of a current, but I tried to show by the arrow heads in the diagram that there could be no current there, because as both ends of the wire terminated in the same source of electricity, they must necessarily repel each other.

G. B. PRESCOTT.

Protection from Lightning.

To stand by the side of a continuous conductor, of sufficient conducting capacity to afford free transit to the electric charge, is the safest position which a person can take. A house with a good lightning-rod passing down its wall is exactly in that condition. But to be near an imperfect conductor, as a tree, for example, or to form part of a broken chain of conductors, is, on the other hand, the most dangerous. Any small metallic substance about the person, as a pair of spectacles upon the face, a ring upon the finger, or a knife in the pocket, would have no appreciable influence. And yet a novelist might, without too great a violation of probability, represent a murderer as arrested in the act of stabbing his victim by a flash of lightning striking the knife from his hand, and liberating the victim by felling the assassin himself to the ground at the instant of giving the blow.

A German writer, giving an account of curious examples of the effects of electrical discharges, states the case of a peasant girl, who, being overtaken by a thunder-shower when walking in the fields, had a golden pin, which was passed through her hair behind to keep it in its place, fused and dissipated by a stroke of lightning without herself suffering any personal injury at all.

To guard against such accidents as these—if any such accidents ever really occur—and also as a protection from the general danger of being struck with lightning to which persons are more or less exposed when out in the open air during a storm, some ingenious philosopher has jestingly proposed that a portable lightning-rod, in combination with an umbrella, should be provided for people liable to such adventures. A sportsman, then, overtaken by a thunder-storm, if equipped with such a protector—a pointed metallic rod projecting in the air from his umbrella over his head, and connected with a wire or chain to drag on ground behind—could bring himself and his traps safely along through the midst of the tempest, while the lightnings played harmlessly around him.

A bar of iron slightly curved by its own weight can be straightened by being magnetized.

Vegetable Electromotors.

The *Chemical News* contains an article contributed by Edwin Smith, M. A., giving results of researches in a field which so far as we are aware has been hitherto untraversed. He says: It is well known that a voltaic combination may be made of two liquids and a metal, if one of the three acts chemically upon one and only one, of the other two; thus—we may employ copper, nitrate of copper, and dilute nitric acid, or platinum, potash and nitric acid. Connect a platinum crucible with one terminal of a galvanometer, pour in a little solution of caustic potash, place in this the bowl of a tobacco-pipe having the hole stopped up with wax, pour into the bowl a little nitric acid, dip in the acid a small slip of platinum foil, and connect this with the other terminal of the galvanometer; a powerful deflection of the needle indicates the presence of an electric current and shows its direction to be from the alkali to the acid, the platinum serving merely as a conductor. It occurred to me, when performing this experiment, that an electro-motive combination might just as well be made of two vegetable substances, with platinum for conductor, provided only they were of a nature to act chemically upon one another—an alkaloid and an organic acid, for instance. It also seemed to me not unlikely that, wherever two flavors are habitually conjoined in our cookery and eating, the reason why they mutually improve each other is because a certain amount of electric action is set up between the substances employed to produce them. The rationale of the right blending of flavors might be found partly, no doubt in chemistry, but partly, also in galvanism.

Pursuing this idea, I tried pairs of eatables which generally go together, such as pepper and salt, coffee and sugar, almonds and raisins, and the like, and found that a voltaic current more or less strong was excited in every instance which I tested. Bitters and sweets, pungents and salts, or bitters and acids, generally appear to furnish true voltaic couples, doubtless in consequence of the mutual action of some alkaloid salt and an acid or its equivalent. As others may like to repeat or extend the experiments, I will describe shortly my mode of procedure: Cut two pieces of platinum foil about 5 inches by 2½ inches, and a number of pieces of filter paper a trifle larger. Well washed linen is sometimes more convenient than filter paper. Have a small wooden board near the mercury cups of the galvanometer, and let a short copper or platinum wire, dipping into one of the cups, rest on the board. The substances to be tried must be brought to a state of solution, the stronger the better, by infusion, decoction, or otherwise. Suppose coffee and sugar are to be operated upon; solutions of both having been prepared, dip into each a slip of filter paper; place one slip on one of the pieces of platinum foil, and the other on the second piece. Next lay the first slip and its foil on the board, with the metal touching the copper wire before mentioned. Lay the second slip with its platinum upwards, so that the coffee and sugar come into even contact with slight pressure, and immediately connect this upper slip, through a bit of copper wire, insulated from the touch, with the other terminal of the galvanometer. Deflection occurs instantaneously, and may be increased to a considerable vibration by breaking and making circuit at the right swing of the needle. After a few distinct vibrations, it is well to turn over the whole pile of slips just as they are, and connect opposite ends with the galvanometer, so as to reverse the current. This is desirable for the sake of confirming your previous observation, and of correcting any slight disturbing cause arising from the wire and mercury connectors, temperature of the hand, etc. It will be found that coffee and sugar have the same electrical relation to each other as zinc

and platinum. Coffee, in fact, is the positive, sugar the negative element. I subjoin a table of the results of numerous experiments, conducted in the manner above described:

ELECTRO-POSITIVE.	ELECTRO-NEGATIVE.
Coffee.....	Sugar (loaf),
Tea (black).....	"
Cocoa.....	"
Nutmeg.....	"
Cloves.....	"
Cinnamon.....	"
Mace.....	"
Vanilla.....	"
Almonds.....	"
Rhubarb (tincture).....	"
Starch.....	"
Starch caramel.....	"
Gum caramel.....	"
Cane sugar caramel.....	"
Milk Sugar.....	"
Gum.....	"
Almonds.....	Raisins.
Horseradish.....	Beet root.
Onion.....	"
Horseradish.....	Table salt.
Mustard.....	"
Pepper (white).....	"
Mustard.....	Tartaric Acid.
Ginger.....	"
Cayenne Pepper.....	"
Pepper (white).....	"
Tea (black).....	"
Tobacco.....	"
Quinine (Howard's).....	"
Gentian root.....	"
Lemon juice.....	"
Horehound.....	"
Lavender water.....	"
Quassia.....	"
Peppermint.....	"
Raw potato.....	Lemon juice.
Rind of lemon.....	"
Peruvian bark.....	"
Camphor (tincture).....	"
Laudanum.....	"
Arnica (tincture).....	Dilute Sulphuric Acid.
Peruvian bark.....	"
Quinine (Howard's).....	"
Iodine (tincture).....	Turpentine.
Caustic potash.....	"
Starch.....	"
Starch.....	Iodine (tincture).
Caustic potash.....	Neat's-foot oil.

It is somewhat difficult to eliminate from these experiments all error arising from difference of temperature, if the galvanometer is tolerably sensitive. Care must be taken to bring the pair of solutions operated upon to the same temperature before testing them; otherwise a thermo-electric current from the hotter to the colder liquid may affect the needle, and mask the true electrical relation between the two so far as it depends upon their chemical nature.

LAKE SUPERIOR, Mich., June 18.

EDITOR JOURNAL OF THE TELEGRAPH:

Thinking a few items relating to the telegraph in this part of the country might be of interest to your readers, I indite the following:

The Northwestern Telegraph Company have a line extending from Green Bay, Wis., to Marquette and Houghton, Mich. This line has been built about four years, and is a very substantial and fine working line. There are thirteen offices. The following are the operators at the more important points: Green Bay, Messrs. Barclay and Harris; Menominee, John Kern; Escanaba, O. D. Sloat; Negaunee, D. F. Wadsworth; Marquette, W. S. Dalliba; Houghton, Henry Mohle. Mr. Mohle has accepted a position in Chicago and intends leaving us shortly. This line is divided into two circuits, Negaunee being the repeating office.

The Marquette and Outonagon R. R. Co. have built a line along their road from Marquette to Champion, a distance of thirty-two miles. The following are the operators: B. H. Bickwell, of Mendota, Ill.; E. Chil-

son, of Burlington, Iowa; J. B. Minick, of Lancaster, Pa.; Dan H. Bacon, of Marquette; V. J. Newman, of Philadelphia, Pa.; M. R. Hunt, of Aurora, Ill.; H. R. Taylor, of Houghton; Geo. A. Hart, of New York city; S. O. Nichols, of Burlington, Iowa, and L. D. Doty, of Belvidere, Ill. All good sound operators.

From Houghton the Mineral Range Company's lines extend North to Eagle river and West to Rockland, a distance of about sixty miles. It will be extended to Outonagon this summer. This line was built last summer and is in all respects a well built line, Mr. W. V. Stevens, the superintendent, having had personal supervision of its construction. There are ten offices on this line. With the exception of Mr. H. S. Ming, knight of the key at Calumet, the operators have learned what they know about telegraphing since the line has been built. On this account it has been facetiously dubbed the "student's line." Under the instruction of Mr. Stevens, whose ability to impart instruction in whatever pertains to the art is well known here, these gentlemen will, no doubt, make good operators in due time, but at present we can only say in the classic language of the Milwaukee gentleman who has been subbing at Houghton the past week, "They are a tuff case."

Hon. J. D. Caton, of Ottawa, Ill., has been spending a week in the Lake Superior country, returning yesterday.

RELAY.

The Post Office Mutual Aid Association.

The clerks, carriers and others belonging to the Post Office Mutual Aid Association this month paid in \$1,134 for the family of J. J. Murray, and \$1,136 for the family of John Tallon, both of whom died last month. Each member contributes two dollars upon the death of an associate. Since the organization was formed, in December, 1867, there have been ten deaths among the members.

It would appear from the above that with a membership very little larger than that of the Telegraphers' Mutual Insurance Association, and during precisely the same period, the deaths have been 10, while those of the latter have been 8. To some who have thought our mortality too great this will show that there is another organization whose death list exceeds our own.

Christian Courtesy.

Every man has his faults, his peculiarities. Every one of us finds himself crossed by such failings of others from hour to hour; and if he were to resent them all, or even notice all, life would be intolerable. If, for every outburst of hasty temper, and for every rudeness that wounds us in our daily path, we were to demand an apology, require an explanation, or resent it by retaliation, daily intercourse would be impossible. The very science of social life consists in that gliding tact which avoids contact with the sharp angularities of character, which does not argue about such things, which does not seek to adjust or cure them all, but covers them, as if it did not see. That microscopic distinctness in which all faults appear to captious men, who are ever blaming, dissenting, complaining, disappears in the calm gaze of love. It is this spirit which our Christian society lacks, and which we will never get till each one begins with his own heart.

SEAWEED WINE.—The *Gazette Hebdomadaire de Paris* says, that seaweed wine is preferable to all preparations of iodine, and perfectly safe in its administration in that large and often-times unmanageable class of cases understood by the term "scrofula." He found that this preparation met with the greatest success in the treatment of disease of the hip and other bones and joints in children.

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 3,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JULY 1, 1869.

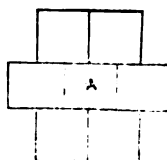
The Tariff.

It is easy to suppose that a Company, made up of the elements of many organizations, combining for mutual safety during and immediately succeeding a period of great civil commotion, should find its system of charges very unsystematic and somewhat chaotic. The Western Union Telegraph Company represents what was once six large dominant organizations, each of whom had, in some respects, distinct and unlike arbitrary rules, not only for their own internal tariffs, but also for the business which the nature of the service compelled them to transact with each other. In this latter class of business, tariffs had to be decided by the points of exchange which uniformity required to be designated, and which, often, by compelling messages to traverse circuitous routes, led to the imposition of excessive charges. During the war also, lines were sometimes built for special necessities, and charges were imposed—not on distance, but to compensate quickly for the cost of construction, and according to special local circumstances. Wherever lines were built to meet an excited and a possibly transitory demand, tariffs were ranged as seemed consistent with the cost of building and the possible brevity of their existence. Other tariffs were based on circuitous routes necessary to reach the point of address, since then accessible by other wires more or less direct. All these causes have contributed to the confusion and irregularity in the general charges for which a remedy has been diligently sought.

To simplify this whole department, to strip it of its perplexity, to establish a basis of tariff on air line distances, rendering the whole system uniform, compensating and just, has been the work of the past two years, and has now, after great labor, approached completion. When thoroughly established, and each office has been provided with books of tariff, many irregularities will be at once removed, and the whole department be rendered susceptible of easy control.

The first step taken in this work was the provision of a map exhibiting all the offices, and on such a scale as to render the position of each distinct. Accordingly a map measuring 9 feet wide by 19 feet long was prepared, on which was noted every office, and the route of the wire by which it was connected. This map required nearly six months to prepare, and covers the entire side of the room in which the labor of the new tariff system is being done.

Instead of calculating the tariff from every office to every other office, as formerly, which would necessitate 10,890,000 entries, the surface of the map from Cape Breton to Omaha, and including all of Texas, has been divided into squares of fifty miles, so arranged that all the squares of every alternate row will be in line with each other, while the vertical lines terminate at the centre of the squares above and below them, as in masonry. Thus the whole map is composed of a series of clusters of squares represented by the Fig. A. The whole number of



squares, as at present arranged, is 500, all numbered, the

numbers commencing at the extreme east, and running from north to south, westward. By giving a tariff from the centre of a square instead of from each office within it to any office in any other square, however distant, it reduces the entries of tariff from 10,890,000 to 1,650,000, without any complexity, and by a process more susceptible of a general just application. When the offices have been provided with the tariffs between these 500 squares, all that will be necessary when a new office is opened will be to notify all offices that an office has been opened in a certain square, and the tariff is at once known.

To provide for a smaller tariff for offices, which by their location near the edges of adjoining squares, would render the tariff too large, a circle of 25 miles radius has been drawn round each office, with a tariff of say 25 cents to or from each office within that radius; another of 50 miles, with a tariff of say 30 cents; and a third circle of 75 miles, with an appropriate tariff. These are called "local rates." In other words, the tariffs for offices not more distant than 75 miles from any office, will be determined by circles of 25, 50 and 75 miles around that office as a centre. All other tariffs are reckoned by circles, 50 miles apart, which have the centres of squares as their base.

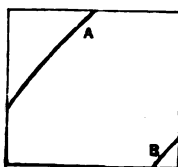
Such is the basis of the system now about to be introduced. It is easy to see that the provision of tariff books, by this process, is made simple, and comparatively unlaborious.

The basis of tariff will be distance by air lines. The minimum distance outside of the "local rates" will be, taking for example the Eastern Division, within a radius of.....

50 miles	30 cents,
75 "	35 "
100 "	40 "
150 "	55 "
200 "	70 "
250 "	80 "

and 10 cents for each added 50 miles.

As these distances are ascertained by circles, it is evident that many squares must be intersected by more than one circle. The tariff in such case is determined for the whole of the square intersected by that circle whose line across the square is longest. For example, B is a radius



for a tariff of \$1.50, while A is a radius for a tariff of \$1.60. A having the longest line across the square will indicate the tariff for the whole square at \$1.60.

To offices beyond Omaha, west, and beyond Calais, east, rates are provided to be added to the tariff given by the squares. These tariffs when west of Salt Lake and east of Calais, are given both in gold and currency, so as to preserve entire uniformity in the charges.

All these arrangements will be regarded as the basis of the system. Departures from it will be given by special directions.

The tariff book is a neat octavo of over 200 pages, in which, in addition to the established rates between the Western Union offices is given:

1. The rates to all offices on other lines where the Western Union Company has no office.
2. Tariffs by the cables to Cuba and Europe.
3. A sheet showing the tariffs from one square to every other square.
4. The rate for additional words and directions deemed necessary for general guidance.

The system thus introduced is, we believe, chiefly the work of Gen. Marshall Lefferts, the engineer of the Company, who has devoted much time to its elaboration, and examined all the objections to its use with the closest care. In the work of its execution he has been faithfully and laboriously aided by Mr. William Holmes, who has charge of the details of the tariff bureau. For the last three months Mr. Holmes has been engaged until near midnight with a large force, entering up the details of the new tariff books, a duty most exhausting and responsible. These will soon be ready for distribution, when the labor of the department will be simplified and reduced.

The adoption of an air line tariff will of necessity greatly diminish many existing charges. Offices fifty miles apart geographically, but whose messages to each other have to pass over a circuit of twice that distance, will have, so far as cost is concerned, all the advantage of a direct line. A large number of places will be thus benefited.

One tariff, irrespective of route, will also enable the company to use any accessible wire for hastening on messages without additional charge to the sender, and without complication of checks. This will reduce the revenue on certain classes of business, but the principle of the new system being right, liberal and just, the general operation of it must be healthful and compensating.

Henry J. Raymond.

In company with the press everywhere, and in sympathy with a sentiment of regret, wider and deeper than is felt for most men when they depart this life, we record the sudden death of Henry J. Raymond, Editor of the *New York Times*, at his home in this city, on the morning of June 18th.

No paper ever more faithfully represented its editor than the *N. Y. Times*. Dignified but not dogmatic, kind without being weak, patriotic without bluster, conservative yet progressive, truthful to present convictions at the hazard of party support, unexcitable yet ardent, with an easy and masterly command of language, both by voice and pen, a hard and careful workman, brilliant as an orator, and unsurpassed in his vocation, Mr. Raymond has passed away leaving a deep gap behind him, and universally lamented and honored. It is much to say of any public journalist what is eminently true of Mr. Raymond, that no article ever was indicted by him to wound by its bitterness, or which owed its birth to malice. Even to those he deemed the foes of his country, when his patriotism was most roused, he was ever dignified and kind, and yet urged resistance with consistent and unswerving ardor.

He has passed away from living men, leaving behind him the fragrance of a life devoted to the best interests of his country, beloved by all who knew him, and honored wherever his name was known.

At the date of our publication, probably 1000 miles of the French cable have been submerged. What was regarded as a wonderful specimen of engineering skill a few years ago now scarcely excites a remark, and the landing of the cable at St. Pierre is expected as confidently as the arrival of an ocean steamer at New York.

POPE'S MODERN PRACTICE has proved a most acceptable offering to the telegraph offices of the country, and has been universally received with expressions of commendation.

THE broken cable between Nova Scotia and Prince Edwards Island has been restored.

THE passengers on the Great Eastern will be confined to gentlemen scientifically connected with the expedition, such as Sir Daniel Gooch, Sir Samuel Canning, Mr. Varley, Sir W. Thompson, and the French directors. Upon her return, the Great Eastern proceeds to Bombay to lay the British-Indian Cable. The voyage from Brest to St. Pierre will occupy eighteen or twenty days.

FLEETWOOD HOUSE,
BROKENHAM, KENT, 8th June, 1869.

MY DEAR SIR: I sail in the great Eastern with the new cable, and shall hope to have the great pleasure of seeing you once more in the course of a few weeks.

Kindly remember me to all friends, and believe me to be

Yours very truly,
C. F. VARLEY.

We shall be glad to see Mr. Varley's cheerful face among us again, and hope the Great Eastern will take good care of him during his journey hither. Has Napoleon been consulted respecting the safety of hitching imperial France to republican America? Does Mr. Varley come with his long cable to marry the Red Shirt of Paris to the Radicals of New England?

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
JUNE 2, 1869.

Notice is hereby given, that the Annual Meeting of the Stockholders of the Western Union Telegraph Company will be held at the Executive Office of the Company (145 Broadway), in the City of New York, on the second Wednesday (14th) of July, 1869, at twelve o'clock, noon, of that day.

Notice is also given, that the Board of Directors have this day declared a dividend of two dollars a share on the Capital Stock of the Company, from the earnings for the six months ending June 30th, instant, payable at the office of the Treasurer, 145 Broadway, on and after July 20th, 1869. The transfer books will be closed on the afternoon of the 21st instant, and opened on the morning of the 21st July.

Stockholders can apply for their dividends personally, or checks will be sent them upon their written request, or they can draw for the same through the banks where they do their business.

By order of the Board,
O. H. PALMER,
Treasurer.

M'Kee & Lee's Railroad Signals.

Much attention seems to be given to the provision of easy and prompt modes of signaling trains for various purposes, especially for giving warning of danger or of notification of a change of orders, arresting a train passing a station where stops are not usually made, &c. We referred some time ago to the ingenious contrivance of M'Kee & Lee, of Neponset, Illinois, for this purpose, which has been adopted by the Michigan Central R. R., the Chicago & Alton R. R., the Terre Haute & Indianapolis, and other important roads, but did not then give the full attention to it which we designed. An invention which has thus secured adoption on such important roads must have merit enough in it to secure the attention of all interested in the safety of travel, and a more complete system of railroad control.

The invention is especially adapted for use on railroad lines where the telegraph operators have orders to stop trains and deliver telegrams. They are required on many roads to display signals, green flags by day and green lights by night, and to withdraw these immediately after trains have passed. This takes the operator from his post and has been found awkward and mischievous.

Messrs. M'Kee & Lee have arranged a signal box, so placed that no train can pass without the signals connected with it being seen, and which are visible from the operator's table. The signals are flags and lanterns, and are connected with cords leading to the operator, who can at once, and without leaving his table, make all the signals necessary, and himself see that they are properly made. Thus while in the act of receiving orders by telegraph affecting a train just approaching or moving off, he can detain them without stopping his work. It is always dangerous to have the operator leave his post at certain times, and he sometimes returns to find orders too late to be communicated. The value of this invention is in thus enabling him to stand by his instrument, and yet arrest the trains.

We have diagrams of these new signals in our possession, which we do not deem it necessary to publish, the whole arrangement being exceedingly simple and effective. To companies who desire to test these signals, we commend our friends, M'Kee & Lee, who can be addressed at Neponset, Illinois, and who will give all explanations which may be necessary.

Extraordinary Phenomenon.

The Caspian Sea or Lake is dotted with numerous islands, which produce yearly a large quantity of naphtha, and it is no uncommon occurrence for fires to break out in the works, and burn for many days before they can be extinguished. Early last month, owing to some subterranean disturbances, enormous quantities of naphtha were projected from the wells and spread over the entire surface of the water, and, becoming ignited, notwithstanding every precaution, converted the sea into the semblance of a gigantic flaming punch bowl, many thousands

of square miles in extent. The fire burnt itself out in about forty-eight hours, leaving the surface of the water strewn with the dead bodies of innumerable fishes. Herodotus mentions a tradition that the same phenomenon was once before observed by the tribes inhabiting the shores of the Caspian Sea, which exceeds in area that of England and Scotland together.—*Chem. News.*

Electric Light Apparatus.

Some time since we were written to, inquiring where machinery for the production of the electric light could be procured, but not having information at hand we neglected to reply. We suppose any of our electric machinists can supply this apparatus. The Messrs. Chester, especially, have devoted much time and care upon this subject, and they would be the most likely to supply the mechanism necessary, and at reasonable rates.

To give some idea of the cost of such apparatus, however, we note that Messrs. E. G. Wood & Co., opticians, Cheapside, London, supply a complete apparatus for the purpose, consisting of the self-acting electric lamp, a powerful mirror and colored glass for throwing rays of different colored lights, and six cells of Grove battery, for £3.10, or not far from \$25 currency. The apparatus is in a neat portable case, and of fine finish.

ONLY a section of five miles in length remains to be cut, before the waters of the Mediterranean mingle with those of the Red Sea; in excavating which, twelve thousand laborers and artisans are daily employed.

It appears certain, therefore, that the canal will be opened on the day fixed by M. de Lesseps, viz., on the 1st of October next. The new ports and towns on the route are rapidly increasing in importance, even before success is certain; one of the most interesting being the town of Ismailia, built on the shores of Lake Timsah, which at present covers an area of six miles, entirely filled with the waters of the Mediterranean.

MR. GEORGE B. PRESCOTT has been withdrawn from the superintendency of the Sixth District, Eastern Division, to the performance of duties in connection with the executive department of the Western Union Telegraph Co., 145 Broadway, N. Y. Mr. Prescott has made himself exceedingly useful to the Company by enlarged and exact knowledge of telegraphic statistics and history, and his new sphere will be much more congenial to his tastes and habits.

THE insurance paid on the French Atlantic cable is 4 per cent. The rates on the old Atlantic cables were 20 per cent.

"ARCHIMEDES, of Syracuse, declared that, if they would give him a fulcrum and a sufficiently long lever, he would move the world, but, not knowing its weight, as we do now, he could not have formed a very clear idea of the magnitude of the task. Supposing that he got his lever planted, and of sufficient length to be moved by exerting upon it a pulling force of thirty pounds. Had he moved it through ten thousand feet per hour, for ten hours a day, the remote end of the lever would have to pass through an arc which it would take 8 trillions, 774 billions, 994 millions, 574 thousands, 737 of centuries to accomplish, in order to raise the earth a single inch."—*Appleton's Journal.*

If a leaden bullet hits a man, what striking metamorphosis takes place?—The leaden bullet becomes felt.

Married.

April 24th, 1869, in Trenton, N. J., by Franklin S. Mills, Esq., Jesse R. Mills, of B. & B. Philadelphia office, to Miss Hattie Pettit, of Trenton, N. J. No cards.

Monday noon, June 14, 1869, at the Charleston Hotel, by the Rev. J. D. Onins, Monroe C. Hamlin, Manager W. U. telegraph office, Charleston, Ill., and Miss Amy P. Whittlesey, of Evansville, Ind.

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MODERN PRACTICE

OF THE
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A HAND-BOOK FOR ELECTRICIANS AND OPERATORS.

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BY FRANK L. POPE.

This book supplies what has long been recognized as the great desideratum in American Telegraphic Literature. It is a THOROUGHLY PRACTICAL TREATISE,

and should be in the hands of every Electrician, Superintendent, Operator, Line Builder, Repairer and Batterymen. It contains full descriptions and explanations of all the

MODERN IMPROVEMENTS IN TELEGRAPHY, which stood the test of actual experience. The work also contains the new system of

TESTING BY MEASUREMENT,

which has been employed with great success upon the Atlantic and other cables, and more recently upon land lines.

The Appendix contains a large amount of useful and practical information, formulas, tables, &c., which have never before been brought together in a convenient and accessible form. The work has been freely illustrated, wherever required, with

ELEGANT ENGRAVINGS,

most of which have been engraved expressly for its pages by the best artists.

WHAT LEADING ELECTRICIANS AND TELEGRAPHERS SAY OF IT.

Prof. S. F. B. MORSE writes:

"I have had time only cursorily to examine its contents, but this examination has resulted in great gratification, especially as the fairness and unprejudiced tone of your whole work."

"Your illustrative diagrams are admirable, and beautifully executed."

"I think all your instructions in the use of the telegraph apparatus judicious and correct, and I most cordially wish you success."

Gen. ANSON STAGGER, General Superintendent of the Central Division of the Western Union lines, writes:

"I feel assured that it will prove of great value to all interested in the science or practical details of the Electric Telegraph, and supply a deficiency that has long existed. A familiarity with its pages will, I have no doubt, render your work standard authority among practical telegraphers in this country on all matters concerning the Electric Telegraph of the present day."

Many other highly complimentary letters have been received from Mr. J. VAN HORN, General Superintendent of the Southern Division, Western Union Co., and others, which want of space prevents publishing.

WHAT THE PRESS SAYS OF IT.

(From the N. Y. Herald.)

"This is an admirable work. * * * We know of no other work of the kind so well adapted as this is to all who desire to become intimately acquainted with the wonderful science of the Electric Telegraph."

(From the N. Y. Sun.)

"* * * An excellent work by FRANK L. POPE, a gentleman whose long experience fully qualifies him for the duty he has performed. * * * The book will be exceedingly valuable to all who are studying electrical science and the art of telegraphing."

Packard's Monthly says his book is full of that kind of information most prized by practical operators, and will find its legitimate place in the working offices.

The work has been very generally and favorably noticed by the press. Notwithstanding the great expense incurred in the publication of this work, it is offered at the very low price of

\$1.50.

On receipt of the price of the book, it will, if desired, be forwarded by mail, post-paid, to any part of the United States or the British Provinces. Orders should in all cases be accompanied by the money, to insure prompt attention, and if sent by Post-office Order or Registered Letter, will be at the risk of the Publishers.

Orders may be sent to FRANK L. POPE, Box 6138, or to the Editors of the JOURNAL OF THE TELEGRAPH, THE TELEGRAPHER, or

RUSSELL BROTHERS,

PUBLISHERS,
28, 30, 32 Centre Street.

The work may also be had of the following, who will keep it on hand and for sale:

D. Van Nostrand, 23 Warren and 27 Murray streets; L. G. Tillotson & Co., 11 Dey street; C. T. & J. N. Chester, 104 Centre street; Chester, Patrick & Co., 38 South Fourth street, Philadelphia, Pa.; W. H. Young, Washington, D. C.; Charles Williams Jr., 109 Court street, Boston, Mass.; S. C. Rice, W. U. Telegraph Office, Albany, N. Y.; C. W. Northrup, A. & P. Telegraph Office, Rhinebeck, N. Y.; Bliss, Tillotson & Co., 171 South Clark street, and L. C. Springer, 162 South Water street, Chicago, Ill.; A. J. Gardner, Greenacres, Ind.; Frank Lehner, W. U. Telegraph Office, Omaha, Neb.; S. E. French, C. & N. W. R. R., Chicago, Ill.; Lundberg, & Marwedel, San Francisco, Cal.; R. Valentine, N. W. Tel. Co., Milwaukee, Wis.; J. J. G. Riley, B. & B. Tel. office; H. Craig, B. & O. R. Tel. Company, Pittsburgh, Pa.; W. H. Woodring, St. Joseph, Mo.; C. H. Sewall, Franklin Tel. office, Boston, Mass.; Chas. E. Hiden, W. U. Tel. office, and W. J. McClure, P. & A. Tel. office, Burnett House, Cincinnati, Ohio; Geo. L. Walker, T. P. and N. E. R. R., Peoria, Ill.; L. Froette Archibald, W. U. Tel., Truro, Nova Scotia; M. D. Buckwell, B. & L. Tel. office, Philadelphia.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
JULY 1, 1889.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since June 15, the date of the last tariff order. Please note them in your tariff book:

NEW OFFICES.

Bergen City, N. J., tariff same as Jersey City, N. J.
Cranford, N. J., re-opened, tariff same as heretofore.
Killawog, N. Y., tariff same as Marathon, N. Y.
Oldtown, Me., tariff 10c. more than Bangor, Me.
Port Crane, N. Y., tariff same as Harpersville, N. Y.

SUMMER OFFICES.

Berkeley Springs, W. Va., tariff same as heretofore.
Catakill Mountain House, N. Y., tariff same as heretofore.
Lake Mahopac, N. Y., tariff same as heretofore.

NEW OFFICES ON OTHER LINES.

Deal, N. J., 20 and 2 from Long Branch. Check Long Branch.
Mahanoy Station, Pa., 45 and 4 from Danville. Check Danville.
Ransch Gap, Pa., 35 and 3 from Philadelphia or Harrisburg.
Check by cheapest route.

Rock Haven, Ky., 50 and 5 from Louisville. Check Louisville.

OFFICES CLOSED.

Belair, Md., mail business hereafter at Baltimore, Md.
Holmes' Hole, Mass., business will now be delivered from New Bedford, Mass. Charges 25c.
Ware, Mass., business will now be delivered from West Brookfield, Mass. Charges 25c.

TO OFFICES "HAVING SPECIAL SHEET A."

Hereafter rate to Crown Point, Ind., will be same as "special rate" to Chicago, Ill.

GENERAL INFORMATION.

Rate to points in Prince Edwards Island will hereafter be 1.20 and 8 in gold, or 1.70 and 11 currency from Sackville, N. B.

WILLIAM OSTON, President.

Base Ball in Hoboken.

HERALD VS. TELEGRAPHERS.

A game between the employees of the New York Herald and the operators of the Western Union Telegraph Company was played at Hoboken yesterday. The Telegraphers far exceeded the Herald boys in batting. The following is the score:

HERALD.				TELEGRAPHERS.			
	O.	R.	E.		O.	R.	E.
Anderson, 3d b.....	3	2		F. H. Seibert, 1st b.....	2	5	
Adams, p.....	3	3		Blanchard, 3d b.....	5	3	
Fitzpatrick, s. s.....	2	2		H. P. Jones, c. f.....	4	3	
Atwood, 1st b.....	5	0		Glover, p.....	1	6	
Kelly, c.....	2	3		Morrell, p.....	6	1	
Gritton, 2d b.....	1	2		Maxwell, l. f.....	1	6	
Weber, l. f.....	3	0		Landy, s. s.....	3	5	
Wallace, c. f.....	3	0		Taaffe, c.....	0	8	
McKenzie, r. f.....	5	0		W. G. Jones, 2d b.....	5	3	
Total.....	27	12		Total.....	27	40	

INNINGS.

Herald.....	1	2	3	4	5	6	7	8	9
Telegraphers.....	2	1	0	0	0	0	2	2	5-12
J. F. Murphy, of Eckford, Jr., of New York, umpire.	2	2	1	2	8	6	13	3	3-40

Home runs were made by Maxwell, Glover and Taaffe. Fly catches and double plays were made in fine style by the telegraphers, who seemed as much at home ball playing as at the key.

At the close of the game the defeated Heralds behaved handsomely, and all parties met and had a good time together, returning to the city much pleased with the sport, at a pretty late hour. There was a large attendance of telegraphers, and all enjoyed the game as well as the afterpart, of which we have no particulars.

This was the first game of the season, but will not be the last. Several other games are in prospect, of which we will give due account.

Telegraphers' Mutual Life Insurance Association.

ASSESSMENT NO. 8.—ASSESSMENTS RECEIVED.

Samuel J. Smith,	James D. Reid,
R. C. Humphreys,	E. F. Ludwig,
R. G. Warth,	D. J. Ludwig,
Robert N. Norton,	L. Maury, Nos. 7 & 8,
Robert Cunningham,	J. U. Ansley,
N. H. Browne, Assess. 7,	W. C. Havens,
James P. Cassidy,	Joseph Beach,
A. J. Lombard,	W. O. Lewis,
Benj. Clark,	James Farrell.

Telegraphers' Insurance Association.

On June 23d, the death of — Anderson, of Memphis, was announced, and a call made for funds for his family, but up to the announcement of his death no application had been received for his insurance, and, from information since received, it would have been declined. The application was received on the morning of June 24.

Hereafter an application must show age, name, address, general health, and if the party has any hereditary or incurable disease, present condition of health, present occupation, how long been engaged in telegraphing, and for whose benefit insured. The application must be approved by some superintendent or manager known to the executive committee. In all cases the full name and address is required.

We take this opportunity to request as much promptitude as possible in remitting assessments. Where it is desired, money may be remitted in advance for other assessments and credit given.

GREAT BRITAIN finds that the purchase of the British telegraph lines will cost her the snug sum of forty-five millions of dollars, this, too, in a territory little larger than the State of New York. We see that Mr. Reuter puts in his little claim at the modest sum of three millions six hundred thousand dollars.

AMONG the passengers for Europe by the Cuba, on the 23d ult., was Major Perry McD. Collins, the projector of the Russo-American Telegraph line. In 1855 Major Collins conceived the idea of uniting Europe and America with a telegraph by way of Asia. Several years later he concluded contracts with the Russian Government and with the Western Union Telegraph Company for the construction of the line, which was begun, but abandoned on the successful laying of the Atlantic cable. Since then he has been patiently working for a renewal of the enterprise, and is now in a fair way for success. He proposes to cross the Pacific by a series of submarine cables from our western coast to Eastern Asia, following the line of the Aleutian and Kurile Islands, and from Japan to China and Siberia. The Western Union extension is completed to within 260 miles of Sitka, and can be carried to that point in a few weeks. On the Asiatic side the Russian line is finished to Posyet, Eastern Siberia, within 300 miles of Hakodadi, Japan, and 2,700 miles from Sitka. Thus, a telegraph line of less than 3,000 miles is needed to complete the electric circuit of the world. The longest cable on the route proposed is 600 miles, between Sitka and Kodiak; and the other cables will be from 50 to 400 miles long. From Hakodadi land lines are proposed to be extended through Japan, and cables to Posyet and Shanghai, the former connecting with the Russian system, and the latter with the Chinese telegraphic cable, which the East India Telegraph Company is preparing to lay down.

Major Collins is now on his way to London and St. Petersburg, to negotiate for cables and arrange for the preliminary work. Government ships have been promised to make soundings along the ocean route, and assist in laying the cables.—N. Y. Sun.

In a report on the Edinburgh Observatory, it is stated by Professor Piazzi Smyth, that, in trying some mechanical means of ventilation for carrying off from the top of a room the effluvia of gaslights, there were obtained five pounds of water so acid as at once to redden litmus paper, by the constant burning of one gaslight for a week; a result completely explaining, it is considered, the circumstances of the corroding and falling off of the covers of books in the Observatory.

The Magnesium Light.

Great expectations were raised with reference to this light as soon as a method was discovered for the cheap preparation of the metal. When magnesium is burned it emits a light quite unendurable to the naked eye, and it only remains to consider the most economical manner in which the combustion can be carried on. When the pure metal is employed it gives rise to a voluminous white cloud of the oxyd of magnesium, that obscures the reflectors and eventually fills the room where it is burned.

Various attempts have been made to absorb this vapor, and thus remedy the difficulty. By alloying the magnesium with zinc the quantity of light is not diminished, and the fumes are more readily removed. An alloy with the new metal, thallium, has been very successfully tried. A lamp has been patented for burning finely divided magnesium mixed with sand, and made to pass through an hour-glass arrangement on to a small flame. The mixed sand and metal are then fed regularly into the flame, and the light emitted is very intense. In other lamps the magnesium, in the form of wire or ribbon, is unrolled from a reel and fed into the flame.

A New Cement for Bottles.

Chemists and others know well the difficulty of keeping very volatile liquids. Bottles of ether, for example, are shipped for India, and when they arrive are found to be more than half empty. The chemist sometimes puts a bottle of benzole or bisulphide of carbon on his shelves, and when he next requires it he finds the bottle empty and dry. The remedy with exporters is a luting of melted sulphur, which is difficult to apply and hard to remove. A new cement, therefore, which is easily prepared and applied, and which is said to prevent the escape of the most volatile liquids, will be useful information to many. It is composed simply of very finely ground litharge and concentrated glycerine, and it is merely painted around the cork or stopper. It quickly dries and becomes extremely hard, but can be easily scraped off with a knife, when it is necessary to open the bottle.—American Artisan.

AN OLD RHYME.—There is an old superstitious rhyme, whereof I have seen several versions, concerning the result of being born on a certain day of the week. It is something of this sort:

Monday's child is fair of face,
Tuesday's child is full of grace,
Wednesday's child has toil and woe,
Thursday's child has far to go,
Friday's child is loving and giving,
Saturday's child works hard for his living,
And the child that's born on the Sabbath day
Is happy and lucky and wise and gay.

Here are a few tests. Byron was born on a Tuesday; so was Napoleon I; Napoleon II (M. Rochefort's ideal Emperor) on a Wednesday; Napoleon III also on a Wednesday; Pope Pius IX on a Sunday; Garibaldi on a Wednesday; Bismarck on a Friday (the 1st of April); the unhappy Emperor Maximilian also on a Friday; his Empress on Sunday; Mr. Gladstone on a Friday, and Mr. Disraeli on a Saturday.—Notes and Queries.

THERE is far more sunshine than cloud in the world, and the blue sky oftener bends lovingly down than does the threatening black. Nature grows flowers everywhere, alike in the untrodden and unseen wilds and in the garden of the florist. Our years of happiness—or what should be such—far outnumber those of sorrow, and the heart beats responses of joy a thousand times where it beats to sadness once. It is well to think of these things. The tendency of mankind is to take short, imperfect, false views of its surroundings. We get everything, deserve nothing, and grumble pretty much all the time.

A Wheelocipede.

It has only one wheel,
Neither treadle nor saddle;
It is built in such shape
That you don't have to straddle.
The man who propels it
Takes hold with his hands
Of two parallel bars,
And on the ground stands;
Puts his feet in motion,
One after the other,
While the vehicle goes,
Without any bother.
This funny machine
Has no painting or gilding;
It is useful to carry
Material for building—
Shingles and shavings,
Brick, lime and plaster—
And the lighter the load,
It can travel the faster.
It is better than a bicycle,
For it isn't so narrow;
And our wheelocipede
We will call a wheel-barrow!

Deep Sea Soundings.

At a meeting of the New York Association for the Advancement of Science and Art, held June 14, Mr. Livingston Morse exhibited his recently invented device for taking deep sea soundings without the inconvenience and delay incident to the use of ordinary sounding lines. The apparatus is termed a "bathometer," and consists in a hollow cylinder of wood or sheet metal containing a number of hollow glass spheres, which, being filled with air, constitute the floats by which the device is caused to return to the surface of the water after its descent to the bottom. The cylinder is ballasted in such a way that it will maintain an upright position in the water, and has a detachable weight affixed to its lower end. When dropped overboard, the weight carries the apparatus to the bottom, whereupon, by an automatic contrivance, the weight is detached and the cylinder rises to the surface. The time of ascent and descent being about equal, and the rapidity of movement being ascertained by previous experiment, the period of submersion is a tolerably accurate index of the depth. The inventor, however, does not intend to rely upon this, but has provided the apparatus with a peculiar registering device by which the pressure of the water, and consequently the depth, is accurately recorded. The instrument is furthermore so contrived as to bring up a specimen of the bottom of the sea at the point where it struck.

THE LOVE OF THE BEAUTIFUL.—Place a young girl under the care of a kind-hearted, graceful woman, and she unconsciously to herself grows into a graceful lady. Place a boy in the establishment of a thorough-going, straight-forward business man, and the boy becomes a self-reliant, practical business man. Children are susceptible creatures, and circumstances, scenes and actions always impress them. As you influence them, not by arbitrary rules, not by stern example alone, but in the thousand other ways that speak through beautiful forms, through bright scenes, soft utterance and pretty pictures, so will they grow. Teach your children then to love the beautiful. Give them a corner in the garden for flowers, encourage them to put in shape the hanging baskets, allow them to have their favorite trees, lead them to wander in the prettiest woodlets, show them where they can best view the sunset, rouse them in the morning, not with the stern "time to work," but with the enthusiastic "see the beautiful sunrise;" buy for them pretty pictures and encourage them to decorate their rooms, each in his or her childish way. The instinct is in them.

Handsome Present.

Yesterday a committee of telegraph operators on the Central Railroad of New Jersey, on behalf of their associates, presented to James L. Mingle, Esq., their former Superintendent, a splendid solid walnut counting house desk as a token of their esteem. The desk is most beautifully gotten up, is amply provided with drawers, shelves and pigeon holes, and was made with a special view to convenience by a leading cabinet maker in New York. Just above the recess, in front of the desk, is attached a large and very handsome silver medal, on which is engraved the following inscription:

JAMES L. MINGLE: Please accept this gift from the undersigned, operators on this line, as a mark of their appreciation of services rendered and favors extended to us all while you had charge of the Telegraphic Department on the Central Railroad of New Jersey:

J. H. Johnson,
C. H. Walton,
P. Mixsell,
F. Gordon,
J. B. Hunt,
S. H. Garis,
J. Silver,
E. S. Russell,
J. M. Shannon,
S. S. Bogart,
G. H. Frech,
A. M. Smith,
W. T. Swam,
A. Nelson,

E. L. Flint,
J. H. Frech,
J. C. Hamman,
T. E. Quin,
J. K. Sheppard,
C. B. Norman,
G. W. Harrison,
W. H. Hagenbuch,
C. L. Suydam,
J. H. Kruesen,
C. H. Vogel,
K. S. V. Randolph,
W. F. Goundle,
J. M. Odenwelder,

J. J. Cyphers.

JUNE 1st, 1869.

The following is a copy of Mr. Mingle's letter of acknowledgement:

EASTON, June 15, 1869.

Messrs. Bogart, Quin, Suydam and others.

GENTLEMEN: The handsome desk you have been pleased to bestow upon me, as a testimonial of your regard, is gratefully accepted. Its beautiful workmanship is the admiration of all to whom I have exhibited it; but whilst I highly prize it for its beauty and usefulness, I value it chiefly as an evidence of the good feeling you retain for me after my retirement from the control of the line upon which you are employed. I shall ever bear in affectionate remembrance this expression of the pleasant relations that had grown up between us, and shall be pleased at all times to bear testimony to the confidence and esteem inspired by your professional skill and personal worth.

Respectfully,

JAS. L. MINGLE.

DURANT'S**NONPAREIL RELAY,**

A PRACTICAL

SELF-ADJUSTING RELAY

ON ALL ORDINARY CIRCUITS.

Price, \$30.

Mr. GEORGE E. SEIBERT, Western Union operator, 145 Broadway, says:

"I have worked Durant's Self-adjuster on the Cincinnati wire for two days, and can testify to its being a Self-adjuster in every respect."

For a full description of the construction and advantages of this instrument see Journal of the Telegraph of December 15, 1868.

Goods sent to all parts of the Continent with bill C. O. D.

Parties remitting in advance by certified check, payable in New York, or by Post Office Order, will save the expense of returning funds by express.

Address all orders to

CHARLES DURANT,

Office and Factory 86 Nassau St.,

New York City.

Agent for the sale of the Nonpareil Relay on the Pacific Coast,

MR. STEPHEN D. FIELD,

San Francisco, Cal.

CHESTER, PARTRICK & CO.,

Manufacturers and Dealers in all kinds of

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38 SOUTH FOURTH STREET, PHILADELPHIA.

Now offer for sale, or will manufacture to order,

REGISTERS,

RELAYS,

KEYS,

LIGHTNING ARRESTERS,

SOUNDERS,

SWITCHES,

And every variety of Instruments now in use. Among the supplies constantly kept on hand, are the following:

Battery Materials of all kinds, Line Wire, all sizes, Brackets, Insulators, Medical Batteries (induced or direct current), Fire and Burglar Alarms for Banking Houses and Private Residences, as well as for Cities and Towns; also, Contractors for the Construction, Reconstruction and Repair of Telegraph Lines throughout the United States.

All the Standard Works on Telegraphy furnished at the lowest prices, among which is the latest work of

MODERN PRACTICE OF THE ELECTRIC TELEGRAPH,

By Frank L. Pope.

Also, Electro-Platers' Batteries and Materials, Blasting Apparatus, Cartridges and Patent Portable Machinery for the manufacture of Nitro Glycerine.

All orders executed with promptness, and satisfaction guaranteed in the quality of articles supplied.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

Agents in New York,

MESSRS. L. G. TILLOTSON & CO., No. 11 Dey street.

THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with its

GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high cost Norway Iron Wire, in the same locality, and strung at the same time, was broken in several places.

Address—

AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

ALANSON CARY, Treasurer,

No. 231 West 29th street,

New York.

Or Agents of the Company.

Ney's Battery.

This cheap and convenient battery is constructed as follows: It consists, in the first place, of a glass vessel, filled with a solution of sal-ammoniac; then of an amalgamated zinc plate, which dips into the vessel. Further, of a porous cylinder of clay, standing in the same vessel, and filled with carbonate of copper, in which a plate of copper is suspended. For field and telegraph purposes, it is well to fill the glass vessel with fine sand, saturated with sal-ammoniac solution, instead of the pure solution itself. It is only necessary to add the crystal sal-ammoniac from time to time, in order to keep this battery in constant activity. The carbonate of copper is itself insoluble in the sal-ammoniac solution; but under the influence of the galvanic current, the sal-ammoniac is separated into the hydro-chloric acid and ammonia, the first of which attaches itself to the zinc, and the latter to the salt of copper, and dissolves it. During the reduction, a secondary current is produced, which is equivalent in strength to that of a Daniels' battery.

SHAWK & BARTON,

Manufacturers of
ELECTRICAL INSTRUMENTS,
And Dealers in
TELEGRAPH SUPPLIES.

Having purchased the Stock and Tools of the Western Union Company's Cleveland Shop, will manufacture to order and keep on hand all articles of Telegraph Machinery and Supplies.

Line Wire,	Salts,	Lightning Arresters,
Office Wire,	Mercury,	Lightning Rods,
Insulators,	Relays,	Induction Coils,
Jars,	Registers,	Tissue Paper,
Porous Cups,	Keys,	Carbonized Paper,
Tumblers,	Sounders,	Clips,
Zincs,	Repeaters,	Electro-platers' Materials,
Acids,	Switches,	Philosophical Apparatus,
&c.,	&c.	&c.

We continue to manufacture Instruments after the favorite

WESTERN UNION STANDARD PATTERNS,

and shall keep up with the times in all valuable improvements.

Customers can obtain at our depot a

COMPLETE OUTFIT OF ELECTRICAL APPARATUS,

embracing such Instruments of other manufacturers as are good and serviceable.

We are prepared to take contracts on liberal terms for the construction and equipment of

TELEGRAPH LINES

of any required length, in any part of the United States, for individuals or for corporations.

NO. 33 ST. CLAIR STREET, CLEVELAND, O.

G. W. SHAWK,

E. M. BARTON.

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THICK, CLEAR AND ADHESIVE.

Who has not used

STICKWELL'S MUCILAGE?

That man must be an old FOGY who prefers any other to it. It is a household word. It sticks the letter stamp which Uncle Sam has forgotten to coat with gum. It mends the babies' dolls and furniture when broken. It saves the purchase of China Cement when the parlor vase is smashed. It effectually closes the Envelope which the cheap stationer sells you as adhesive. It is as strong as glue prepared by Spaulding "or any other man." It is as cheap as the worthless trash sold under another name. It saves the pieces. It never SOURS or becomes THIN. Freezing does not hurt it.

Stickwell's Mucilage is KING of the Market. No other brand sells as well.

IN QUARTS, PINTS, 8OZ. CONE, 8OZ. FLAT, 8OZ. CONE, AND FLAT BOTTLES, WITH CAP AND BRUSH.

ALL MUCILAGE PACKED ONE DOZEN IN WOOD BOXES.

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Sole Proprietor, N. Y.

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Stocks, Bonds, Gold and Government Securities bought and sold on Commission.

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WRITING AND COPYING FLUID,

Labeled by me, for the last ten (10) years, **ARNOLD'S FLUID** Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 33¼ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

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Offer the best guaranty of excellence in their profession—in their long established business—in the extent and variety of their manufacturing facilities—in the many improvements introduced by them, now almost universally adopted or imitated—and in the extent of their business, domestic and foreign, enabling them to keep pace with telegraphic progress.

They publish an Illustrated Descriptive Catalogue of their leading manufactures, to which they respectfully refer.

Telegraphers' Mutual Life Insurance Association

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of whom the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association, decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postage, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to the executor of the first degree as are dependent on the decedent; should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay within the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and be ineligible to be restored only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, and shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when authorized by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also act as the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,
A. S. BROWN,
W. H. HILL,

Executive Committee.

J. D. REID, Treasurer.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association is any one time, having been limited for the present to *After hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 146 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

Journal of the Telegraph.

A Valuable Scientific Museum Destroyed.

The St. Louis Academy of Science has recently suffered the loss by fire of its valuable collection of books, pamphlets, maps, etc. The museum contained six hundred specimens of marine shells, donated by the Smithsonian Institute, and was unusually rich in crania, skeletons of birds, and reptiles, together with Dr. Pope's mounted skeletons of mammals, purchased in Europe and transported at great expense; also about 1,200 specimens of minerals, embracing a full suit of Missouri minerals and ores. There were also an extensive collection of the bones and teeth of extinct animals, and fossil turtles collected from the Mauvais Terre, Dakota, by Prof. Hayden; also, the collection of rocks, illustrating various geological periods, amounting to four or five hundred specimens, including those collected by Dr. Wizenzen during Colonel Doniphan's expedition to New Mexico.

Beside the above, there were any quantity of Indian relics and curiosities, including a birch bark canoe; also the specimens of porcelain, collected from a porcelain tower blown up by the China rebels, and presented to the Academy by Lieut. Clarke, United States Navy. All were destroyed, a loss which is irreparable.

Curious Electric Shock—Lightning Lying Around Loose.

On Monday afternoon, Mr. D. A. Griffin, of this city, received a pretty severe electric shock in this wise: On the afternoon in question he, in company with Mr. A. Richardson, was engaged in putting up a lightning rod on Mr. Burne's house, some seven miles south from this city. The tip of the rod being a little loose, Mr. Griffin applied his pincers to the wire to tighten it, when there was an instantaneous explosion of electricity, with some four or five sharp reports, following each other in rapid succession. Mr. Griffin was knocked down, falling on the roof, but luckily had sufficient strength and consciousness to throw his hands over the peak of the roof and maintain his position until help reached him. A short time previous to the explosion, a moderate thunder storm had passed over the locality, but at the time of the shock, the clouds had nearly or quite passed away, and no signs of the presence of electricity were visible. The connections of the rod with the earth had not been completed at the time of the shock, and the moment the steel pincers came in contact with the rod the electric current was attracted, with the results above named. Mr. Griffin, we believe, has entirely recovered from the effects of the shock.—*Rochester (Minn.) Post.*

TYPE-SETTERS should be careful to dip their fingers into the right boxes. Out West an editor has been sued for libel, in having published that a certain Mr. Harrison was a well-known house-breaker. The defense of the editor is that he wrote horse-breaker, which the plaintiff is by occupation.

A GENTLEMAN of Rochester saw an advertisement that a cure for dyspepsia might be had by sending a postage stamp to the advertiser. He sent his stamp and the answer was, "Dig in your garden, and let whisky alone."

"JIM," said one youngster to another on the Fourth; "Jim, lend me two cents, will yer? I got up so early that I spent all my money before breakfast. I didn't think the day was going to be so long."

SOME people have singular ideas of perfect happiness. An industrious Scotchman who resided near New York for a quarter of a century, and who had accumulated a very handsome property, recently sent to the "auld countrie" for his father, with the view that he should share his prosperity, and slip away from his lease of life as smoothly as possible. One day a friend of the family paid a visit to the elegant mansion on the Hudson, where the old gentleman was living with his son, and took occasion to compliment the proprietor of the estate on its surpassing loveliness and cosy comfort. The owner, full of love for his beautiful home, said he looked upon it and its surroundings as "a perfect heaven on earth." "Heaven on earth!" growled the venerable Scot—"heaven on earth, and no' a thimblefu' o' whuskey in the heill hoose!"

SPECIAL NOTICE.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK.

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BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK.

General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York. The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their

SUBMARINE TELEGRAPH CABLE

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

Western Union Telegraph Company.

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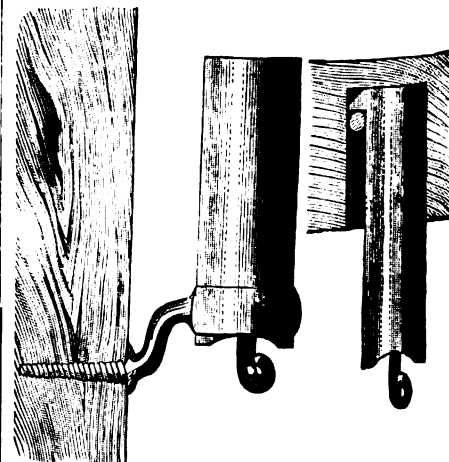
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WHOLE NO. 41.

HUGH ALLAN,
President of the Montreal Telegraph Company,
Montreal.

BY JNO. HOEN, JR.

Every nation has its history. Its wealth, power, administration, productions, moral status and influence, are scanned and estimated by sister nations, and has its place assigned in the forces of the world. But nothing in the history of any nation has ever commanded more attention than the lives of men who, by their genius or industry, have so impressed themselves on the national life as to be themselves the nation, the illustration of its vigor, and the sources of its power. So marked is this often, that sometimes a great nation may be completely and faithfully epitomized in a single name. In speaking of England the names of Bright, Cobden, Cunard, spring instinctively to the lips. In America, Stewart, Field, Grinnell. Ranking equally with all these in point of merit and positive influence, we point to Hugh Allan, of the Dominion of Canada, and offer a brief biography of this enterprising and influential man.

Hugh Allan was born at Saltcoats, County of Ayr, Scotland, on the 29th of September, 1810. He comes of a sea-faring race. His father, Capt. Alexander Allan, was a ship-master, who, for 30 years, traded between the Clyde and Montreal. Like the majority of the youth of Scotland, Hugh started early in the race of life. He left school when 13 years of age, and, like a duck, took naturally to the water. In this he obeyed the instincts of his family. His father's desires were his own as to his ultimate avocations in life. Hugh was accordingly placed in a shipping office in Greenock that he might obtain some insight into mercantile matters, more especially those relating to ships. He remained one year in this office, and then made several trips with his father, thus enlarging his knowledge and enabling him to acquire somewhat of the practice, as he had already obtained the theory, of navigation.

The study of ships, however, was only an introduction to the condition of ship-owner. Neither he nor his father deemed it sufficient that he should know only how to sail a ship, he was determined to find out how to build one. He soon therefore became absorbed in naval architecture and the practical modes of ship building. To lay a broader basis for the future, it was agreed by both father and son that a larger knowledge of general trade was essential to enlarged success, and it was determined between them that Hugh should leave Scotland and seek for a situation in Canada.

His first step in the successful career which has since followed him, was taken in the dry goods house of Wm. Kerr & Co., Montreal.

His engagement with this firm completed, he revisited his native land, after a somewhat extended tour through the United States. It need scarcely be remarked that he travelled with his eyes open, and,

having seen, remembered what he saw. After a year's absence he returned, and became a clerk in the house of Jas. Miller & Co., who, in addition to being commission merchants, were owners and builders of ships. In the course of four years, by his strong native talent and industry, he worked himself up to a junior partnership, and subsequently into a full partnership in this house, under the title of Edmonstone, Allan & Co. Not long after this, another change in the firm took place, and it became, as it now remains, Hugh and Andrew Allan.

In 1837-38, during the Canadian Revolutionary troubles, Mr. Allan determined to identify himself with the fortunes of his country, and laying aside



mercantile pursuits, served as a volunteer, and ultimately obtained a Captain's command.

In 1841, the troubles having subsided, his attention was called to the fact that a different class of ships was much needed between Montreal and Glasgow.

His theoretical information obtained in the counting-house at Greenock, and enlarged by his first experience in Montreal, together with his practical knowledge gained while sailing with his father, enabled him at this juncture to foresee that "tide in the affairs of men, which, taken at the flood, leads on to fortune," and having taken it at the right time, has made him, as he is at this moment, the most prominent man in the commercial circles of the Canadas.

In 1851 it became evident to many thinking minds in Canada that screw steamers could be successfully and profitably employed in the mail and passenger service between Liverpool and the St. Lawrence. Mr. Allan, it may be presumed, weighed well the matter in his own mind, and while trying, without success, to obtain a subsidy for carrying the mails from the

Canadian Government, put the project to the test, and with the assistance of his brothers, constructed two screw steamers for the St. Lawrence River. No sooner were these steamers completed than they were chartered by the English Government for service in the Black Sea during the Crimean war, the owners realizing no small gain by the arrangement.

Prior to building these steamers, the contract for ocean mail service was given to a Glasgow firm, which they did not keep. Their failure proved to be Allan's success. He had now a strong case to offer to the Government, when the new contract subsequently came up, for, with the advantage of having steamers built expressly for the service, he was enabled to point to the failure of the former contractors with such emphasis that the Government entered into an engagement with him as representative of a company, which service we believe has been faithfully performed to the present day.

In 1856 a fortnightly service with four steamers was commenced, and in the Spring of 1859 a weekly communication was established, which has ever since been continued.

The words "Allan's Line" has become a household word, and are synonymous with "Cunard."

The success of "Allan's Line" has not been without the loss of a number of fine steamers and many valuable lives. The pecuniary losses which these calamities have involved was enough to have discouraged a less resolute man than the subject of this sketch.

In January, 1852, 17 years ago, Mr. Allan was elected President of the Montreal Telegraph Co., and of which he was one of the original promoters. The lines of this important company extend throughout the whole of the settled portion of the Dominion of Canada, and are steadily increasing, and are connected at various points with the vast net work of lines of the Western Union Telegraph Co.

Mr. Allan is also an original shareholder in the Atlantic Telegraph Co., and for some years past has been one of its directors. He has always urged the propriety of low tariffs, having found by experience over the Canadian lines that low rates pay best, so long as the wires are not overcrowded. Mr. Allan's faith in the success of this work has never been shaken, and the hopes that he formed when the old cable was about to be laid have long ago ended in full fruition.

He is also largely interested in the Western Union Telegraph Co.

There are few enterprises which have originated in the City of Montreal, or are carried on in connection with it, in which Mr. Allan is not engaged.

In addition to being the principal owner and manager of a line composed of 19 first-class steamships and 25 sailing ships of large tonnage, he is President of the Merchants' Bank of Canada, which has an authorized capital of six millions of dollars. President of the Canadian Navigation Company whose 13 steamers run from Toronto, Hamilton and Lewiston on Lake Ontario to Montreal, and from Quebec to the Saginaw River. President of the Lake Memphremagog Navi-

gation Company. President of the Mulgrave Gold Mining Company. President of Montreal Warehousing Company. President of the Vermont and Canada Marble Company. President of a Building Society, and a shareholder and director in numerous other companies and enterprises. He also has extensive business connections with the United States.

Mr. Allan in appearance is about the medium height, with full beard, clear blue eyes and well defined regular features. His movements are quick, firm in his convictions, which are seldom at fault, energetic and untiring in all he undertakes, prompt in business, with an intuitive knowledge of that which will best tend to the public good.

By his fellow citizens he is recognised and noted for a singular amount of administrative ability, and their confidence in it is unbounded.

There are few men in any country whose business avocations involve a greater amount of thought, labor and responsibility. Taking therefore all these facts into consideration, the new Dominion, the adopted home of Mr. Allan, may well be proud of her son.

Unostentatious in his manner, his maxim, "to do the greatest good for the greatest number," a worthy citizen, a public benefactor and a staunch friend, there is no one in the Commonwealth or one who would be more highly preferred by the citizens for the honors of Knighthood than Hugh Allan.

Wire Railways.

"A railway without cuttings, embankments, tunnels, viaducts, or bridges, no matter how hilly the country to be traversed"—such is the definition given by *Herapath's Journal* of an invention now in use in Leicestershire, and a working model of which may be seen in Gresham street, E. C. The Wire Railway provides a simple and cheap substitute for a line of rails, and is of great service where, from the scarcity or intermittent character of the traffic, or the engineering difficulties of the ground to be got over, it is either not expedient or impossible to go through the expensive process of forming a local railway. For the wire spans over and evades obstacles in place of burrowing under or levelling them, and will perform its task as easily along a rugged tract of country as on the smoothest road. The experiment being now prosecuted with complete success between some Leicestershire stone quarries and a railway station three miles distant, consists of an endless wire rope, supported on a series of pulleys carried by substantial posts, which are ordinarily about 150 feet apart, but the interval between which may be greatly extended, as is shown in one case where the span from post to post is 600 feet. One of the ends of this rope passes round a Fowler's clip drum, worked by a portable steam engine, and this drives the rope at a speed of six miles an hour. Boxes are hung on the rope at the loading end near the quarries by a pendant which is ingeniously arranged to preserve a perfect equilibrium, and at the same time to pass without hindrance over the supports. Each of these boxes carries one hundred weight of stone, and the delivery is at the rate of 200 boxes, or 10 tons per hour for the three mile distance.

Already wire railways on the Leicestershire model are in course of erection in France, Italy and Spain. Negotiations are on foot, too, between the Turkish Government and the engineers here, and it is not improbable that this generation may see goods carried by wire as commonly as messages. The railway is, indeed, not unlike an exceedingly stout electric telegraph; and there is something almost droll in the sight of a regiment of well laden trucks or boxes passing gravely along it at stated intervals, and at a regular

pace, much as if they were at aerial drill. The most important point in Mr. Hodgson's invention is his method of passing the points of support, which consists in so curving the frame of the truck, or box, as to make the centre of gravity come under the rope. So admirably is this managed that some of our leading engineers have been discussing quite recently the possibility of constructing a stout wire railway between Dover and Calais, which should be supported from a line of pillars sunk in mid ocean, and along which passengers could be conveyed. The cost would be comparatively small, and suspensory trains could, it is argued, be dispatched across the Channel without difficulty or danger.

It should be stated that where heavy loads must necessarily be carried, a pair of stationary supporting ropes, with an endless running rope for the motive power, are employed, and that by these means as many as a thousand tons per day can be easily conveyed. The cost of erecting these railways in England, and of supplying motive power and rolling stock, is from £250 a mile for carrying 50 tons a day, in boxes holding half a hundred weight each, to £1,000 a mile for one of the double rope lines, to carry 1,000 tons a day, in boxes or trucks holding six hundred weight each. For all districts where there is traffic, but where it would not pay to construct a railway, the wire railway is particularly applicable, and, as will be readily understood, wherever there is standing room for posts, there a line can be erected. A recent application from traders in copper for putting one up for them, which should run through an African forest, and over an African jungle down to the coast, illustrates the varied circumstances under which the new system of transport may be applied.—*London News*.

Marriage by Telegraph.

The Paris correspondent of the *London Star* finds time amid the excitement of the French elections to pen this bit of social gossip: "You will remember the sensation produced last spring by the Duke of Beaufremont having been warned by a fair friend of the danger he was in of being poisoned by mean of a *bonbon* to be offered to him at one of the *ballets de l'opera*. The duke left Paris after the affair. His name has come again before the public in consequence of his wife pleading for separation *de corps et de biens*. The duchess, *nee* Valentine de Chimay, was still at the convent where she was educated when her consent to her marriage was asked by telegraph. The young heiress, flattered by the prospect of becoming the wife of a distinguished officer, consented by the same unromantic mode of transit. Immediately after the wedding ceremony she accompanied her husband, with whom she fell desperately in love, to the various garrisons where he was quartered, followed him on all possible occasions, and especially appears to have risked her health by taking long and fatiguing rides in his company. Two children were successively born, when the Mexican war gave the duke a pretext to separate himself from her. The duchess took her children to her chateau near Nanteuil, where, during his absence, she acted as agent and superintendent of the property, writing by every mail long and admirable reports of the improvements she was carrying out on the estate. Her attachment, unfortunately, never diminished, although in her family the duke's flagrant infidelity was perfectly known. Her anxiety for him during the Mexican campaign impaired her health, and immense was her joy when the return of the expedition was announced. With nervous impatience she awaited the telegram which would bring her the glad tidings of her husband's return. All her illusions soon revived and even strengthened in her absence. She conjured visions of renewed and eternal happiness.

At last the anxiously expected missive reached her chateau. It was dated, not from St. Nazaire, where the troops had landed, but from Paris, and ran thus: 'I cannot find any shirts; inform me by telegram when you have put them. (Signed) BEAUFFREMONT.'

To the North Pole by Balloon.

A new and daring experiment is noted by the *Pd Mall Gazette*: "The invariable failure which has hitherto attended nautical expeditions to the Arctic regions has induced two Frenchmen, Messieurs Tissandier and De Fouvillie, to undertake the enterprise of reaching the North Pole in a balloon. The machine in which the bold adventurers are about to embark on their perilous journey, and which is appropriately named 'Le Pole Nord,' is now being completed in the Champ de Mars, which the Government have placed at their disposal for the purpose.

The monster balloon, beside which even the famous *Geant* would seem a mere toy, will contain over 10,000 cubic meters of gas, and is composed entirely of cloth manufactured from caoutchouc, which will allow of great expansion in the rarefied strata of the atmosphere. The seams uniting the different pieces form a total length of three English miles. The car, a marvel it is said, of strength and lightness, is constructed to carry ten passengers, 4,000 pounds of ballast, and provisions for a month.

On a New Thermo-Electric Battery made with Galena.

M. M. Mure and Clamond. This battery is composed of sixty elements, made up of small bars of galena, 40 m.m. in length by 8 m.m. thick, and bars of thin sheet iron, 55 m.m. in length by 8 m.m. in width, and 0.6 m.m. thickness. These materials have been arranged so as to form a hollow cylinder, which, when it is intended to be used, is to be heated by a peculiarly constructed gas burner. The specimen of this battery exhibited at the meeting, had an electro-motive force of $1\frac{1}{2}$ Bunsen element. M. Becquerel read a lengthy paper on the subject of this battery, the result of which is, that thermo-electric batteries, constructed either of metallic alloys, or, as in this case, of a metallic sulphide and a metal, are not economical in use, and are too liable to changes brought on by the effects of the heat.

Utilization of Street Dust.

The dust from the macadamized streets of Paris is stated, yields an income of \$2,000 per annum to an ingenious individual of that city. He collects the mud from the streets, which near the houses in course of construction contains so much stone dust; he then places it in large tubs, passes the deposit through sieves, allows it to form a concrete, which he then forms into the long yellow bricks for knife-cleaning. The material costs nothing, the labor is insignificant, but the bricks sell for twenty cents each.

To clear a Room of Mosquitoes.

A writer in a South Carolina paper says: "I have tried the following, and find it to work like a charm. Take of gum camphor a piece about one third the size of an egg, and evaporate it by placing it in a tin vessel, and holding it over a lamp or candle, taking care that it does not ignite. The smoke will soon fill the room, and expel the mosquitoes. One night I was terribly annoyed by them, when I thought of and tried the above, after which I never saw or heard of them that night, and the next morning there was not one to be found in the room, though the window had been left open all that night."

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C. L. Chase, John C. G. Hamley,
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A. R. Brewer, T. P. Scully,
O. M. Gay, Joseph Knittle,
J. T. Maxwell, H. Frank Thurber,
Waldo Collins, John W. Sampson,
Gerrit Smith, J. D. Easterlin,
O. S. Wood, C. G. Merriweather,
S. Robertson, Chalmers Brown,
A. Weller, W. H. Chivvis,
D. H. Henshaw, George Chivvis,
G. K. Wood, Warren H. Moake,
W. W. Burhans, Fred. Crouse,
W. H. Hill, John H. Emerick,
R. K. Woodward, Joseph A. Remley,
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John Gay, F. T. Smith,
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W. H. Fessenden, William Connor,
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Henrietta Dieckman, A. W. Campbell,
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C. Orth Buts, J. C. Mattoon,
W. H. Clark, H. Pearce,
John Coque, C. M. Knox,
John W. Lewis, B. M. Johnson,
Josiah A. Hard, D. W. Warner,
Alfred W. Pearke, C. L. Snyder,
Cornelius Dwyer, W. J. Lawler,
George L. Lang, E. C. Bush,
George W. Dyer, E. C. Armstrong,
John Lonergan, B. F. Bush,
C. E. Tweed, M. C. Newman,
W. H. Stanton, Charles Selden, Jr.,
W. H. Steigelmaier, C. S. Lamb,
H. S. Smithers, O. E. Newton,
Fred. J. Grace, A. H. Graham,
G. H. Grace, M. B. Graham,
Philip P. Hauff, F. A. Armstrong,
John V. Brisben, C. E. Higdon,
Albert V. Hodakin, A. Kern,
Thomas W. Russell, W. W. Smith,
George H. Godfrey, C. H. Summers,
Miller Bullard, P. Callahan,
George E. Chevey, J. Sherwood,

John G. Edwards, J. E. Ash,
Joseph A. Fuller, W. Stoneback,
John A. Hasty, C. H. Smith,
W. H. Hamlin, Clarence A. Bolton,
J. N. Hoover, Arch. Craig,
A. T. Langhorne, Fred. S. Smith,
Christ. Minger, Dwight B. Case,
Harry J. Nichols, Charles Berry,
John G. Pollock, C. H. Edwards,
R. A. Taylor, Charles D. Sprague,
James E. Thomas, Charles Beardsley,
W. H. Vandegrift, Jefferson Herrick,
Alfred Winder, John C. Gregg,
J. C. Willson, William Sanford,
C. C. Whitney, J. Bohanna,
Daniel T. Francis, Henry C. Beckwith,
James P. Golden, E. D. Sandford,
Albion Earl Lang, Charles W. Moore,
A. A. Briggs, Charles L. Deforest,
H. W. Stager, John Wenzel,
P. H. Cooke, J. M. Worden,
Charles D. Camp, A. G. Martin,
John M. Outen, A. H. Copeland,
O. C. Harrell, B. L. Guion,
Stephen Putnam Belden, S. P. Gifford,
L. E. Atwater, D. L. Pike,
John P. Kirchner, Daniel V. Ferris,
Will Fraser, A. J. Schall,
N. H. Rugg, E. N. Taylor,
M. W. Wilder, Thomas J. Tobin,
H. L. Gramzow, John O. Kelly,
David Leary, W. H. Hoyt,
Edward Powell, Ira Dewitt,
H. E. Doolittle, Andrew Neilson,
George G. Hadley, Fred C. Gay,
Richard Waterman, E. L. Catterfield,
T. H. Miles, Lizzie H. Snow,
T. D. Gibbens, James J. Calahan,
S. M. Hunter, E. B. Clarke, 8 and 9,
Alfred H. Seymour, Fred Fairchild,
W. H. Sawyer, George Muttart,
William Cannon, Thomas M. Bryan,
M. C. Bagley, W. H. Booth,
William James Evans, John P. Bignon, 7 and 8,
James Abbott Murray, Albert Baur,
Benj. Thompson, G. M. Reynolds,
Edward P. Wetman, W. W. Kelchner,
W. Wallace Cummings, B. F. Ford,
John A. Coesterlin, No. 7, James M. Armstrong,
Alfred F. Swan, Emma Sammis,
Ben B. Toye, C. H. Stanciff,
H. P. Dwight, George E. Spellman,
A. Hunter, A. J. Stoddard,
B. W. Patterson, Henry W. Wynkoop,
James Murray, Thomas A. Laird,
J. M. Bechtel, E. J. Saville,
James H. Pressley, William Roche,
John F. Williams, David McDonald,
James E. Moon, W. R. Munroe,
R. S. Raymond, W. J. Dealy,
Robert H. Morris, J. W. Tillinghast,
James Rowe, D. J. Willis,
W. K. Applebaugh, C. A. Kellogg,
J. H. Cade, A. Stuart Brown,
Colin Fox, James Cooper,
L. B. Dwight, Thomas Henning,
Cornelius Corbett, J. White Kelly,
W. T. Lindley, John B. Morris,
John P. Fowler, E. J. Wilson,
Henry Denver, A. H. Stewart,
W. J. Denver, N. J. Gibson,
Jonas S. Brown, H. B. Spencer,
J. B. Leach, Robert Cowell,
George W. Trabue, George F. Durant,
E. C. Boyle, Alice A. Durant,
N. H. Browne, C. D. Littlejohn,
Alfred F. Childs, F. J. Nicholson,
George Farrell, A. F. Crissey,
J. A. Swift, J. V. Ford,
A. W. Nohe, John Harrigan,
J. W. Hay, A. J. Locke,
J. A. Cure, 7 and 8, Samuel Moore,
J. H. Easterlin, C. S. Follett,
J. B. Graham, C. A. W. Briggs,
J. B. Page, F. D. Adams,
W. N. White, J. E. Selden,
L. Waldorf, W. C. Buell,
C. V. Lamb, C. McLaughlin,
B. F. Follett, D. H. Fitch,
W. H. Ashby, L. Read,
George A. Lance, George W. Bell,
A. R. Phillips, J. V. G. Jamieson.

The French Atlantic Cable.

This cable, which has just been successfully laid from the Great Eastern steamship, has some modifications of construction. The gutta-percha employed for insulation is brought direct from Singapore, as it left the hands of the natives, in the shape of unsightly idols, deformed quadrupeds, caricatures of patriarchs, dogs, ships' birds, and is made into a paste for protecting the electric core. The copper wire is received from the wire mills in hanks of fifteen or twenty pounds each, each hank being tested on its arrival to ascertain its conductivity, none below a certain standard being allowed to be used. The conductor consists of a strand of seven wires, 0.56 inch in diameter, or a little less than one-sixteenth of an inch, six being twisted round the central wire. The seven wires are rendered perfectly compact by the coating of the central wire with an adhesive matter known as "Chatterton's Compound." The weight of the complete strand is four hundred pounds per nautical mile. It is made in lengths of about one mile, and wound on reels ready to be covered with gutta percha. The strand is passed through a vessel of Chatterton's Compound, and through a die corresponding to the size of the first coating of gutta percha, which is forced round the strand as it passes through the die. Four successive coats are thus applied, and between each coating the wire receives a film of the compound, which improves the insulation and binds the coats together. The total weight of the core is 800 lbs. per nautical mile, equally divided between the copper and the gutta percha. The total length of cable for the section between Brest and St. Pierre is 2,788 nautical miles, the second section thence to New York 776 nautical miles long, the smaller wire consisting of a conductor of 107 lbs. per nautical mile, and a covering 150 lbs. per mile. The cable thus prepared is finished with a serving of jute yarn and ten wires of homogeneous iron, each of which is covered with manilla yarn steeped in tar.—*The Engineering and Mining Journal*.

The Zirconia Light.

The oxhydrogen zirconia light has been such a success at the Tuilleries, having been worked without interruption since the 21st of January, that the Emperor has ordered measures to be taken to render that mode of illumination permanent in front of his palace. During the interval required for getting these new arrangements ready, the court will be lit up with ordinary gas as before. In connection with this fact M. Tessie du Mothay has had the Order of Chevalier of the Legion of Honor bestowed upon him, and well has he merited it, for his many useful and practical inventions. Whether the process introduced by this gentleman for the commercial manufacture of oxygen from the manganates is the best that can be used for the purpose, may, perhaps, be open to discussion; this, at any rate, is true, that it is the only process that has succeeded on a large practical scale up to the present time.—*British Journal of Photography*.

Mr. Hubbard Still Busy.

We wrote this gentleman dead. We were mistaken. He still pursues his postal telegraph scheme with all the keenness and perseverance of a New Englander. The demolition of his plans before the last Congress by the irresistible logic of facts and figures, staggered but did not slay him. We are to find him anon the hero of a new battle, with new collaborators, and a new base. But he will find that the transparent selfishness of his former schemes has put the public mind on guard, and that the logic of the old facts will be more irresistible by the lapse of time, aided as they will be by the growing desire of the people to keep Congress from old schemes which may hinder the payment of our national debt.

Playing with Lightning.

Our classical reminiscences have left us with the conviction that, when Vulcan forged the bolts of Jove, the scene must have been, as the graphic reporter has it, "one of terrific grandeur." We pictured to ourselves the lame god and his Cyclopean assistants, hammering and forging the celestial weapons in some flaming cavern of Etna or Vesuvius, amid an eternal din like that of a chain cable factory crossed with a rolling mill. Lurid smoke rolls heavily upward through the fiery air; the molten lava rushes forth on its work of destruction, while the lightnings that now and again play round the top of the groaning mountain, proclaim to a trembling world the tremendous nature of the operations going on below.

Although we had inspected electrical machines, and had looked as scientific as possible at the sparks we had seen elicited from them, the grand and heroic idea of lightning making had never left us. Consequently, when we were told that lightning was made and exhibited at certain stated hours, in the unromantic district of Regent Street, we received the statement with some incredulity; and it was to test its truth that, after many years, we came to revisit the Polytechnic. Let us endeavor to give some account of what we learn from the lucid and interesting lecture, which explained to us the extraordinary performances of the great induction coil.

It was discovered by Faraday, many years ago, that a coil of wire, wound loosely round a magnet, became actively electric at the moment when the magnet was either placed within its folds or withdrawn from them, and also that a galvanic current, in passing round a conducting circuit, produces an "induced" current in another conductor that surrounds the first. A galvanic current is usually generated by what is called a galvanic battery, consisting of two dissimilar metals or other substances, technically named elements, not touching each other, but immersed in some acid fluid. Chemical action is excited, and electricity, in the form known as galvanism, is set free. If the elements are connected together, outside the acid, by a piece of wire, or any other conductor, the electricity will proceed from one element, called the positive pole of the battery, and will pass along the wire to the other or negative pole, thus making what is called a circuit. If the wire be interrupted, the electricity, if present in sufficient quantity, will leap across the gap in the form of a visible spark. The gap be filled by any substance capable of being chemically decomposed by electricity, the decomposition will take place. In all this we have only the galvanic battery, and the primary current directly proceeding from it.

Now Faraday's discovery was, that this galvanic or primary current, at the moment when it begins to flow, and again at the moment when it ceases to flow, produces a secondary or induced, and perfectly independent current, in another conductor wound around the first, but not in contact with it. At the moment when the primary current begins to flow, the induced current passes in the same direction with it; but at the moment when the primary current ceases to flow, the induced current passes in the opposite direction. Instead of being, as in the primary current, continuous, the induced current is only momentary; and, in order to produce it at pleasure, it is necessary to have some contrivance by which to cut off and to restore the primary current as often as may be desired. As often as it is cut off, the reversed induced current passes; as often as it is restored, the direct induced current passes. The instrument used for this purpose is called a break or contact breaker. It is placed in a gap in the primary or galvanic circuit, communicating with one extremity of the gap, and capable of being made to

touch the other extremity also. When it touches, it is said to "make" contact, and when it ceases to touch, it "breaks" contact.

Not only does the magnet, like the primary current, induce electricity, but a piece of soft iron is rendered magnetic during the passage of a primary current through a coil of wire surrounding it. If the iron be massive, it retains its magnetic quality for a few moments after the galvanic current ceases; but, if it be of small bulk, it gives up its magnetism immediately.

In the manufacture of a "coil" for the display of induced electricity, all the foregoing facts are taken into account. The centre or core of the coil is formed of a bundle of soft iron wire. Around this is wound the wire for the primary current, and around this again the wire for the secondary current. When the ends of the primary wire are connected with the two poles of a galvanic battery, the core of iron wires becomes a core of magnets, and hence assists the primary current in inducing electricity in the secondary wire. When the ends of the primary wire are disconnected from the battery, the core ceases to be magnetic, and the withdrawal of the magnet assists the cessation of the primary current in again inducing electricity in the secondary wire.

The largest induction coils hitherto made have been about a foot or fifteen inches in length, by about four inches in diameter. Seven miles has been about the extreme limit of length of the secondary wire; and nine inches the greatest length of spark that could be obtained. With these figures as standards of comparison, we approach the "monster coil" now under consideration.

In this, the central core of iron wires is composed of pieces each five feet long, and the thickness of knitting needles, the whole core being five inches in diameter. The primary wire is of copper, thirty-seven hundred and seventy yards in length. The secondary wire is also of copper, and is one hundred and fifty miles in length. The rods of the core are separated from one another, or insulated, by being wound round with cotton, and the primary wire is covered in a similar manner. The secondary wire is covered with silk; and all these coverings are required in order to force the current to keep within each wire, or to pass along its length, instead of escaping from it laterally to contiguous turns of the spiral. The whole apparatus is enclosed within cylinders of vulcanite, and is mounted on strong supports, themselves similarly covered. The ends of the secondary wire issue one from each extremity of the coil, and are connected to "terminals," one of which is a point, and the other a polished disc of metal. They stand on movable columns in front of the coil; and the wires, when necessary, can be detached from the terminals, and attached to any other apparatus that may be required. When the primary wire is connected with a powerful galvanic battery, and contact is made, the core becomes a bundle of magnets, and this bundle combines with the primary wire to induce an electric current in the secondary wire. When contact is broken, the primary current ceases to flow, the core loses its magnetism, and an electric current is again induced in the secondary wire. If the terminals be not too far apart, this induced current leaps across the space between them in the form of a visible spark or flash.

There is yet another piece of subsidiary apparatus, called the condenser. This consists of a number of small sheets of insulated tin foil, connected together, and with the primary wire, to which they form a sort of loop circuit. The condenser is supposed to afford a safety-valve, or reservoir of space for the primary current, and a security against any injury being done to the primary wire by the sudden rushing into it of a stream of electricity.

The first endeavors to work the new coil were frustrated by its own powers of destruction. It melted the platinum, and burnt up the brass of the original contact breaker. When used with a small amount of condenser surface, it burst the primary wire into fragments, and escaped from it laterally. When these difficulties were overcome, and the whole apparatus was in order, it afforded a spark, or rather a flash of lightning, twenty-nine inches in length, and apparently about a third of an inch in width. The length was measured, of course, by the distance between the terminals, and when this exceeded twenty-nine inches no distinct flash was given. For a distance within its power to cross, it would almost seem that the electricity, like a strong leaper, makes an effort proportionate to the resistance to be overcome. When the terminals are distant, but still within the twenty-nine inch limit, the flash strikes upon the disc with a heavy shock and a loud report. When they are near together, or within two or three inches, the flash gushes forth without noise, and lazily, like a spurt of molten metal or of dense flame; and from this "flaming spark," as it is called, the flaming portion can be blown aside by bellows, leaving the actual course of the electricity distinctly visible. Either the flaming spark or the longer one will perforate considerable thicknesses of glass, and five inches of solid plate glass have already been pierced by it. At one visit we chanced to see a remarkable illustration of the way in which metallic surfaces may serve to attract lightning. The outer covering of the coil displays the name and address of Mr. Apps, its maker, in gold letters of considerable size. In taking a long spark, the stands that support the terminals were placed nearer to the coil than usual; and the attraction of these gold leaf surfaces was sufficient to divert the spark from its course and visibly to break it up into portions.

In the darkened theatre at the Polytechnic, the long flash lights up the room and the audience with the peculiar lurid glare so well known as an effect of brilliant lightning at night, and displays the features and action of every one present. But it is curious to note that, the flash being of instantaneous duration only, it allows no motion to be seen. We should think, if guided by our consciousness alone, that the flash lasted an appreciable time; but this would be an error due to the persistence of the impression on the eye, after the flash itself had ceased. If the room be made perfectly dark, and if the spectators all raise their arms and wave their hands to and fro as quickly as they can, the flash will display the position of the arms but not the movement of the hands. While the flash lasts, the hand has no time to move, and is consequently seen, as if motionless, in the position in which the flash finds it. It is in contemplation to exhibit the same effect in a more complete way by affixing a revolving disc. When the disc revolves so rapidly that no outlines of the picture can be distinguished by means of any ordinary light, they will be perfectly seen in a darkened room by the light of the flash. It lasts so short a time, that the revolving disc does not change its position in the brief period.

It is the smallest part of the advantage expected from the new coil, that it allows all the luminous and all the destructive phenomena of chamber electricity to be exhibited, in hitherto unapproached beauty and intensity. Men of science anticipate from it new discoveries of high importance.

We publish among the happy men who have bidden farewell to single blessedness, our friend George D. Butler, of Rochester, N. Y., to whom we kiss our hand in token of our blessing. We wish him and his handsome lady love a long and happy life.

Scintillations from Scientific Authors.

BY MADISON BUELL.

Faraday stated that a flash of lightning contains so small a quantity of electricity that it would not suffice to decompose more than a single drop of water; its enormous tension would be wasted and only converted into heat. There is one sense, however, in which this statement would not be strictly accurate. Assuming the tension of the lightning to be a million cells, and assuming the tension of one cell to be sufficient to decompose water, it is clear that by passing the flash of lightning through a million vessels of water in a series, we should have tension enough to decompose a drop of water in each vessel and thus decompose a million drops.

Although the phenomena of electrical induction enter more or less into every case of electrical action, they rarely come within the cognizance of those who have charge of land lines.

It is important to observe, that in speaking of the resistance of any circuit, we speak of the *whole* resistance, including that of the instrument, of the conducting wires and line circuit, and of the *battery* itself, which *last* is frequently a very important part of the whole resistance, and must on no account be forgotten.

The conductivity of ordinary galvanized iron wire compared with pure copper 100, averages about 14, or about 1-7th that of pure copper.

The resistance of No. 8 iron wire is about 13-5 ohms per statute mile, and of No. 4, about 6-8 ohms.

The resistance of iron increases about .35 per cent. for each degree Fahr.

Conduction is the converse of resistance.

The resistance of a *small* fault is much greater with a small battery power, say five cells, than with a higher power, say fifty cells.

Lightning is the most extreme case of tension with which we are acquainted (if we except, perhaps, the Aurora Borealis), and we may often see a flash a quarter of a mile in length.

Heat and Light appear to be rather *modifications* of the same forces, than distinct forces mutually dependent.

Of absolute rest, Nature gives us no evidence; all matter is ever in movement, not merely in masses, but, also, molecularly or throughout its most intimate structures.

It is a circumstance worthy of remark, that the arrangement of molecules, which renders a solid body capable of transmitting light, is most unfavorable to its transmission of electricity.

Portions of muscle and nerve present different electrical states with reference to other portions of the same muscle or nerve; thus the external part of a muscle bears the same relation to the internal part, as platinum does to zinc in the voltaic battery.

Magnetism and Electricity, and the terms which belong to these sciences, are taken possession of and applied in cases in which we know that the sciences from which the names are conveyed, have not the smallest application.

The world little knows how many of the thoughts and theories which have passed through the mind of a scientific investigator, have been crushed in silence and secrecy by his own severe criticism and adverse examination.

The Western Terminus of the French Cable.

Duxbury, the American terminus of the French Atlantic Cable, is fully described, together with its surroundings, by the *Boston Journal*. The following account of it is interesting:

"The place selected for the western terminus of the cable is at Rouse's Hummock, so called, in the town of Duxbury. This is situated near the Gurnet light, at the entrance of Plymouth Harbor, and in a direct line is about one mile and a half from the village, but it cannot be approached without driving around the beach a distance of five or six miles, unless one feels disposed to cross marshes and rivers, which, in a direct line, intervene between it and the village. The Hummock is a conical shaped hill, and embraces about thirty or forty acres of land, covered with a slight growth of wood. Its highest point is about fifty feet above the level of the ocean, from which a beautiful view of the majestic ocean and the surrounding country can be had. The cable company have erected a building at this place, in which the ocean cable will be placed.

"As the French Cable Company had not acquired the power from Congress previous to its adjournment to lay and maintain a cable on the shores of the United States, in order not to retard the progress of this great work, a charter was granted by the Legislature of Massachusetts to the Ocean Telegraph Company, whose line meets the cable outside the jurisdiction of the United States, thus obviating all difficulties that might otherwise have occurred. A man will be stationed in the building to guard the cable against danger, and in case of a break it will be tested at this point. But from here a land cable is spliced to it, which is to be laid across the marshes, in a trench constructed for that purpose, where it is conducted to the main office, in the old Bank Building at Duxbury village.

"From here an independent land line is being constructed to Boston, and it is supposed that one will soon be built to New York. This office will be under the charge of Mr. L. G. Watson, of New York, the general superintendent and managing agent of the company, assisted by Mr. R. T. Brown, of London, the manager of the land lines. Mr. M. J. Gaines, formerly Consul-General for the United States at Tripoli, but who for the past seven or eight years has been engaged in telegraphic service in the Mediterranean, is to be the chief clerk in charge of the cable, and a force of about twelve electricians will be required to perform the duties of the cable and land lines.

"The steamers which are to convey the section of cable from St. Pierre to Duxbury are expected to arrive about the 25th of the present month, when it is proposed to celebrate the event by an appropriate demonstration. Although the American people could hardly be supposed to feel the electric thrill produced by the successful laying of the Atlantic Cable, having become accustomed to great improvements and stirring events, yet they cannot but appreciate the additional link in the progress of our country's success."

Supposed Suicide of an Operator.

We are pained to learn that the body of James Silver, operator at the office of the Western Union Telegraph Office at Bound Brook, N. J., was found at the dam of the Raritan River, three miles south of that village, June 25th. He is supposed to have committed suicide by drowning on the 27th of June, at Bound Brook, but on what this suggestion is based we have no means of knowing. No reason for the act is given, and, so far, seems to be unknown.

Sales Western Union Stock.

REPORTED BY J. HORN, JR.

JULY.

1st-100 @	38½
2d-500 from	38½ to 39
3d-100 @	38½
7th-375 from	38½ to 39
8th-2,400 from	37½ to 38
9th-1,710 from	37½ to 38
10th-100 @	37½
12th-100 @	37½

Decision in the Anderson Case.

In another part of the JOURNAL we have referred to the case of Mr. Anderson, who died before his application was received. The following note was handed us by Dr. Green (to whom we referred the case), too late for use instead of our own remarks: "It has been claimed that the declaration of a wish to insure, and remittance of the necessary premium through a person who had volunteered to collect a small club of applicants, was an insurance accepted by the agent of the association, even though the names were not received or known by the officers. The committee could not regard this claim as just or legal. The association sends out no agents authorized to receive money or to pledge policies. Friends who collect applications act rather as the voluntary agents of the applicants, and in their interest. The committee can not, therefore, feel justified in making an assessment on its members, with the penalty of forfeiting membership for non-payment; but the committee will be gratified if every member shall voluntarily contribute to the relief of Mr. Anderson's widow and orphan child, and will most cheerfully be the medium of receiving and forwarding such contributions from members, as also from any kind, benevolent friends who are not members of the association.

Base Ball in Brooklyn.

The New York Telegrapher's nine will play a picked nine from the Stock Exchange, on the Star grounds, Brooklyn, on Saturday, July 17th. Game to commence at 3 o'clock.

There will also be a game played between the same parties on the same grounds, on Friday, July 23d. Game to commence at 3 P. M.

HOWARD SCOTT, of the Hanover Junction (Pa.) office, has resigned, and has accepted the Freight and Passenger Agency of the N. C. R. W. Co. at that point.

An Anxious Youth.

The following is sent us from the manager of the office at Painesville, O., and is a rich specimen of an aspirant for telegraphic education. We give the application *verbatim et literatim*:

GREENWICH STATION Huron County Ohio Ju 9th 186
 Sir I Wish youe Would Be a Comadating and obliging to Rite to Me and tel Me now Wether youe take Students to lirn Tellegraphing Rite and tell me how Much youe ask to lirn a Student Rite all the perticulars
 Rite Sone as youe get this if youe pleas I Would like to Come as Sone As Conviatant to youe they have Student here I Cant git in here for I dont now long he Will Be here I Spoe he Will Stay here until he gets an office
 Yours
 Rite Soe I Will now What to Diew Encloding Book Ceeping

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1897. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address— JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, JULY 15, 1899.

Annual Election.

On yesterday, Wednesday, July 14th, the annual meeting of the Western Union Telegraph Company was held at their executive rooms, 145 Broadway, New York. There was a good attendance, and there was represented personally and by proxy about twenty-five millions of the stock.

After the meeting had been organized, the President delivered his annual report, of which a synopsis will be given in a future number.

The annual election of Directors for the ensuing year was then held, Richard A. McCurdy, George Wales Soren and James D. Reid acting as inspectors, when the following gentlemen were declared elected:

BOARD OF DIRECTORS.

D. N. Barney, New York.	W. E. Dodge, New York.
E. S. Burrows, Albion, N. Y.	Francis Morris, New York.
Ezra Cornell, Ithaca, N. Y.	C. Livingston, New York.
John D. Caton, Ottawa, Ill.	E. S. Sanford, New York.
Z. G. Simmons, Kenosha, Wis.	William Orton, New York.
R. A. Lancaster, Richmond, Va.	Harrison Durkee, New York.
A. B. Cornell, Ithaca, N. Y.	James C. Fargo, New York.
E. Creighton, Omaha, Neb.	A. W. Greenleaf, New York.
N. Green, Louisville, Ky.	E. B. Wesley, New York.
Wilson G. Hunt, New York.	Hiram Sibley, Rochester, N. Y.
Geo. Jones, New York.	G. H. Mumford, Rochester, N. Y.
O. H. Palmer, New York.	J. H. Wade, Cleveland, O.
Moses Taylor, New York.	Geo. Walker, Springfield, Mass.
E. D. Morgan, New York.	Alfred Gaither, Cincinnati.

Hugh Allan, Montreal.

At a meeting held by the newly appointed Board, the following officers were elected to serve until the second Wednesday in October, 1870, which, by unanimous vote, was made the period of future annual meetings:

William Orton, President.	
Norvin Green,	} Vice-Presidents.
A. B. Cornell,	
George Walker,	
O. H. Palmer, Secretary and Treasurer.	
W. H. Abel, Auditor.	
James D. Reid,	} Inspectors of Election.
Richard A. McCurdy,	
George Wales Soren,	

Hugh Allan.

We publish with right good will a biographical sketch of a gentleman widely and well known both in Canada and in the United States as a genial, liberal, sagacious, enterprising man. Mr. Allan carries success on his face just as the prow of his magnificent ships seem to bear a smile of triumph above the waves. We presume he has his hours of care, but they do not appear on the robust, joyous, generous face he carries when we have had the pleasure of seeing him in his occasional visits to New York. His likeness, which we deem an excellent one, will impress those who see it as the verisimilitude of a hearty, well poised, executive, generous character. Under his management the

telegraph has been a continued blessing to the Canadian people.

Mr. Allan resides in Montreal, a city which owes much to his enterprise and taste, and "Raven's Crag," the name he has given to his princely home, stands on the brow of the mountain which overlooks the city, and is probably the finest residence within its limits. The grounds around it are extensive, and laid out with exquisite taste. They are surrounded by a massive stone wall, and are entered through the Porter's Lodge, itself a beautiful and pleasing looking structure. In the mansion there is to be found everything to denote high culture and refinement, and every appliance for indoor enjoyment.

It is not the fashion in our republican society to confer titles upon distinguished men who have done their country honored service. It is different, however, with our neighbors of the New Dominion and in England, where a title is the gift of a marked service to the State. We are sure that, if the honor of knighthood is the guerdon of the State for useful citizenship and high qualities of personal character, there is no one of our neighboring citizens who is better entitled to the sword stroke which confers it than Mr. Allan. Were we the Queen, we would slap his broad shoulders and order him to "Rise, Sir Hugh Allan," with abundant pleasure.

Since the above was written Mr. Allan has been elected a Director of the Western Union Telegraph Company.

Construction of Cyphers.

NECESSITY OF CHOOSING CYPHER WORDS DISSIMILAR IN TELEGRAPHIC ORTHOGRAPHY.

No one but a practical telegrapher is competent to make up a safe and reliable practical cypher that will be comparatively free from the danger of errors in transmission over the wires. Cypher words of the same length may be very different in pronunciation or in print, and yet be so nearly alike when written in telegraphic characters, as to be difficult to distinguish one from the other by sound or sight, in the absence of connecting words in making sense and meaning. Especially is this so when an instrument is slightly out of order, or some atmospheric influence may prolong a dot to a dash or abbreviate a dash to a dot, or leave the receiving operator in doubt as to which was intended. It often happens in telegraphic orthography that the only difference between two words is the use of a dash in forming one of the letters in one word, and a dot in making a letter similarly placed in the other, the transposition of which utterly changes the word and sense. If two such words thus easily transposed be used in the same cypher to mean different things, errors will inevitably occur; and in business messages may mislead in large transactions and involve heavy losses.

It would be simple prudence, therefore, before adopting a cypher for business uses in telegraphing, first to submit it to the careful examination of a practical telegrapher, or an expert familiar with the telegraphic alphabet, in order to discard the use of one or other of any two words that shall be found very similar in telegraphic orthography. In such submission it

is not necessary that the party inspecting the cypher shall be informed of what the words are intended to mean. It is only with a view of pruning the list of words thus easily converted from one to the other.

In receiving cypher messages a business man may not be seriously misled by the rendering of a word not used in his cypher. Such a rendering at once advertises itself as an error, and while it may fail to give him information he wants, it can not give him false information. The substitution, therefore, of one word for another word not used in the agreed cypher between correspondents, cannot effect the same injury as the change to another word that is also used in the cypher to represent a different figure or convey a different meaning.

Hence the importance in making up a cypher of choosing words so dissimilar in length, as well as in telegraphic construction, as to make their transposition if not absolutely impossible, at least unlikely to happen.

It might be well for telegraph companies to have made up and published for the benefit of their customers, a vocabulary of cypher words, not easily capable of conversion to other words in transmission by this slight variation of one or two telegraphic signals. From such a vocabulary business correspondents could select such words and attach to them such meanings as they might choose to adopt, known only to themselves and to such confidential clerks as they deemed proper to intrust with their key.

B. R. McAlpine, Esq.

By the time this reaches our readers, Mr. McAlpine, for the last three years one of the Vice-Presidents of the Western Union Telegraph Co., will be far on his way to Europe. To this journey Mr. McAlpine has been led by the condition of the health of his family, who are now at Lausanne, Switzerland, in the Hotel Gibbon, so named after the distinguished historian, who wrote his "Decline and Fall of the Roman Empire" beside the placid waters of Geneva, and in presence of the majestic scenery of that mountain republic. We bid him a hearty God speed in his journey, and envy him the freedom from care, and the inspiration of the historical atmosphere of the old world, which this separation from his ordinary duties secure to him. We trust that restored health to those who cause his departure will permit the full enjoyment of both.

Mr. McAlpine will be missed by the Company from the service of which, both as Director and Vice-President, he now retires. In his peculiar sphere his course has been distinguished by a rigid adherence to fundamental rules, from which no present advantages could make him swerve, and in special watchfulness over those details of the service which were made his special care. In these details he was rigorously correct and particular. He permitted no irregularity, and exacted the most uncompromising obedience to established rules. Thoroughly just himself he claimed that an equal reciprocal service was the only just basis of contracts, and never lowered the Company in securing advantages for it, or in conflict with elements of danger. He was held in high respect by his associate officers, who deeply regret his separation from them. Mr. McAlpine sailed yesterday in the Cuba.

An article from Mr. Pope on the question of Auroral Currents will appear in our next number.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

	May, 1869.	May, 1868.
Total Receipts.....	\$590,145 21	\$597,374 47
Total Expenses.....	387,861 54	349,165 41
Net Profits.....	\$202,283 67	\$248,209 06

The French Cable.

ST. PIERRE, Miquelon, July 14, 1869.

The ocean cable was spliced to the shore end to-day by the steamer William Corry.

The cause of the failure to splice yesterday was that the shore end was lost. The buoy was easily found, but when taken up it was discovered that the cable was detached, and it was therefore necessary to grapple for it.

Directly the splice was made the instruments and the full staff of operators were sent on shore, and communication was soon opened with Brest.

Sir James Anderson, the commander of the Great Eastern, had brought with him a sealed message which had been prepared by the Emperor Napoleon, and the purport of which was to remain unknown until it was opened on this side the Atlantic upon the completion of the cable, when the message was to be sent to the Emperor over the wires in order that he might thus judge of the accuracy of the transmission. This message was sent to-day.

BREST, July 14—Noon.

No signals have been received through the new cable from the Great Eastern since the dispatches of Monday. It is supposed, however, that no accident has occurred.

WASHINGTON, July 14, 1869.

With the exception of the "opinion" of Attorney General Hoar and the letters addressed to the French and the British Minister by Secretary Fish, no action has been taken by the Government to prevent the landing of the French cable on the coast of Massachusetts. Secretary Boutwell has not, as reported in some quarters, ordered a United States revenue cutter to proceed to the point where it is proposed to land the cable on United States territory and prevent it, nor is it likely that any such course will be pursued. The matter was pending in Congress at the adjournment, and it will probably be left to that body to settle it. Secretary Fish considered it his duty to place the French Minister in possession of the facts so far as the action of our Government has been developed relative to the landing of the cable, so that he might inform his Government of the risk it must run in attempting to land the cable on United States territory without authority from Congress.

The point to be insisted upon is that the government of the United States shall have equal facilities and privileges over the cable with that of France. This seems to be about the only objection to the landing of the cable in the minds of government officials. This, too, was the principal object which the Senate Committee on Foreign Relations had in view in reporting and urging the passage of the bill to prevent the landing of any foreign cable on the shores of the United States, without the consent of Congress.—*N. Y. Herald.*

Married.

BUTLER—WILTON—On Thursday, June 17th, at Fairport, N. Y., by the Rev. J. Butler, George D. Butler and Miss Jennie Wilton, both of Rochester, N. Y.

TINGLE—HOLTZINGER. On Sunday, June 6, 1869, at the residence of the bride's mother, at Cumminsville, O., by the Rev. A. J. Reynolds, Will. C. Tingle, of the Western Union Telegraph Company, to Miss Ella E. Holtzinger.

Executive Order No. 77.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
JULY 12, 1869.

ANNON STAGER,
THOS. T. ECKERT,
JOHN VAN HORNE, } Gen'l Superintendents.

Referring to Executive Order No. 25, it is now ordered that Columbus, Ohio, be, from and after this date, added to the list therein designated as "Night Offices."

Please issue the necessary instructions.

(Signed) WILLIAM ORTON, President.

Eastern Division.

RE-ARRANGEMENT OF DISTRICTS 3, 4, 5, 6 AND 7.

George B. Prescott, Esq., having been assigned to important duties in the Executive Office of the Western Union Telegraph Company in New York, has resigned the Superintendence of the Sixth District, Eastern Division, taking effect from the 1st of June, and the territory heretofore under his charge has been assigned as follows:

That portion of it from Montreal via Burlington and Rutland to Bellows Falls, Vt., from Rutland, Vt., to Albany, N. Y., via the several routes, and from Hoosic Falls, N. Y., to and including North Adams, Mass., to the Fourth District, George W. Gates, Sup't, White River Junction, Vt.

That part on the Housatonic R. R., from Bridgeport, Conn., to Pittsfield, Mass., and thence to North Adams, Mass., and the lines and offices belonging to the Boston and Albany R. R. route, from Springfield to Albany, to the Fifth District, Chas. F. Wood, Sup't, Boston, Mass.

That part on the Albany and Susquehanna R. R., from Albany to Binghamton, N. Y., to the Seventh District, S. B. Gifford, Sup't, Syracuse, N. Y.

The lines on the Hudson River Railway, the Harlem Railway, the Turnpike route between these roads, and on the Northern Railroad of New Jersey, from New York to Piermont, thence via Turnpike on the west bank of the Hudson, to and including the cities of Albany and Troy, now constitute the Sixth District, E. D., and Albert B. Chandler has been appointed Sup't, in addition to his present duties. Address, 145 Broadway, New York City.

The line from Concord, N. H., via Boston, Concord and Montreal R. R., to Littleton, N. H., thence to Northumberland, and via the White Mountains to Gorham, Conway and Meredith, N. H., with the offices thereon, has been assigned to the Third District, James S. Bedlow, Sup't, Portland, Me.

THOS. T. ECKERT,
Gen'l Sup't, E. D.

Approved.

WILLIAM ORTON, President.
June 14, 1869.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
JULY 15, 1869.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since July 1st, the date of the last tariff order. Please note them in your tariff books:

NEW OFFICES.

Alexandria Bay, N. Y., } Tariff same as Clayton, N. Y.
Redwood, N. Y., }
Theresa, N. Y., }
Downey, Iowa, tariff same as West Liberty, Iowa.
Greenbrier, White Sulphur Springs, Va., tariff same as Covington, Va.
Espyville, Pa., tariff same as Linesville, Pa.
Golden City, Col., tariff same as Denver, Col.
Healing Springs, Va., } Tariff same as Covington, Va.
Hot Springs, Va., }
Fredericktown, Madison Co., Mo., Mokena, Ill., and
Sulphur Springs, Jefferson Co., Mo., tariff from offices having
"Caton map," as given by map tariff. From all others, 65c. for

Fredericktown, 45c. for Sulphur Springs, more than rate to St. Louis, Mo., and for Mokena, tariff same as Joliet, Ill.

Missouri River, Iowa, tariff same as Council Bluffs, Iowa.

Nelson Furnace, Ky., tariff same as New Haven, Ky.

Pomona, N. J., tariff same as Egg Harbor, N. J., or 40c. more than rate to Philadelphia.

Teris, Ill., tariff same as Elivaston, Ill.

Van Dusenille, Mass., tariff same as Barrington, Mass.

SUMMER OFFICES OPENED.

Boars Head, Hampton Beach, N. H., and

Ocean House, Rye Beach, N. H., tariff same as heretofore.

NEW OFFICES ON OTHER LINES.

Aylmer, Ont., } 35.2 from Buffalo. Check Buffalo.
Exeter, Ont., }
Listowel, Ont., }

Girardville, Pa., tariff 35.3 from Philadelphia. Check Philadelphia.

Millville, Pa. (Erie line), tariff 50c. from New York, and from Binghamton, Elmira, Salamanca and Buffalo, same as Lackawaxen.

Rocky Point, R. I., tariff 30.3 from Providence, R. I. Check Providence.

OFFICES CLOSED.

Cranford, N. J., Marion Junc., Ala. Shawhan, Ky., Camden, Mo., Xenia, Ind., and Lagrange, Ga.

TO OFFICES "HAVING SPECIAL SHEET A."

Tariff to Clarksville, Tenn., 75c. more than "special rate" to Louisville, Ky.

GENERAL INFORMATION.

The following lists give the rate to points on "Other Lines" west of Omaha, Neb. The rates will take effect from the day of receipt of this order:

When computing tariff to any of the points named, the rate to Omaha, Cheyenne or Ogden, should be added to the rates here given from the same offices, and the business checked to Omaha, Cheyenne or Ogden, as indicated at the head of each list.

From Omaha, Neb. (check Omaha), to

Brady's Island, Neb., .	140.9	North Bend, Neb., .	80.5
Columbus, Neb., .	96.6	Pappillion, Neb., .	40.3
Elkhorn, Neb., .	50.3	Plum Creek, Neb., .	130.9
Elm Creek, Neb., .	125.8	Schuyler, Neb., .	90.6
Grand Island, Neb., .	110.7	Silver Creek, Neb., .	100.7
Gilmer, Neb., .	35.2	Valley, Neb., .	60.4
Kearney, Neb., .	120.8	Willow Island, Neb., .	135.9
Lone Tree, Neb., .	106.7	Wood River, Neb., .	115.8
McPherson, Neb., .	145.10		

From Cheyenne, Wy. (check Cheyenne), to

Bitter Creek, Wy., .	175.12	Medicine Bow, Wy., .	120.8
Benton, Wy., .	140.9	O'Fallons, Neb., .	120.8
Bushnell, Neb., .	50.3	Ogallala, Neb., .	110.7
Big Springs, Neb., .	105.7	Potter, Neb., .	70.5
Carbon, Wy., .	125.8	Ferry, Wy., .	130.9
Creston, Wy., .	155.10	Pine Bluffs, Neb., .	45.3
Ft. Sanders, Wy., .	70.5	Red Desert, Wy., .	165.11
Granite Canon, Wy., .	40.3	Rawlins, Wy., .	145.10
Hazard, Wy., .	35.2	Rock Creek, Wy., .	110.7
Hillsdale, Wy., .	40.3	Sherman, Wy., .	50.3
Julesburg, Neb., .	100.7	Separation, Wy., .	150.13
Lookout, Wy., .	105.7	Table Rock, Wy., .	170.11
Lodge Pole, Neb., .	90.6	Wyoming, Wy., .	90.6

From Ogden, Utah (check Ogden), to

Aspen, Utah, .	90.6	Evanston, Utah, .	80.5
Black Buttes, Wy., .	150.10	Green River, Wy., .	130.9
Bryan, Wy., .	125.8	Hot Spring, Utah, .	35.2
Bridger Sta., Wy., .	105.7	Piedmont, Wy., .	100.7
Blue Creek, Wy., .	45.3	Rock Springs, Wy., .	135.9
Castle Rock, Utah, .	60.4	Salt Wells, Wy., .	140.9
Carter, Utah, .	110.7	Wahsatch, Utah, .	70.5
Devil's Gate, Utah, .	40.3	Weber, Utah, .	45.3
Deseret, Utah, .	35.2		

WILLIAM ORTON, President.

Death of Albert Wyeth.

On the 9th inst. we were waited upon by a personal friend of Mr. Wyeth, formerly an operator of the Western Union Telegraph Company, who bore a letter from him, dated from the prison at Santiago, June 20th, asking, in manly terms, for intercession in his behalf, in order to secure his release, and intimating that time was given him for that purpose. Although the *N. Y. Herald* had, on that morning, made announcement that Wyeth had been publicly shot, yet, hoping that it might prove to be an error, the officers of the Western Union and the International Ocean Telegraph Companies were entreated to make an effort to save him. The following correspondence shows with what result. It is barely possible that Wyeth may have had the time granted to him which his letter intimated, but the announcement of his having been shot comes too officially to leave much hope.

Mr. Wyeth bore, we believe, a most excellent character, and we deeply regret his death.

NEW YORK, July 9, 1869.

To J. NEWNINGER, Esq., V. P., Havana, Cuba:

Will you do me the favor to ascertain, from either American or Spanish officials, whether Albert Wyeth, telegrapher, late of New York, and prisoner at Santiago de Cuba, June 20th, has been executed, as reported in New York papers. If not, can you not have proceedings stayed until papers can be forwarded from here which will no doubt procure his release. Answer.

THOS. P. BLADEN.

I earnestly unite in the above request, and hope the Government will release this young man as a special concession to the Telegraph.

WILLIAM ORTON,

Pres't W. U. T. Co.

HAVANA, July 9.

To WM. ORTON, Esq., Pres't W. U. T. Co., New York:

I regret to be under the painful necessity of informing you that the *Diario De La Marina*, of this city, copying from a paper published in Santiago, reports that Mr. Albert Wyeth, notwithstanding his declaration that he was an innocent passenger on the "Grapeshot," was shot in Santiago on the 21st ult. If your application had reached here earlier, his excellency, the Captain General, who is actuated by the most humane principles, would doubtless have stayed the execution until your evidence could have reached him through the U. S. Government. "73."

J. NEWNINGER.

CONFIRMATION OF HIS DEATH.

Since the foregoing dispatches were put in type the following letter from Mr. Wyeth has been placed in our hands by his friend Eugene L. Castner, of the Western Union office at the Fifth Avenue Hotel. There is no evidence of trepidation in its firm chirography, and poor Wyeth has met his fate like a man. The letter will appeal to all hearts:

SANTIAGO DE CUBA, June 21, 1869.

DEAR GENL:

Good bye. I will be shot at seven o'clock this morning. It is now about three A. M. I was sentenced about twelve o'clock last night. I have just been baptized in the Catholic chapel here, and will pass the few hours of life that yet remain to me here with the good priests. Tell George and Newell, and all my other friends, of my fate. All who came on the vessel have been shot. There are three others who came on the vessel who die with me. There is no hope whatever, and be assured you will never see me again on earth. My love to Newell and George and all the rest. Send my trunk with contents to my mother, Mrs. E. J. Wyeth, Chambersburg, Pa. Good bye. Be prepared to meet me in Heaven, whither, I trust, I am going. Good bye to Frank, Andrew and all. Your friend to the last, AL.

The Electric Lamp.

Mr. John Browning, F. R. A. S., the optician who manufactured the great telescope for the government of India to photograph the late eclipse, has contrived a most ingenious, simple, convenient and cheap automatic lamp. For all purposes, whether of photography or lecture demonstration, this lamp will be equally suitable as the older forms, since it gives a steady intense light, and so to speak manages itself. As the light however is, though brilliant, yet small, it is necessary that the lenses and pictures employed in demonstration with the lantern be of a very perfect character, else strise will make their appearance. This lamp will in most cases supersede the lime lamp, because not only is it prepared for work in a few moments, but all chance of explosion (to which the lime light is very liable) is completely removed. The plan of construction differs from that in use in the ordinary electric lamp. In those the carbon points are pulled a limited distance apart by automatic electro-magnetic apparatus, that distance being sufficient to give the maximum of light without breaking the flow of the current. In the new lamp there is no pulling apart of the carbon points, the battery power being so weak that all such movements would be useless. The principle adopted in the case before us is to let the carbon points touch each other, and to clamp them in that position, so that the current has to burn an interval between the two points for itself. The battery power used is very small, about six Grove's cells. The moment the current ceases to pass, the magnet ceases to be a magnet, the armature rises, the clamp is loosened, and the bar falls, and approximates the points sufficiently to continue the current, and then the armature is again drawn down, and the bar clamped.

It might be thought from this that the light would be an interrupted one, but this is not the case. The cessations of the current are of such extremely short duration, that the impression of one flash does not leave the retina before another appears, so that the light from the lamp is practically constant. If the ear be applied near the lamp, feeble vibrations indicating the making and breaking of contact will be heard, but the eye can only see a steady, continuous light. With a battery of six or eight cells, a 9ft lantern disc may be brilliantly illuminated, and this lamp, with regard to cleanliness, cost, efficiency, and absence of danger, has no competitors.

The Faraday Memorial.

The *Chemical News* says: "It is a matter of much satisfaction to know that at length steps have been taken to provide a memorial to Faraday in the form of a statue. That the government have held aloof from taking any part in this memorial is much to be regretted, but the Chancellor of the Exchequer has stated that he is only following precedent in not allowing public moneys to be expended on a memorial to a private citizen. But was Faraday a private citizen? In one very limited sense, indeed, he was, but in point of fact, he was a cosmopolitan. "Faraday," said M. Dumas, "n'appartient pas seul a l'Angleterre, il appartient a tout le monde." A private citizen! Who has more promoted works for the weal of his country, for the welfare of his race? We hope that not only the scientific men of this country will promote the Faraday memorial, but that the whole country will subscribe to it, and that we may have not alone a statue to this great man, not alone the lectureship and medal, but some greater work, and we would suggest, as we have before done, that it should take the form of a Public Laboratory, which would afford to those who have longings for science, but who lack opportunity, a means of satisfying the yearnings of

their genius. To those who "fall gloriously fighting in the service of their country, to those who in the Senate have promoted large interests, successful negotiations, an honorable peace, or a triumphant war, the country and the Government never fail to raise memorials, and to give honor. Let them honor him who, working quietly and steadily, and firmly, has added so much to the internal wealth of this country, & much to the scientific literature of the world. Faraday ever held in his hand "Lampas investigationis non torris contradictionis," and the bright steady light illumines all that he did, and enveloped him as he passed untimely from our sight.

Will the Administration Defend the National Honor?

[From the New York Sun.]

The company for laying a telegraph cable from France to this country will, it is said, shortly attempt to consummate its enterprise by landing the hither end of the cable upon the shore of Massachusetts. It will pretend to do this under color of authority from the Massachusetts Legislature, but the act, if committed, will be none the less a gross violation of international law, and an insult to the dignity of the United States.

That every nation has sole and exclusive control over the waters of the ocean for a distance of a marine league or three miles from its coast, is as well settled as any rule can be, and the United States is no exception to it. It is equally well settled that the jurisdiction of individual States of the Union extends only to low water mark. The Massachusetts charter, give them the right to use the soil of Massachusetts to this extent. For a distance of three miles beyond low water mark they will have to trench upon the national domain; and if they lay their cable across this territory before receiving permission from Congress they will virtually declare that the United States, as a nation, has no maritime rights which foreign adventurers are bound to respect.

Our Secretary of State has, it is reported, addressed a diplomatic note in duplicate to the British Minister and the French Charge d'Affaires at Washington, informing them of the failure of the French company to obtain permission from Congress to do the precise thing they now threaten doing, and virtually notifying them that the execution of the threat will be regarded by him as a violation of national rights. Up to the distance of three miles of the shore they are at liberty to do what they please short of committing piracy; but once within the three miles, they should be met and effectively turned back.

The Sabbath.

The streams of religion run deeper or shallower as the banks of the Sabbath are kept up or neglected.—*Calcott.*

Give to the world one half of the Sunday, and you will find that religion has no strong hold of the other half.—*Sir Walter Scott.*

I feel as if God had, by giving the Sabbath, given fifty-two springs in the year.—*S. T. Coleridge.*

Where there is no Christian Sabbath, there is no Christian morality; and without this free institutions can not long be sustained.—*Justice McLean.*

Base Ball at Hoboken.

EDITOR JOURNAL OF THE TELEGRAPH:

On Monday, July 12th, a nine composed of Western Union Telegraph Company's employees played a game of base ball at Hoboken, with the Orions. The score, at the end of the fourth innings, stood, Orions 16, Telegraphers 0. In the eighth inning the Telegraphers, by sharp play and heavy batting, scored 18 runs, and by scoring 5 more in the ninth innings, won the game. The score stood, Orions 27, Telegraphers 33.

Yours, resp'y,
G. W. ROBERTS.

Death of John L. Anderson.

SUDDEN DEATH.—We regret to learn of the sudden death yesterday, by congestive chill, of John L. Anderson, an able and well informed electrician, who had the superintendence of the batteries at the telegraph office corner of Main and Court Square. So expert was he as a repairer, that specimens of a peculiar mode of his in arranging "connections" were sometimes applied for from New York. On Friday last a number of the gentlemen of the office joined the Mutual Insurance Association that has recently been organized among the members of the telegraphic profession, and Mr. Anderson was fortunately one of them. He was much beloved among his acquaintances. He leaves a wife and child, and was a native of Switzerland.—*Memphis Paper.*

An article appeared in our last issue respecting this death which was the result of our absence from the city. Mr. Anderson, in company with 10 others, had applied for membership in the Telegraphers' Mutual Life Insurance Association, but the papers had not been received at the time of the telegraphic announcement of Mr. Anderson's sudden death. They were received the following day, and, in the case of Mr. Anderson, were deemed too late for the committee to act upon, and no certificate was issued. It has been claimed that the sending of the money, although not actually received, entitled Mr. Anderson's family to the benefit of insurance, but the committee have not been able so to regard it. Although this be true, we shall be glad to be the medium of the receipt of any sums which may voluntarily be sent us for Mr. Anderson's family, and which we recommend to all operators in or out of the Association as a brotherly act worthy of their attention.

The committee has no money except as it is given to them, and the refusal of the committee to send a certificate to one certified as dead, need not hinder a dollar from coming to his family. The committee only claim that, under the circumstances, they can not exclude from membership those who do not remit.

Wonders of Minute Workmanship.

In the twentieth year of Queen Elizabeth, a blacksmith named Mark Scalot, made a lock consisting of eleven pieces of iron, steel, and brass, all of which, together with a key to it, weighed but one grain of gold. He also made a chain of gold consisting of forty-three links, and having fastened this to the before mentioned lock and key, he put the chain about the neck of a flea which drew them all with ease. All these together, lock and key, chain and flea, weighed only one grain and a half. Oswaldus Northingerus, who was more famous even than Scalot for his minute contrivances, is said to have made sixteen hundred dishes of turned ivory, all perfect and complete in every part, yet so small, thin and slender, that all of them were included at once in a cup turned out of a pepper-corn of the common size. Johannes Shad, of Mitalbrach, carried this wonderful work with him to Rome and showed it to Pope Paul V, who saw and counted them all by the help of spectacles. They were so little as to be almost invisible to the eye. Johannes Ferrius, a Jesuit, had in his possession cannons of wood, with their carriages, wheels, and all other military furniture, all of which were also contained in a pepper-corn of the ordinary size. An artist named Claudius Gallus made for Hippolytus d'Este, Cardinal of Ferrara, representations of sundry birds sitting on the tops of trees, which by hydraulic art and secret conveyance of water through the trunks and branches of the trees, were made to

sing and flap their wings; but at the sudden appearance of an owl out of a bush of the same aridice, they immediately became all mute and silent.—*World of Wonders.*

Base Ball.

About a fortnight ago the Night Owl Base Ball Club made a trip to Oxford, Ohio, where they played the University Club, of that place, which, by the way, is one of the strongest clubs in the State. The Owls were so badly defeated that a nine composed of clerks from the extensive dry goods establishment of Hopkins & Co., in this city, thinking they would achieve an easy victory, challenged the Owls to a game, which came off on the morning of the 5th, at the Iron Slag grounds in this city. Smarting under their defeat of the week before, the Knights of the Key went in to win, and win they did by the large score of 70 to 11. Of the individual play upon the occasion Gould and Webb at 1st and 2d base particularly distinguished themselves, the former capturing nine prisoners in good style. Kern, in the sixth inning, made a neat double play, taking a high fly from Bradshaw's bat, and touching Buhler ere he could return to his base. Williams, in his new role of pitcher, was very effective and regular throughout. The following is the score:

NIGHT OWLS.	O. R.	PICKED NINE.	O. R.
Gould, 1b.....	3	Robertson, c.....	3
W. Baker, M.....	2	Brewster, ss.....	0
Spink,.....	2	Mason, lf.....	1
Williams, p.....	2	Higgins, p.....	4
King, 3b.....	4	Buhler, cf.....	0
Kern, ss.....	1	Bradshaw, 2b.....	2
Scott, cf.....	2	Starritt, 1b.....	3
Weithro, rf.....	4	Kestep, 3b.....	2
Webb, 2b.....	1	Lothman, rf.....	3
	21		31
	70		11

INNINGS.

	1.	2.	3.	4.	5.	6.	7.
Night Owls.....	2	9	22	0	7	15	15-70
Picked Nine.....	1	6	1	1	0	2	0-11
Out on bases—By Gould, 9; Webb, 1; Kern, 1—Total, 11.							
Assisted by Webb, 8; Kern, 2; Williams, 3; King, 1; Gould, 1.							
By Starritt, 3; assisted by Kestep, 1; Robertson, 1; direct, 1.							
Flies caught—Kern, 1; Spink, 3—Total, 4. Brewster, 2; Higgins, 3—Total, 5.							
Foul bounds caught—Spink, 4; Robertson, 10.							
Catches on Strikes—Spink, 2; Robertson, 3.							
Umpire—E. C. Ulrich, Buckeye B. B. Club.							
Spectators—Messrs. Peirce and Britt.							
Time of game—2 hours and 45 minutes.							

On the 7th the Night Owls played a close game with the Red Stockings, Jr. Score by innings as follows:

	1.	2.	3.	4.	5.	6.	7.
Night Owls.....	2	4	0	3	4	0	0-13
Red Stockings, Jr.....	0	1	3	8	1	0	5-18

We leave for Cowes, Ohio, to-morrow morning, to play the North Bend Club, whom we met and defeated twice last year. I will send the score in my next.

VOYAGEUR.

TELEGRAPH WIRE.—A. Cary, assignor to American Telegraph Wire Co., New York city.—June 15. The gist of this invention lies in a telegraph wire having a steel core with a strip or strips of copper or other good electric conductor applied thereto, and soldered in place by means of a bath of tin. The same parties patent also, on June 15, a machine for making compound telegraph wire, the essential features of which consist in the combination of a device for folding the sheathing upon the wire with the device for drawing the compound wire, and also in a method of making telegraph wire by twisting about the common wire a sheathing of metallic ribbon and drawing them both through a metallic die.

Science and Art.

A striking instance of the immense value that a small piece of steel may acquire by the great power of skilled mechanical labor, is the balance-spring of a watch. From its extreme fineness and delicacy, four thousand weigh not more than one ounce, and exceed in value £1,000, or \$5,000 in gold.

SAMUEL C. BISHOP,

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THE BISHOP GUTTA PERCHA COMPANY,

The Original and Only Manufacturer in the United States of *gutta percha* description of

PURE GUTTA PERCHA GOODS.

INSULATED SUBMARINE TELEGRAPH CABLES.
INSULATED TELEGRAPH AND ELECTRIC WIRE.

The Insulation of Telegraph and Electric Wire with Gutta Percha has been adopted by the manufacturers of these articles, in Europe as well as here, and in an experience of over TWENTY YEARS has never failed.

I also Manufacture

WATER, BEER AND SODA PIPE,

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WALTER O. LEWIS, Esq.,

Electrician of the Company.

Brooks' Paraffine Insulator.

CHICAGO AND N. W. RAILWAY CO. TEL. DEPT., }
CHICAGO, June 14, 1869. }

DAVID BROOKS, Esq., Philadelphia, Pa.:

DEAR SIR—It is a pleasure for me to add what little weight my testimony may have upon the merits of your insulators. We have one line between Chicago and Milwaukee (85 miles), insulated with the old style, of three years' standing, which has done us excellent service. We have one with the new between Chicago and Jamesville (91 miles), that has been up a year and a half, never failing us. It is immaterial whether the weather be rain or shine, so far as its working is concerned. These are short circuits, and do not show the good qualities as strongly as longer lines, but they demonstrate the superiority of your insulator over the Wade or plain glass, there being wires of this description over the same poles, with which frequent comparative tests have been made, greatly in your favor. The cost of repairs on these two lines have been very small, proving the economy of your insulator in actual outlay within a few years, if the quality of insulation was no consideration. I can heartily commend your insulators to the telegraph fraternity.

Yours truly,

GEO. H. BLISS.

THE *Scientific Review* says that a project for the formation of a society for the exploration of China is being actively promoted in Belgium, with a view to the introduction in the Celestial Empire of railroads, telegraphs, and the development of its mineral wealth. The project is very favorably viewed by King Leopold, who has traveled in China.

Journal of the Telegraph.

Miscellany.

The Home of the Lepers.

THE LEPER COLONY OF MOLOKAI IN THE SANDWICH ISLANDS—HORRORS OF THE DISEASE—DANCE OF DEATH.

A Hawaiian correspondent of the San Francisco *Bulletin* gives the following description of the home of the lepers, on the north coast of Molokai: The low peninsula on which the colony is located is about three miles broad, spreading a couple of miles into the sea, and is so completely isolated that it is an appropriate and secure retreat for the poor victims of leprosy. A rough sea breaks continually upon a wild, forbidding coast. At the back an almost perpendicular wall towers to the height of 3,000 feet. There is but one avenue of approach by land—a narrow, zig-zag trail, cut in the face of this wall. The leper is indeed banished out of the world, and forgotten of men. Every island in the kingdom is haunted with the miserable victims, so terribly branded that no artifice can mask their deformity. Leprosy is not swift in the work of destruction. One may live 15 or 20 years, growing slowly but surely worse the whole time. Its first symptoms are almost imperceptible; it is therefore difficult to pronounce on some of them. There is a thickening of the lobe of the ears, swelling of the hands and feet, paralysis of the arms and fingers, ulceration, etc. There is a deadly look in the eye which can hardly be mistaken. With all these dreadful signals of doom there is no pain. The senses are benumbed. The worst features of the disease are an unhealthy appetite and a complete demoralization, the passions becoming almost ungovernable.

The Chamber of Horrors is filled with a dozen or fifteen recumbent figures, among the worst of the bad cases. A fetid odor, faint but perceptible, pervades the apartment. We hear hard, hoarse breathing, harsh whispers, and deep sighs from those who can never again speak with their old voices. The decay of the vocal organs is almost the last stage of the plague, and seems the most terrible of all. The patient is usually by this time one mass of corruption. Faces are turned to us, as we grope among the half-conscious sufferers, that look as though they had been hacked twenty times across with a broad ax, and each gash healing, had left a horrid seam. Ears swollen to twice their natural size, raw-looking and bloody, while the enormous lobes, hanging nearly to the shoulder, ooze with a sickening pus. There are those with nostrils slowly withering away, some with no nasal at all, only an ulcerous cavity remains, too abominable to be thought of for a moment. Fingers grown sharp at the end, sloughing the skin, shedding the joints one by one. This man can lay hold of and remove a toe without any sensation. What is it that so paralyzes the sensibilities? Nothing but death itself, grasping the vitals. They are but half alive, these lepers, and carry their own infectious corpses about with them. One old man, sitting in a malo, a narrow strip of cloth bound about the loins, is covered from head to foot with large, hard swellings. There is not valley enough between his thousand-and-one fleshy hillocks to lay the tip of your finger. Yet he is unconscious of any pain whatever. He turns a ghastly grin—supposed to be a smile—upon us, as he exhibits a new mound, just making its appearance on one side of him, which is likely to crowd out a few of the older ones. The poor wretch looks more

like a horned toad, polished down a little, than a man and a brother.

Once upon a time these decaying remnants of humanity deliberately gave a grand ball at the hospital. There was a general cleaning out of disabled patients, and a brushing up of finery, while the ball itself was the great topic of conversation. Two or three young fellows, who had a few fingers left, began to pick up a tune or two on native flutes made of bamboo. The lamps flamed in the death chamber of the lazar house. The wheezing voices, the shuffling of half-paralyzed limbs over the bare floor, the wild sea moaning in the night, made the scene unearthly.

SPECIAL NOTICE.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

AND

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.,

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by the

BISHOP GUTTA PERCHA COMPANY, OF NEW YORK,

General Agents for the sale of any articles manufactured by them

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at the Company's prices in New York. The long experience of this Company (and that of Mr. SAMUEL C. BISHOP, its immediate predecessor) in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation they have gained and enjoy for the superior quality and perfection of manufacture of their

SUBMARINE TELEGRAPH CABLE

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

Pole Line Cordage, with Fibre and Bishop's Patent Compound outside.

Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

BISHOP'S PATENT COMPOUND WIRE

for out-door use and office connections.

INSULATED WIRES,

with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with the Bishop Gutta Percha Company, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

Western Union Telegraph Company.

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Telegraphers'**Mutual Life Insurance Association.**

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.
I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postage, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

J. D. REID, Treasurer.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

By permission of the Western Union Company, and to avoid risk by mail, remittances may be made by an order signed by a Manager on John Horner, Cashier, New York office. Whenever practicable it is desirable this should be done.

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Labeled by me, for the last ten (10) years, *ARNOLD'S FLUID* Superior to any Fluid used. It is Greenish Blue in color, turning Jet Black, flows freely, dries rapidly, does not set-off in books, gives one or more excellent copies. Has no sediment, can be used to the last drop. It is 38½ per cent. cheaper than any other (so called) combined ink. Used exclusively by the Western Union Telegraph Company.

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Now offer for sale, or will manufacture to order,

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All orders executed with promptness, and satisfaction guaranteed in the quality of articles supplied.

IMPROVED TELEGRAPH WIRE.

The attention of Telegraph Companies and Builders is invited to the Compound Steel and Copper Wire manufactured by the AMERICAN COMPOUND TELEGRAPH WIRE COMPANY.

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THIS IMPROVEMENT

has already been quite extensively introduced, and it is confidently believed, that by the natural laws of progression, is destined to supersede iron wire for Telegraphs, because of its superior working capacity under all conditions of weather.

THE WEIGHT OF THE COMPOUND WIRE

is but about one-third that of an equivalent conductor of iron, and its conducting capacity may be largely increased with but slight increase of weight. In consequence of this lightness, together with its GREAT AND UNIFORM STRENGTH,

but one-third of the number of poles are necessary that are required in iron wire construction, thus largely improving the Insulation and combining Economy in Construction and Reconstruction, with superiority in working.

THE WINTER TESTS

have proved its durability and capacity to successfully resist breakage from sleet and wind storms, and one of the testimonials received to this effect states that during a certain severe sleet storm the Compound Wire remained intact, while a high cost Norway Iron Wire, in the same locality, and strung at the same time, was broken in several places.

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Keeps constantly on hand and for sale his

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Having adopted the use of

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which is much richer and finer than brass, he now presents his work in a style and of a quality that are unsurpassed. His Relays were awarded

THE FIRST PREMIUM

at the late Great Fair of the American Institute, N. Y., and their superiority is generally acknowledged by operators who use them. Aside from the advantages apparent upon inspection of these magnets, their acknowledged merits consist in the construction of the helix, which was patented August 15, 1885. This being of naked copper wire, so wound that the convolutions are separated from each other by a regular and uniform space of the 1-600th of an inch, the layers separated by thin paper. In helices of silk insulated wire the space occupied by the silk is the 1-150th to the 1-300th of an inch; therefore a spool made of a given length and size of naked wire will be smaller and will contain many more convolutions around the core than one of silk insulated wire, and will make a proportionably stronger magnet, while the resistance will be the same.

PRICES.

Relays with helices in bone rubber cylinders, very fine	\$19 50
Small Box Relays	16 00
Same in Rosewood	17 00
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All other appliances made to order. Extra spools for replacing such as may be spoiled by lightning, furnished at \$1.25 each. Old goods taken at the price of new wire by the pound. Goods sent to all parts of the continent with bill C. O. D. Or, to save expense of returning funds by express, remittance may be made in advance by certified check payable in New York, or Post-office orders, in which case he will make no charge for package. He has ample facilities for furnishing all other kinds of Telegraph Supplies at the lowest manufacturers' prices.

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NONPAREIL RELAY.

PATENTED MAY 19, JUNE 30, AND DECEMBER 8, 1888.

This Instrument, having been thoroughly tested on the principal Telegraph Lines in this country, is now offered for sale. It has proved itself a practical

SELF-ADJUSTING RELAY

under all ordinary conditions of the circuit. It will be found especially valuable in

RAILWAY TELEGRAPH OFFICES,

where the operator, being frequently otherwise employed, cannot be in constant attendance upon his instrument.

THE BUNNELL REPEATER,

by the use of this Instrument, is rendered practically Self-adjusting, entirely obviating the annoyance frequently arising from the inattention of operators at repeating offices.

THE NONPAREIL RELAY

is finished in a manner superior to any other instrument in the market.

The parts of the Instrument are

MADE INTERCHANGEABLE,

so that a duplicate of any portion can be furnished at any time.

These instruments are now made with the sliding bolt insulated from the armature-lever, and a continuous wire connection between the plating point and the lever.

The ordinary resistance of this Relay is equal to about Twenty-five Miles of No. 8 Iron Wire.

Relays of any required resistance will be made to order.

PRICE, \$30.

THE USUAL DISCOUNT TO DEALERS.

Mr. Geo. E. Seibert, Western Union operator, 145 Broadway, New York, says:

"I have worked Durant's Self-adjuster on the Cincinnati wire for two days, and can testify to its being a self-adjuster in every respect."

For a full description of the construction and advantages of this Instrument, see JOURNAL OF THE TELEGRAPH of Dec. 15, 1888. Goods sent to all parts of the Continent with bill C. O. D. Parties remitting in advance by certified check, payable in New York, or by Post Office order, will save the expense of returning funds by express.

Agent for the sale of the Nonpareil Relay on the Pacific Coast, Mr. STEPHEN D. FIELD, San Francisco, Cal.

Address all orders to

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MANUFACTURERS OF

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Zincs, Porous Cups, Platinum, Acids, Quicksilver, Tinning Coppers, &c. All of the most approved Pattern and Best Quality.

REGISTER PAPER, MANIFOLD PAPER, MESSAGE PAPER (IN STRIPS).

Printed Message Heads and Envelopes

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RELAY MAGNETS,

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SWITCH-BOARDS,

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PAPER-REELS,

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OF EVERY DESCRIPTION.

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Of any desired Size and Pattern. American Manufacture. We shall be happy to answer all inquiries and furnish any required information promptly.

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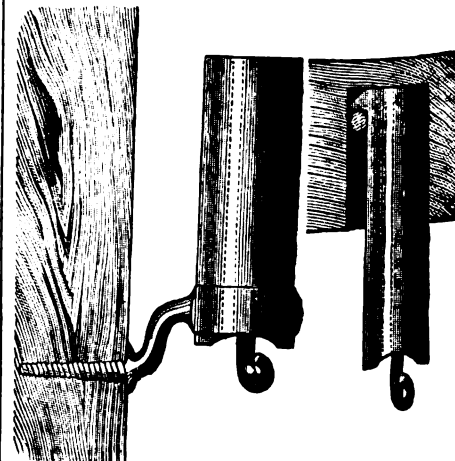
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BROOKS'

PATENT PARAFFINE INSULATOR WORKS.

21 ASPEN STREET, NORTH OF 2123 CHESTNUT STREET.

PHILADELPHIA.



The guarantees of this insulator are:

1st. A current resistance in rain or fog, or in rain and fog combined of 100,000,000,000 Ohms.

2d. To insulate a conducting wire of any length in rain or fog or rain and fog combined, to its full working capacity, or the capacity of a similar wire or conductor placed upon any other insulators under the most favorable circumstances of weather.

3d. Strength, not to break or part by any strain by, or that No. 8 wire will bear.

It is not injured by missiles in the general acceptance of the term.

It does not depreciate from exposure to smoke, soot and the gases from combustion to one hundredth part of the extent of ordinary insulators.

It is not injured by atmospheric discharges. It is a protection to the poles from the same effects, there not being an authenticated instance of a pole being injured where these insulators are used.

JOHN POLHEMUS, Printer and Stationer, 102 Nassau Street, N. Y.

JOURNAL OF THE TELEGRAPH.

VOL. II. NO. 17.

NEW YORK, AUGUST 2, 1869.

WHOLE NO. 42.

The Song of the Telegraph.

I have heard men say that when winds were high,
And clouds were teasing about the sky,
Journeying over some lone morass,
Where the endless wires of the telegraph pass,
They have stood, and listened, and trembled with fear,
The song of the telegraph to hear.—
A sad and most unearthly strain,
A sharp, low moan, like a soul in pain,
Rising and falling fitfully,
Like the long waves after a storm at sea.
I have thought and wondered many a time
What the wire would say, could it speak in rhyme;
And thinking much, and wondering long,
At length have found the telegraph's song.

Lo, the golden age has come!
Light has broken o'er the world!
Let the cannon mouth be dumb,
Let the battle flag be furled!
God hath sent me to the nations,
To unite them, that each man
Of all future generations
May be cosmopolitan.

I, the lightning—the destroyer—
I, the untamable, the proud—
To be harnessed to the wire,
I have left my thunder cloud.
Harbinger of peace and union,
Messenger no more of wrath,
To establish sweet communion,
Down to earth I take my path.

With the olive branch extended,
Swift I go to every shore;
Soon all nations shall be blended,
They shall learn of war no more.
Peace and progress be forever
Printed on the hearts of men,
So that future time may never
See a battle field again.

Injury to Prof. Morse.

The friends of Prof. Morse have been made quite anxious by a serious injury which happened to him a few days ago, and many inquiries have been made respecting it. We give the following message, addressed to us, to show how cheerfully and hopefully one on the verge of fourscore bears the breaking of his bones:

POUGHKEEPSIE, July 28, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

My hurt is the breaking of both bones of my left leg from a mis-step on the stairs. Tedious, but not painful to bear. Am doing well. SAM'L F. B. MORSE.

The French Cable a Bond of Friendship Between France and America.

PARIS, July 26, 1869.

The *Journal Officiel* congratulates the country on the completion of the Franco-American cable. It says: "The new route of communication now opened between France and the United States will henceforth render our intercourse more frequent and our relations more intimate. It will draw closer the bonds of friendship which now unite the two countries."

The French Cable.

THE EMPEROR OF THE FRENCH TO THE PRESIDENT—THE PRESIDENT'S REPLY.

The following dispatches were transmitted by the French Cable:

PARIS, 8:45 A. M.

The Emperor of the French to the President of the United States:

I am highly gratified to inaugurate the new line of telegraph which unites France with the United States by sending to you the expression of my good wishes for you and for the prosperity of the United States.

NAPOLEON.

The President of the United States to the Emperor of France:

I cordially reciprocate your good wishes, and trust that the liberal policy of the United States, pursuant to which the cable has been landed, may result in many such means of communication, especially between this country and its earliest ally and friend.

U. S. GRANT.

"The line of the French cable first starts in very shallow water from Minou Bay, but in four or five miles it deepens from 17 to 20 fathoms, and then gradually shelves from 30 to 60 and 90 fathoms; a depth which is pretty equally maintained over the whole bed of the English Channel. At this level, but on the whole gradually deepening, it continues till in line with the westernmost part of the Irish coast, where, taking a northern course, it passes down a gentle slope of sand, that continues descending till the depth increases from 200 to 800 and 900 fathoms, and then in a short distance to 1,700 fathoms. Over all the rest of the course to mid-ocean the bottom is mud, shells and sand, and with a uniform depth of about 2,000 and 2,200 fathoms. This course would have brought the Great Eastern close to the northward of the supposed gaunt spires of rocks called the 'Three Chimneys,' and which, as laid down in the Admiralty chart, were confidently believed to exist. Lieutenant Johnstone, in the course of his soundings, went over the exact spot where they are indicated in the chart, and found more than 2,000 fathoms of water, with deep water all around, and not the slightest trace of rock or shoal in any direction.

"From the locality of these fictitious pinnacles, the cable course is kept in a pretty regular depth of from 1,800 to 2,000 fathoms, and throughout over a soft bed of mud mixed with myriads of the most minute shells. These shells comprise various forms of *diatomaceæ*, which, though perfect in their organization, are so exquisitely small as only to be visible under the most powerful microscope. They are really as fine as flour, and the greater part of the bed of the Atlantic is covered with the *debris* of these animalcules, the existence of which proves conclusively, what was long denied, that at these great depths there is an absolute cessation of all motion. Over such a bottom the line is taken in an arc of a large circle, the most southerly point of the cable being in 42 degrees north latitude, and the most northerly 48 degrees. Along the southern end of the Newfoundland Bank it is sunk in about 150 to 200 fathoms, the water on the Bank itself varying from 50 to 90 fathoms. Thus it is completely sheltered from the ice, which, if the ice-

bergs pass the bank at all, must clear the cable which lies under its lee by some hundred fathoms or more."

Signaling on Board the Cable Fleet.

The *London Gazette* gives the following interesting description of the manner of signaling through the cable on board the Great Eastern:

The method of signaling used between the ship and the land is that now universally adopted in working all long submarine lines—the reflecting galvanometer. The principle of this most delicate instrument was discovered a few years since by a German electrician, named Weber. It was then, however, a large machine, and the condensation of all its powers into the smallest and lightest form is due to the scientific research and skill of Sir William Thompson.

This instrument consists of a small mirror with a magnet on its back. That the two are very small indeed may be judged by the fact that both together weigh less than three-eighths of a grain. This infinitesimally small reflector, which is intensely bright, is suspended by a silk thread as fine as a hair in the midst of a small circular coil of insulated copper wires. Directly a current is sent through this circular coil, no matter how slight, it induces another electric current within its circle, which acts in an opposite direction, and this causes the magnet at the back of the mirror to turn to the right or left, and of course, to turn the little mirror with its reflecting ray of light with it. By a very simple arrangement, this fine ray of light is thrown upon a horizontal graduated scale, about three feet long and three feet distant from the mirror.

Thus when a current is sent through the little circular coil round the mirror, the magnet is acted upon, and turns the mirror with its ray of light, say on the left of the scale in front of it. When the current is reversed, and that is instantly done by pressing a little key in the speaking instrument, the current in the circular coil is reversed and sent in the opposite direction, and this in turn sends the ray of light from the mirror on to the opposite side of the scale to the right. When the ray of light rests stationary on any part of the scale, it means a dot; when it moves rapidly to the right or left, it means so many dashes, according to the distance it goes. This reflecting galvanometer tells with unerring certainty whether or not the Great Eastern is steady.

The vessel now at the end of the cable is, with its coils of insulated wire and iron hull, a mere electro-magnet so to speak. The course of the Great Eastern is east and west, and therefore at right angles with the course of the magnetic current, which is north and south. Thus every time the ship rolls, either to port or starboard, a slight current, but still a current, is induced in her vast coils, and thence transmitted through the cable to the shore end at Minou, where it acts upon the reflecting galvanometer, and turns its ray of light a little to the right or left of the centre of the scale, and thus shows in a fraction of a second of time the precise degree and rapidity at which the vessel is rolling.

Electrical Tension—A Reply to Mr. Prescott.

New York, July 10, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

An article upon auroral currents appears in a recent number of your paper, from the pen of Mr. Geo. B. Prescott, in which he takes exception to a statement of my own, in an article published some weeks since in another journal, which was in the following words:

"All electrical currents are invariably caused by a difference of electrical tension between two points—and the passage of the current, as it is termed, tends to equalize these varying tensions. Under ordinary conditions, the current used in operating a telegraph wire is caused by the difference in electrical tension between the two poles of the battery employed."

Referring to the above paragraph, Mr. Prescott, in the course of his article, says:

"This statement is singularly inaccurate. The passage of the current has nothing to do with the difference in electrical tension between the two poles of the battery, for the tension is the same at one pole of a battery as at the other."

With all due respect to his opinions upon this matter, I fail to see that Mr. Prescott has brought forward any proof whatever in support of his somewhat remarkable assertion, that "the tension is the same at one pole of a battery as at the other." If, as he says, I "have inadvertently fallen into some errors that require correction," it is due to myself to say, that quite a number of other electricians of far greater ability have shared the same fate. We know that if a wire is connected from one pole of a battery to the other, a current of electricity will pass through it. How could this happen if the tension were the same at both poles? As a familiar illustration, suppose two reservoirs connected by a horizontal pipe, the water standing at the same height in each, and filling the connecting pipe. In this case, the pressure being equal at each end, the water in the pipe remains at rest. Take a quantity of water from one reservoir and add it to the other, and the equilibrium is disturbed. The pressure becomes less at one end of the pipe and greater at the other, and a current flows through the pipe until the equilibrium is again established. Now take the case of a battery, both poles being disconnected. Suppose the chemical action within the battery to be entirely suspended, the electrical tension at both poles would be the same as that of the earth, which is assumed to be zero. But when the chemical action takes place, the electric equilibrium is disturbed. The copper or platinum pole of the battery assumes a positive tension, and the zinc pole a negative tension, these tensions being equal but *opposite*. With 1,000 cells the phenomena of the attraction and repulsion of light non-conducting substances may be shown, as with a frictional electric machine, proving that there is actually an accumulation of electricity in a state of tension at each end of the battery, the tension at one pole being as much *above* that of the earth as that of the other pole is *below* it. The tension at the two poles is not "the same," any more than the magnetism is the same at the north and south poles of a magnet, or the temperature is the same when 50 degrees above zero that it is when 50 degrees below.

I find that the leading modern authorities upon electrical matters are inclined to view the matter under discussion in the same light as myself. Gavarret says ("Telegraphie Electrique," p. 35): "The poles of a battery, when disconnected, have equal but *contrary* tensions." Culley (*Handbook of the Electric Telegraph*, p. 10) says: "If both poles be insulated the central plates will be neutral, the zinc pole will leave a — tension of (say) 20, and the copper pole a + tension of 20." Latimer Clark says (*Resistance Measurement*, p. 23): "All electrical currents are produced *solely* by differences of tension," and again (p. 17), "The quantity of electricity flowing along any conducting wire, between two given points, is directly proportional to

the difference of tension between those points." C. F. Varley, in his *Report on the Condition of the Western Union Lines*, p. 73, gives a diagram showing the tension, or electro-motive force, upon a line with a battery at each end, and a closed circuit, on the American plan of working, which correctly represents the varying tensions in different parts of the line. The tension of the earth being considered as zero, the grounded pole of each main battery is zero, and there is a point on the line midway between the batteries which is also zero, one half of the line having a positive and the other half a negative tension, as long as the circuit remains complete. The greatest tension occurs at the points where the batteries are attached to the line, and it decreases gradually from that point to zero in the middle of the line. Therefore the greatest tension in the circuit is at one pole of the battery, while the other pole is at zero, this tension being positive in the case of one battery and negative in the case of the other.

I might go on and enumerate a dozen more authorities to the same effect, if it were necessary to sustain my position, but the foregoing ought to be sufficient, for the correctness of it seems to me to be almost self-evident. If, as Mr. Prescott contends, it is an error, I certainly did not fall into it through "inadvertence," neither, I think, did the writers above quoted.

While upon the subject I may remark that Mr. Prescott seems to have fallen into one or two slight errors on his own part. In his article he also says:

"I have never known an earth current to change from maximum positive to maximum negative in a shorter period than 60 seconds, and the change is often spread over an interval of several minutes."

In his work on the *History, Theory and Practice of the Electric Telegraph*, p. 319, the following statement occurs: "The waves (of the auroral earth current) occupy about fifteen seconds each ordinarily, but we have known them to last a full minute, although this is rare." It would appear as if at least one of the above statements was "singularly inaccurate."

Mr. Varley will also doubtless be somewhat surprised, in common with myself, to learn that the principle upon which his Atlantic cable condenser depends "is that of the gradual change in polarity of the earth currents." If the polarity of these currents remained *unchanged*, it is quite probable that the cable could still be successfully operated by means of the condensers. Or does Mr. Prescott mean that the polarity of the earth currents can be changed by means of the condenser?

In conclusion I may say that I have no reason whatever to doubt that Mr. Prescott's arrangement of wires, on the 15th of April, worked without the slightest interference from the auroral influence. The weather was clear and dry, and the conditions of insulation extremely good. Under less favorable circumstances some effect would probably have manifested itself. This, however, is a matter of little practical importance. Mr. Prescott's arrangement, in the majority of cases, perhaps in every case, will work as well as any other. With the prevalent conditions of insulation the metallic circuit is theoretically the best.

F. L. P.

PRIVATE TELEGRAPH.—An organization has lately been formed in this city, under the style of the "American Private Telegraph Company," which is a novel, and promises to be a highly important and useful, enterprise. Its object is to place business men in direct communication with each other, and connect their offices, stores, warehouses, residences, etc., so that at any moment word may be conveyed from the one place to the other. It operates on the principles of the police telegraph, and is so simple in its *modus operandi* that any person may learn it in a very short time.—*Chicago Times*.

The Tides.

The power exerted by the tides every day along thousands of miles of sea coast is especially remarkable, as it is the only natural force directly dependent on gravitation, which owes nothing to the heat of the sun, itself a result of gravitation, and in its turn the cause of all other forces on the surface of our planet, either wind or water power, steam power or the power of animals.

To estimate the force of the tides, all that is necessary is the consideration that the attraction of the sun and moon (principally of the latter), acting in opposition to terrestrial gravitation, elevates the surface of a large portion of the ocean, nearly twice in twenty-four hours, to the mean height of about two feet. The extent of surface thus raised may be set down at 100,000,000 square miles, or one half of the surface of the earth, taking this at 200,000,000 of square miles, of which the ocean occupies about three fourths, or 150,000,000. Every square mile of water two feet thick, contains nearly 60,000,000 cubic feet, or 3,840,000,000 pounds of water, and this, multiplied by 100,000,000, the number of square miles affected by the tide, gives the enormous number of 768,000,000,000,000 foot pounds exerted every 12½ hours, or 75 minutes, which gives per minute a power of 100,000,000,000,000,000 foot pounds. Dividing this by 33,000 to reduce it to horse power, we obtain nearly 3,000,000,000,000 horse power as the total power of the tide wave over the whole surface of the earth.

The railroads of the world, at the close of 1868, are reported to have been in the aggregate 109,177 miles long. The comparative mileage of the different countries is given as follows: The United States 42,255; Great Britain, 14,247; France, 9,934; Prussia, 5,926; Russia, 4,317; and Italy, 4,109. The total for Europe is 56,660. Asia has 4,474 miles; South America, 1,424; Australia, 789; Africa, 583.

It has been observed that wires which have for a long time transmitted electricity, have their texture changed and are rendered brittle. In this observation, however, though made by a skillful electrician, M. Peltier, the effects of exposure to the atmosphere, to changes of temperature, etc., have not been sufficiently eliminated to render it worthy of entire confidence.

Remarkable Cure from Lightning Stroke.

Mrs. E. Stahl, who lives on the "South Hill," in Bloomington, recently received a striking benefit from a stroke of lightning. She has for a long time suffered from heart disease, superinduced in great measure from the anxieties and mental sufferings caused by the war. She had six sons in the army at one time. She also had suffered from a broken foot, and has not been able to move about, except by the aid of a cane. For a year past she could not reach a neighbor's house unassisted. On the 29th of May a heavy thunder storm passed over this town, and while Mrs. Stahl was standing in the door of her cook house, she received a severe shock from lightning, which she describes as like the blow from the flat side of a board on the top of her head. An iron rod six feet long was standing near her. She would have fallen, but was caught in the arms of her son. The shock was followed by nausea, and much bodily prostration for four or five days, and serious consequences were feared by the neighbors. She finally recovered entirely, and greatly to her surprise, her bodily health is entirely restored, and she is now able to walk without a cane. Her lame foot is entirely well. Those who are incredulous or curious can verify the truth of these facts by inquiring of Mrs. Stahl personally.

Wedlock.

WEDLOCK ; OR, THE RIGHT RELATIONS OF THE SEXES. Disclosing the Laws of Conjugal Selection, and showing who may and who may not Marry. By S. R. Wells, author of "New Physiognomy." New York: Samuel R. Wells, Publisher. 1869. pp. 238.

Authors may talk of conjugal selection as they please, but there is only one way to go about it, or, rather, that men and women ever pursue. A man takes a fancy for a woman and marries her for no reason he knows of but the fancy. A woman does the same. You can't argue them out of it. Tell the woman the man is a brute, a villain, a thief, what you like, she'll go it blind and have him any way. So of him. Still good advice may stick on some sensible hides and we recommend them to "Wedlock." It is neatly got up and will be read as all such books are. Our philosophy of marriage is to love and wed. Genuine love will stand the test of time the longest.

A Good Number.

Wells' Phrenological Journal for August has the following among its varied contents: Rev. John P. Newman, D. D., Chaplain to the U. S. Senate; J. Edgar Thomson, President Pennsylvania R. R. Company; James A. Whitney; Henry J. Raymond; The Old North Church; The Wallachians; Small v. Large Heads; The Laughing Deacon; The Lyre Bird; The Phrenologist's Prophecy, or an incident in the Life of Metternich; Bible Experiences; Observations and Impressions of a day, or Reading Faces on the Rail; Marriage Customs, etc.; How to become a Christian; a well balanced mind; etc., with Portraits and other Illustrations. Price 30 cents, or \$3 a year. S. R. Wells, Publisher, 389 Broadway, New York.

The Galaxy.

The Galaxy improves with every issue. Its articles are brief, able, full of a cheerful interest which makes it an ever welcome guest. In the last number, amid many others of value and interest, is an article of unusual excitement which we must give in our next number although somewhat long. It is the story of a drunken telegrapher who caused the collision of two trains, and is told with much romantic skill.

O. S. Wood, Esq.

We have neglected to state that Mr. Wood, formerly General Superintendent of the Montreal Telegraph Company, whom all operators know by reputation, and all who know him personally admire and respect, has returned to Montreal, his former residence. This change was made chiefly with a view to restore his wife's health, which has long been delicate. The change, however, was fruitless, for on the 25th of June she died, much respected and beloved by a large circle of friends who mourn her loss. In this bereavement we sincerely sympathize.

We regret also to record the death of the wives of J. H. Purnell, Opelika, Ala., James Newell, New Orleans, and Bolling W. Starke, Raleigh, N. C. In the case of Mr. Purnell the loss was deepened by the death, soon after, of his interesting daughter Jessie. To all of them we extend sincere sympathy.

The Dark Side.

While we congratulate the profession on the general high character which distinguishes it, we have sometimes to acknowledge that its purity might be increased. There are no earthly gardens in which grow no weeds.

The last month's report of the Central Division shows the following dismissals:

For drunkenness and neglect of duty.....	1
For incompetency.....	1
For drunkenness and dishonesty.....	1
For drunkenness and inattention to business.....	1
Defaulter.....	1

For drunkenness in such a service as ours there is no excuse, and it should admit of no toleration. It absolutely unfits a man for his duties and none can properly be intrusted to him. We would gladly join in a united pledge of total abstinence to secure the service from the dishonor and injury of this evil element. Considering its unfitting qualities for the care needed in our business, we would approve rather than blame the test of total abstinence in making appointments.

New Telegraph Line.

The Dutchess and Columbia Railroad Company have just opened up a line of Telegraph along their road between Fishkill and Millbrook. The line was built by Mr. S. J. Burrell, and the design is to extend it to the State line of Massachusetts through Millerton. The railroad on which it is built is, as is well known, a part of the Boston, Hartford and Erie, terminating in Fishkill, opposite the village of Newburgh, and of which George H. Brown, Esq., is president. By the 15th of August the line will be open to Pine Plains, with the following offices:

Fishkill,	La Grange,
Fishkill Landing,	Millbrook,
Hopewell,	Bangall,
Arthursburgh,	Pine Plains.

All are now open except the two last.

Anniversary of the Atlantic Cable.

On Tuesday last, July 27th, the Atlantic cable, the pioneer of all subsequent successes in cable laying, completed its third year of service. In all that time there has been no interruption of communication for an instant. When the one cable failed the other was always ready.

A few weeks ago we published a table, showing the various reductions of tariff which had been made by the company, until on June 1, the charge was reduced to ten dollars, in gold. We claimed that its affairs had been managed with wisdom and liberality, and that it deserved the gratitude of the public on both continents. We repeat that sentiment now.

TELEGRAPH SUPERINTENDENT.—Dr. O. P. S. Plummer, who has been Superintendent of the Western Union Telegraph line from Portland to Callahan's, has had his jurisdiction extended to Marysville. The Doctor is an accomplished and popular gentleman, and one of the best electricians on this coast, and his friends will be glad to learn of his promotion.

Brooks' Insulator and the C. P. R. R. Telegraph.

A letter from F. L. Vandenberg, Supt., dated Sacramento, May 23, says:

"I worked my line on Brooks' Insulators from Promontory to Wadsworth, 550 miles, through heavy rain, clear of escape, when M. P. could not work to Corrin, 40 miles, through the same storm. They use glass and bracket."

Dug Burnett.

EDITOR JOURNAL OF THE TELEGRAPH: OMAHA, July 21, 1869.

Dug Burnett has gone to the land where all good telegraphers wish to go. The last seen of him was in the act of waving his drenched handkerchief in a frantically soothing manner to the "boys," who stood weepingly gazing upon the manly form, leaving us for the "Golden Land." He leaves an interesting family to mourn his departure and hosts of friends to rejoice at his good fortune. Supt. Gamble couldn't do without him and we gave him up "sorrowfully," though cheerfully. Seriously, he is one of the best of men, and wherever he goes will carry with him the best wishes of the fraternity. E. F. Smith, late of Chicago, relieves him of his duties in this office. **DRAKE.**

The French Cable.

The London *Times* gives a long account of the laying of the French Atlantic Cable, from which we take the following details of interest:

"The shore end of the cable is laid from a place called Petite Minou. There are two Minous, about eight or ten miles above Brest. One is Minou, plain and simple, a mere grim chasm in the rock-bound coast. Petite Minou is a little semi-circular nook, open to the whole swell of the Atlantic from the west or southwest, and with such a surf breaking upon the sand that boats can rarely land there, even in the calmest weather. In fine weather this little indentation is covered with sand to a considerable depth. In stormy weather—that is to say, for about eight months of the year—the sand, it is stated, is almost completely swept away, leaving the rocks bare. From this little bay the shore end is laid at an acute angle with the line from which the swell generally sets in, but during the fine weather—that is, while the sand is there—it can do little or no mischief. In bad weather, however, when the sand is gone, and when the great waves hurl up blocks of stone weighing many tons on to the rocks, it cannot be denied that the cable, for more than a mile's length from shore, will almost daily be exposed to the risk of serious injury, and that, apart from the risk from stones, its constant chafing from side to side upon the rocky bottom must soon or later cut it through."

THE General Superintendent and American Managing Agent of the French Cable Company, is Mr. L. G. Watson of New York, assisted by Mr. R. T. Brown of London, who will have charge of the company's land lines. Mr. M. J. Gaines, formerly Consul General for the United States at Tripoli, but who for the past seven or eight years has been engaged in the telegraphic service of the Mediterranean, is to be the chief clerk in charge of the cable, with a force of about 12 electricians.

Married.

VALENTINE—DE RIEMER. In Milwaukee, Wis., July 18th, by the Rev. C. D. Halmer, of Chicago, Mr. Richard Valentine, Manager of the Western Union and North Western Telegraph Co.'s office, Janesville, Wis., to Miss Susie B. De Riemer of Milwaukee.

Died.

At Zanesville, Ohio, July 23, 1869, Laura Powlens, wife of Jas. Newell, of the Western Union Telegraph office, New Orleans, aged 27 years.

A New Insulator.

W. E. Simonds, of Hartford, Conn., has invented an insulator on the principle suggested in THE JOURNAL of June 1. A description has been sent us, but without cuts, which, however, are unnecessary. Beneath the bell of the ordinary glass insulator, and of such diminished diameter as to be inside of it, is affixed a cup filled with paraffine, which offers a successful obstacle to moisture passing from the stem to the wire. This is practically the whole of the invention. W. W. Smith, Esq., Vice-President of the Cincinnati and Indianapolis Railroad, has an insulator in use similarly formed. Its merit is in the retention of ordinary forms, and their strength, with the paraffine barrier, which is preserved in place even when melted by heat. We will refer to it again.

LAKE SHORE & MICHIGAN SOUTHERN RAILWAY,
General Superintendent's Office,
CLEVELAND, O., July 1, 1869.

Mr. Wm. Kline, Jr., is this day appointed Superintendent of Telegraph for this Company; Office, Toledo, Ohio.

CHAS. F. HATCH,
Gen'l Sup't.

The "Foucault" Cable,

FOR SUBMARINE, SUBTERRANEAN AND AERIAL LINES, AND
FOR CONTROLLING INDUCED CURRENTS.

Our attention has been called to the above cable, which its inventor claims can be successfully used for all the above purposes. The validity of these claims has already been settled by practical tests, which show that, in practice, it is all that it has been stated to be in theory, and that the science of telegraphy has made greater progress towards perfection than it has done for years. We refer more particularly to land telegraphy, as on marine lines all has been done within the past ten years that could have been hoped for by the most sanguine. Yet, even for this purpose the inventor of this cable claims properties which will enable the present rate of transmission on long submarine lines to be increased two-fold. A number of conductors in long cables can also be used, the action of induced currents, which have hitherto had so great an influence in defeating rapid transmission, being under control.

The "Foucault" Cable was patented in France in 1867, with additional improvements in 1869. The patents for Spain, the United States and England were taken out during the present year, and are now pending for other European countries. It has been in constant use since 1867 on board the Trans-Atlantic Company's steamers Europe and Lafayette, plying between New York and Havre, in working Foucault's speaking telegraph, which is designed for and has been used with great success during the same time, in transmitting the orders of the officer of the deck to the man at the wheel, and in automatically registering the obedience to such orders by return signals.

The exposure which the cable has undergone on board of these vessels has shown that the material of which it is made will stand any ordinary extremes of atmospheric temperature without depreciation, and, indeed, thus far it has gained in conductivity. This has also been the experience of the present Atlantic cables, although from a different cause. Upon these vessels the cable has been exposed to much more severe tests than it possibly could have had upon the ocean's bed, as it was subject to all atmospheric changes—heat, cold, ice, snow, steam and salt water alternately covering it for longer or shorter periods. But none of these destroying influences have had any perceptible effect, and it is apparently more durable to-day than when it was first laid down. There is no reason to doubt that it will last for ten or twenty years as an aerial line, while when laid as a submarine

or subterranean line, it can scarcely be less than perfect.

The manner of constructing these cables is varied by the circumstances under which they are to be used, while the same general principle is carried out in all.

Subterranean cables have been usually completely honey-combed and all conductivity lost within a minimum of from three to six years. This has been the result at Berlin, Paris, London and other points where the trial has been made.

For aerial use properties are required which have never yet been secured, although many attempts have been made. Strength, flexibility, lightness, a freedom from atmospheric influences, so as to work at all times, together with the power to combine any number of wires in one cable without interference from each other by induced currents, are all needed. All these are secured by the Foucault cable.

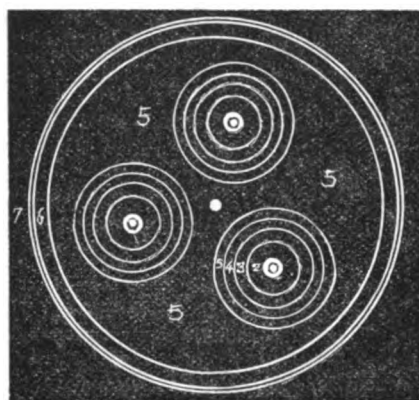


FIG. 1.

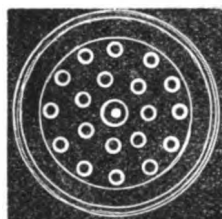


FIG. 2.

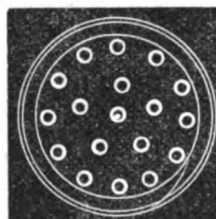


FIG. 3.

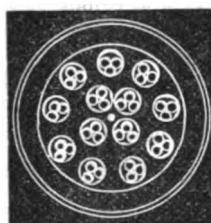


FIG. 4.

Fig. 1. Section of cable magnified. 1. Conductor of one or more wires. 2. Gutta percha, or other insulating substance. 3. Cotton thread. 4. Tin foil or other metallic substance. 5. Linen band, saturated with ceruse of lead and litharged or other oil. 6. Hemp, natural fibre or paraffined. 7. Coal tar, or other analogous substance.

Fig. 2. Conductors of copper wire No. 16, with a compound steel wire No. 8 in centre to give strength.

Fig. 3. Conductors all of compound wire, size 14; conductivity equal to No. 16.

Fig. 4. Conductors of triple copper wire, for flexibility; conductivity equal to No. 16.

SPECIFICATION.

In making a cable of one or more conductors, I use, as conductors, single copper or other metallic wires, or I twist several smaller wires together, forming one conductor of the proper size.

I cover each conductor with a coating of gutta percha, or instead of gutta percha I form a composition of ceruse, or carbonate of lead, finely powdered, and mixed with litharged oil and sawdust to the proper consistency. I then cover the gutta percha, or composition already described, with a metallic conducting coating.

I use preferably a coating of plumbago applied by friction, or a coating of tin foil, or I wrap a small copper or other metallic wire in a long spiral around the gutta percha or composition. Any conductor, properly applied, will answer the same purpose.

This metallic surface or wire is connected with the ground at each end of the cable, or at any other point or points that may be required, to carry off, properly employ and control all induced currents of electricity.

Over this I wrap a cotton thread, completely covering the gutta percha or composition and the metallic conducting surface, formed as above described.

I then saturate a linen band with a mastic composed of ceruse or carbonate of lead, finely powdered and mixed with litharged or other oil, to a proper consistency, and I wrap the linen band so prepared around each conductor, already covered as above described, each turn of the band lapping over the previous turn.

The different conductors are then brought together and wrapped with the same band, and over all is wrapped a tarred rope, of the thickness desired, which is covered with a coating of coal tar.

Cables for submarine use may be afterwards removed as usual, with iron wires of a size suitable to the locality and the work which they have to perform.

CLAIM.

1st. The construction of a telegraphic cable in the manner and for the purpose herein described.

2d. A conducting surface for induction currents when applied to the outside of the insulating coating of each group of conductors, in the manner and for the purpose herein described.

3d. A band composed of linen, or analogous material, saturated with a compound of carbonate of lead and litharged or other oil, when arranged in a telegraphic cable, in the manner and for the purpose herein described.

4th. In a telegraphic cable, the construction of the coatings, formed of gutta percha or composition, the metallic conducting surface, the cotton thread, the band saturated with mastic, and the tarred rope, arranged in the manner and for the purpose described.

5th. As an insulating material, used in the construction of telegraphic cables, the composition, composed of carbonate of lead, or other similar substance, litharged or other oil, sawdust or other analogous fibrous substance, in the manner and for the purpose described.

A Novel Electro-magnetic Engine.

"Mr. H. M. PAINE, of Newark, N. J., has applied for a patent for a new application of electro-magnetism to motive power. Similar but expensive attempts have been made with unsatisfactory results. Mr. Paine claims that he has overcome all difficulties. His machine is rated at four-fifths of a horse power, and is capable of running sewing and other machines requiring small power; but the expense is about the same as a similar power from steam. By doubling the size, however, he says he would secure twenty horse-power at an expense of \$1 per day for running, the fuel being the acids and zinc consumed by the battery. The machine under notice occupies a space of thirty inches in both length and height, and is about ten inches wide."

We clip the above item from a New York daily paper. Twenty horse-power at an expense of \$1 per day is simply ridiculous; and Paine's "novel electro-magnetic engine" evidently belongs to the same category as "Paine's water-gas," about which so much idle noise was made some fifteen or twenty years ago.

—Am. Artizan.

Scintillations from Scientific Authors.

BY MADISON BUELL.

Men admire the steam engine of Watt, and the calculating engine of Babbage, but how little do they care for the thinking engine of the Infinite Artificer.

We have reason to believe that heat and electricity are both modes of motion.

New matter is presented to us daily, and it passes away unrecognized.

The book of Nature which we have to read, is written by the finger of God.

The most delicate flower, the tenderest insect, continues in its species through countless years; always varying, yet ever the same.

The electrical condenser was invented by Voltaire. It was originally formed of a wooden disc, covered with green silk, and of a metal disc furnished with an insulating handle, and which is placed on the wooden disc. An experiment with this condenser was the origin of the discovery of the Voltaic pile.

The dip of the magnetic needle was discovered in 1576 by Normann.

The first European navigator who made use of the compass was Vasco de Gama, in his first expedition into India.

If we look at electricity, it has advanced, in the hands of the careful investigator, to the most extraordinary results: it approaches at the motion of his hand; bursts from the metal; descends from the atmosphere; surrounds the globe; it talks, it writes, it records; it appears to him (cautious as he has learned to become) as a universal spirit in nature.

A very important precaution is not to act upon a galvanometer with a current too powerful for the instrument, for the action of such a current would risk modifying the intensity, or even by inverting. The sensibility of the galvanometer is thus greatly altered, and we run the risk of afterwards committing errors, either in regard to the force or direction of the currents we may desire to appreciate. Those who have the differential galvanometer belonging to the Western Union Telegraph Company please take notice.

The quality of iron exercises a great influence over the power of the electro-magnet. It must be as soft as possible; old iron, and especially Swedish iron, is preferable to all others.

It is to a German philosopher, M. Schweigger, that we owe the original idea of the galvanometer in use at the present day.

The true reason of the difficulty in telegraphic insulation is in employing the earth as part of the circuit, and depends on the following law: "That each of the two bodies which we necessarily suppose insulated takes a part of the total electricity, proportional to its own surface."

There is one circumstance, independent of the chemical nature and the physical constitution of bodies, which renders them better or worse conductors: it is their degree of affinity for the humidity of the air. Glass, which is of itself a good insulator, easily becomes a conductor as soon as exposed to humidity; it attracts to its surface the aqueous vapors of the atmosphere; they form there a thin film of water, by which the current gradually passes away.

Statistics of Telegraph Lines in Switzerland.

Switzerland has 2,404 miles of telegraph line, and 4,626 miles of wire. Cost of line per mile, \$175.99; cost of wire per mile, \$90.52. The materials used in the construction of these lines are as follows:

Lines with Iron posts.....	416 miles
" Chestnut posts.....	75 "
" Larch posts.....	158 "
" Fir (injected) posts.....	626 "
" Common Fir posts.....	970 "
" Chestnut and Larch posts.....	57 "
" Larch and Common Fir posts.....	98 "
" Cables.....	9

2,404

The number of miles of line constructed in 1867 was 184; of wire 508. The amount expended for construction and repairs was \$32,307.66. The amounts expended are not given for the separate items, and only the average cost per mile of wire can be stated.

Upon existing lines (over a length of 244 miles of line) there were added 262 miles of wire, and 184 miles of new line were constructed having 246 miles of wire. The amount of line reconstructed during the year was 103 miles.

With the exception of the special wires forming a part of the International Telegraph System established at the Conference in Paris in 1865 (0.196 inches, about No. 6 Birmingham wire gauge, and the St. Gothard Line with wire of 0.157 inches, about No. 9 Birmingham wire gauge), the wire used on the Swiss Lines is 0.118 inches in diameter, about No. 11 Birmingham gauge. The weight per mile of No. 11 iron wire is 199 pounds.

In the United States no conducting wire of iron is used smaller than No. 9, which weighs 303 pounds to the mile, while a very considerable portion of the lines are constructed with No. 8 wire, weighing 376 pounds; and in some instances No. 6 wire, weighing 538 pounds per mile, is in use. The short distances over which the Swiss lines work enable them to use wire of this small size, but they would be comparatively valueless over the great routes traversed by the American lines. An examination of the statement of the different kinds of poles used in Switzerland will show that 1,904 miles, out of a total of 2,404 miles, are of larch or fir, neither of which would be regarded as suitable timber to construct the most indifferent line in the United States.

When the cheapness of labor in Switzerland is taken into account, together with the inferior quality of the poles, and small size of the wire, we are not surprised that the cost of building the lines does not average more than \$175.99 in gold per mile.

A New (?) Thermo-electric Battery.

Mure and Clamond have brought before the French Academy, as new, a form of thermo-electric apparatus, which seems to be an attempt to commit "flat burglary" upon our countryman, Farmer, of Boston (who had his apparatus at the French Exposition). It is pleasing to find that Edmund Becquerel at once perceived and pointed this out, on the occasion. The authors use, as their elements, iron and galena. Becquerel showed also that galena was used as long ago as 1823, by Cumming. He objects to the use of sulphurets altogether, on account of the obvious danger of such elevation of the heat as to alter their constitution, preferring unalterable metals and alloys. For his other somewhat extended remarks the original must be referred to; but his concluding paragraph has sufficient interest in this connection to demand space:

"The results obtained from this battery, which is interesting to science and of facile use, prove that thermo-electric batteries are not yet as economical as has been supposed. It is true that the heat produced

by the (gas) burner may be better utilized by the plan of putting a greater number of elements around the chimney (radially, as in Farmer's plan) but even then, as in all such apparatus, the portion of the heat which is utilized in the production of thermo-electric current is but a very small fraction of that which is communicated to the elements, the rest being lost by radiation, etc."—*Comptes Rendus*, *Mai* 31, 1869, pp. 1255-56. H. W.

FRANK L. POPE has resigned his position as superintendent of the Gold and Stock Reporting Telegraph in this city.

T. A. Edison, of Boston, succeeds Mr. Pope in the above position.

Mr. Pope, like a wise man, thinks health worth more than money, and has started West to breathe Superior air. When he returns he designs paddling his own canoe in some congenial occupation respecting which his shingle will be seen in due season.

Mr. Edison is like his predecessor, a man of genius and skill. Few men are better posted than he.

An Extraordinary Man.

One of the most extraordinary cases of peculiar formation in the human body we witnessed a few days since at Connelly's Hotel, Mercer, in the person of a colored man, a stranger. It is hardly correct, perhaps, to call it a case of malformation, as the phenomena were entirely internal, the man presenting no unusual appearance whatever. The person, by some inward muscular power, which he cannot explain can shift the position of his heart at will. We went to see him, not believing more than half that we had been told, but were convinced in less time than it takes to write it. He requested us to satisfy ourselves that his heart was in the position usually occupied by that organ. Placing our hand on his breast we could feel its beating distinctly. He commenced a series of contortions with his abdomen, rolling it over and over several times. At the conclusion of this striking exhibition, we placed our hand upon a lump in his left side below his waist, and there was the heart thumping away as if nothing unusual was the matter. A few more contortions and the frisky organ passed across the abdomen, and on the right side kept up its work of throwing the blood through the system as regularly as if in its natural position. More contortions and it traveled back home, its course being easily traced under the skin till it passed under the ribs. The man then commenced a sort of rotary motion of the bowels, apparently turning them over several times, when we felt a complete set of ribs covering the abdomen, the regular set being in their usual place. Turning the bowels in the opposite direction the false ribs disappeared. On being asked if his parents had more children like him, he replied that he had a brother over six feet high, who could reduce his stature to something less than three feet. We believe him readily after having witnessed the above performance.

Obituary.

Died in Raleigh, N. C., Saturday, July 17th, Mary Jane, wife of Bolling W. Starke, Manager Western Union Telegraph Company, aged twenty-five years. Mrs. Starke has been an invalid for three years, but during the past twelve months her health was so delicate as to be a constant source of anxiety and distress to her friends. Her sufferings were protracted and peculiarly severe, but she bore them with the most exemplary patience and fortitude.

A devoted husband, a tenderly attached mother, four little children and a numerous circle of friends and relatives are left to lament her early removal.

Blessed are the dead who die in the Lord!

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1897. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 8,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, AUGUST 2, 1899.

The President's Annual Report.

We promised our readers a synopsis of Mr. Orton's report read before the Annual Meeting of Stockholders of the Western Union Telegraph Company, on the 14th ult. We do so very briefly and yet with sufficient detail to convey with clearness the leading facts.

This being the first formal report presented to the Company since its consolidation with the other leading lines of the country, its introductory pages are necessarily historical. The vast number of companies, of which no less than 80 existed in 1851, with their short poor structures, their varied tariffs, the obstruction, loss of time, and incorrectness in the transmission of distant dispatches caused by repetitions from one line to another, was clearly narrated, and with which all intelligent minds, who have followed the history of telegraphic progress in America, are more or less familiar. In connection with this the argument for consolidation was stated, an argument fully and best answered in the success which has attended it.

The statistical portion of the report gives the following information:

The lines of the Company now extend from Plaister Cove, Cape Breton, to Indianola, Texas, on the Atlantic coast, and from Los Angeles to the Kishyox Fisheries, 800 miles north of New Westminster, British Columbia, on the Pacific. They occupy every State and Territory except Minnesota and New Mexico, and with the lines in these they have exclusive connections.

During the last four years the construction and reconstruction of lines has amounted to over 25 per cent. of the whole length of line owned by the Company.

New line built.....	8,372 miles.
New wire erected.....	16,454 miles.
Line reconstructed.....	13,803 miles.

The extensive lines formerly built from Omaha to Salt Lake, by way of Fort Laramie, along the northern branch of the Platte river from Fort Jefferson, and along the southern branch to Denver, have all been removed, and permanent structures have been built along the route of the Union Pacific railroad to take their place. From San Francisco, also, to Elko, in Nevada, new lines have been built, leaving only a gap of 220 miles between Elko and Promontory Point, where the Central and Union Pacific roads unite, to complete the construction of this new line along the entire route. Telegraphic communication be-

tween the two oceans may, therefore, be henceforth regarded as safe and reliable, the lines being now alike removed from the destruction of emigrant and Indian, as well as from the casualties incident to forest roads through vast reaches of uninhabited territory.

A number of lines, built originally for local service, have been reconstructed to serve as main lines in connecting large cities and distant places.

During the past year a vast amount of work of the most compensating character has been done, in a close and rigid inspection of the machinery and conductors of the line, the restoration and improvement of insulators, the painting of arms, the cutting out and soldering of wire joints, by which the business of transmission has been greatly facilitated and quickened, and the capacity of the wires enlarged.

The following is the property of the Company July 1, 1899, exclusive of real estate and stock interests:

Stations.....	3,469
Miles of poles.....	52,099
Miles of wire.....	104,584
Submarine cables.....	103
Sounders.....	2,607
Recording instruments.....	1,334
Relay magnets.....	3,807
Manipulating keys.....	4,180
Translating repeaters.....	132
Printing instruments.....	19
Switch boards.....	710
Lightning arresters.....	1,666
Cells of main battery.....	14,929
Cells of local battery.....	7,210

The receipts of the Company have been as follows:

1896-7.....	\$6,568,925 36
1897-8.....	7,004,560 19
1898-9.....	7,305,923 99

The net revenue has been—

1896-7.....	\$2,624,919 73
1897-8.....	2,641,710 88
1898-9.....	2,744,383 99

or an average of about 6½ per cent. on the capital stock.

In the use of this revenue the Company have deemed it their duty to declare moderate but uniform dividends, to reduce the bonded debt, to increase the facilities for business, to reach the basis of a low and just tariff, and to employ the most skilled labor. In other words they have deemed it their duty to treat the property as a permanent investment, with growing necessities and wider work, rather than a property under a limited lease to be milked and killed.

During the past two years much attention has been paid to the tariff. The reduction of rates has been carried out as fast as practicable, not under the constraints of opposition tariffs, but on a carefully designed plan which would, on the one hand, afford a fair revenue, and, on the other, meet public expectation. In this as well as in contemplated reductions, over 3,000 offices will share, where there is no opposition. The charges to the press also have, in some cases, been reduced fifty per cent., and have been generally modified. A new system of tariffs is now about being inaugurated, based upon air-line distances, by which charges will be

made upon the actual number of miles between the offices measured in a direct line across the face of the map. This will reduce the general tariff nearly 15 per cent., and will, it is believed, be followed by good results.

In many cases the tariff will be reduced much more. This will be especially true of communication between the East and South and Southwest, where messages have had, sometimes, to pass over twice the geographical distance to reach their destination. Places adjacent yet connected by circuitous lines will also feel the advantage of this new system which equalizes the charges throughout the entire country.

Were there an entire absence of opposing lines, the effect of which is, usually, to deplete the revenues and increase expenses, the reduction of the tariff could be made more radical and satisfactory.

During the past year there have been 363 new offices opened on the lines of the Western Union Telegraph Company, being more than the entire number of offices now open by all the competing lines.

During the past year 6,000 miles of wire have been added to the property and facilities of the Company. At this rate of progress, the property of the Company in ten years will exceed 165,000 miles of wire, and the number of offices be about 7,000, erected and opened from current revenues, enlarging by so much the sources of income, and increasing the value of the general property and stock.

On the subject of the valuation of the Company's property several modes of estimates are given.

Assuming a stock earning 10 per cent. to be worth par, as the Western Union stock is now earning 6½ per cent., the value of the stock with its present revenues should be 65. That 2½ per cent. is used in adding to the Company's property does not detract from the fairness of the valuation even if 10 per cent. be insisted on as a basis of par value.

Based on the valuation of English lines the value of the Western Union Telegraph Company's lines would be \$37,500,000 in gold.

Based on the average valuations of European lines the value would be \$31,000,000 in gold.

Based on the proposed purchase of English lines the value would be \$56,000,000.

Mr. Orton believes that the circumstances and prospects of the Company warrant him in assigning a present value to the stock of the Western Union Telegraph Company far above its present rates.

The report terminates with a statement of the condition of other companies, and their influence upon the prosperity of the Company he represents. Of this portion of the report we need only say that he proves that, while of necessity their existence limits to the extent of their depletion of the general receipts for telegraph transmission, the ability to effect more radical reductions of tariff, they cannot be regarded as permanent or serious obstacles to more enlarged success.

The point in the report to which the attention of stockholders will be strongly directed, will naturally be the immense work of construction and reconstruction of lines, which have been carried on with the

earnings of the Company. It will be felt at once that could these be discontinued the profits of the Company must be largely increased, and the value of its stock enhanced. Is it necessary? Will it continue? are questions ever ready on the reader's lips. Let us add a word on this point, for it touches the life and future of the Company.

First, let it be said that the cost of this class of work is not so great as the length of the structures would indicate.

In the work of constructing new lines, the money is, to some extent, derived from the population they reach, in subscriptions which are restored by the use of the lines thus erected. In other cases they are built by the co-operation of railroad companies, who bear a share of the cost and supply a portion of the labor. In this way the work of construction is constantly adding valuable property with comparatively small outlay. Yet, did they cost the Company twice as much as they have, the work is essential, if the general property is to maintain its value, and the Company perform its public duty. In doing this it accumulates strength. Where a population needs the telegraph, and it hesitates to provide it, the invitation is at once given to other interests to enter.

In the work of reconstruction there is also this to be borne in mind: that the work is largely accomplished by the regular forces of the Company. During the summer and fall all the regular repair force can sometimes be safely detached to perform this work, and it is largely done in this way. It is a work which tells immensely on the acceptability of the Company in the performance of its public duties. The time has now come when delays by feeble structures are impatiently endured, or, rather, are unendurable. The lines, therefore, have to be kept in the highest state of efficiency to maintain the standing they have attained. It is the policy of economy, it is the policy of power, it is the policy of successful resistance to opposition, to extend the lines wherever populations need their aid, and to keep the whole fabric, which now spans so vast a space, in the highest possible condition of working capacity.

Cable Celebration.

The successful completion of the French cable between Brest and Duxbury, was duly celebrated at the latter place, on Tuesday, July 27th. About five thousand people were present, and six hundred guests sat down to dinner under a mammoth tent provided for the occasion. Speeches were made by Mayor Shurtleff, of Boston, Sir James Anderson and others, and all was "merry as a marriage bell."

It is singular that the day chosen for the celebration, was the third anniversary of the opening of the Atlantic cable, which has so well performed its part in the intercourse of the two worlds.

THE Secretary of the Treasury has admitted the French cable free of duty.

A FAULT has been discovered in the Atlantic cable of 1866, one hundred and thirty miles from Valentia.

TARIFF BUREAU.

Semi-Monthly Circular.

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
August 1, 1899.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since July 15th, the date of the last tariff order. Please note them in your tariff books:

NEW OFFICES.

Amazonia, Mo., offices having Caton map will use map tariff, all others will add 115 to their rate to St. Louis, 150 to Chicago or 75 to Omaha, taking for their rate the lowest amount found after adding as directed.

Avondale, Pa., tariff same as Kennett's Square, Pa.
Chittenango Springs, N. Y., summer office, tariff same as Chittenango Station.

Cornwall, N. Y., reopened, tariff same as heretofore.

Dalton, Ill., tariff same as Lansing, Ill.

Espyville, Pa., reopened, tariff same as Linesville, Pa.

Ft. Benton, Montana, 3.00 more than Salt Lake City, Utah.

Feris, Ill., tariff same as Elvaston, Ill.

Hillsborough, N. B., reopened, tariff same as heretofore.

Laurel, Del., tariff same as Seaford, Del.

Montgomery, White Sulphur Springs, Va., tariff same as Christiansburg, Va.

Mokena, Ill., offices having Caton map will use map tariff, all others will make tariff same as Joliet, Ill.

Missouri River, Iowa, tariff same as Council Bluffs, Iowa.

Mt. Carmel, Pa., on and after August 1st, will be a Western Union office. Tariff 30c. more than rate to Mauch Chunk, Pa., or 35 c. more than rate to Philadelphia, unless otherwise directed by Supt.

Otsego, Mich., tariff same as Kalamazoo, Mich.

Plainville, Mich., tariff same as Kalamazoo, Mich.

Struthers, O., tariff same as Youngstown, O.

Townsend, Del., tariff same as Middletown, Del.

Westville, Ind., reopened, tariff same as La Croix, Ind.

Zilwaukee, Mich., tariff same as Saginaw, Mich.

Argenta, Nev.,
Carlin, Nev.,
Elko, Nev.,
Winnemucca, Nev., } Tariff to these offices from points East of Omaha, same as San Francisco.

NEW OFFICES ON OTHER LINES.

Allegheny, Va., tariff same as Millboro, Va., gr 75 and 5 from Richmond, Va. Check Richmond.

Greenwood, N. Y., tariff same as Turners, N. Y.

Huguenot Springs, N. Y., summer office, tariff 35 and 3 from Roundout. Check Roundout.

Somesville, Me., tariff 35 and 2 from Ellsworth, Me. Check Ellsworth.

South West Harbor, Mt. Desert, Me., tariff 40 and 3 from Ellsworth, Me. Check Ellsworth.

Oromo, Ont., and Port Darlington, Ont., tariff 35 and 2 from Buffalo. Check Buffalo.

OFFICES CLOSED.

Nysack, N. Y., Wilmot, N. S., and Hyde Park, Pa.

GENERAL INFORMATION.

In last JOURNAL tariff to Van Deusenville, Mass., was given "same as Barrington, Mass.," it should have been Great Barrington, Mass.

WILLIAM ORTON, President.

Executive Order No. 78.

EXPRESS BUSINESS.

EXECUTIVE OFFICE,
WESTERN UNION TELEGRAPH COMPANY,
145 Broadway, New York,
JULY 22, 1899.

ANSON STAGGER,
THOS. T. ECKERT,
JOHN VAN HORNE, } Gen'l Superintendents.

This Company has ceased to do business free for the following Express Companies and Dispatch Lines, viz.:

United States Express Company,
Great Western Dispatch,
American Merchants' Union Express Company,
National Express Company,
Merchants' Dispatch,
Peoples' Dispatch.

And these Companies now charge for all service performed for us. This arrangement went into effect July 1st with the United States Express and Great Western Dispatch, and July 15th with the other Companies above named.

This business will be governed and accounts adjusted by the following

RULES.

All messages forwarded by any officer, agent or employee of the foregoing Express and Dispatch Companies, must be paid for by the sender at full commercial rates.

Each office of this Company will forward, with the monthly account current (Blank No. 4), a statement showing amount received during the month from each of these companies.

In settling accounts with railroad companies which share receipts with this Company, and with employees who receive for salary the whole or a part of the receipts, the amount received for express business must first be deducted. This is necessary to avoid loss to this Company, inasmuch as we account to the express companies for these receipts, and our net income is not increased thereby.

Express matter will be forwarded as heretofore without prepayment, but upon every package must be stated the amount of the express charge. The several companies will make up a monthly account against this Company, for all service rendered, which will be paid by our Treasurer at New York.

To audit accounts against this Company it will be necessary for every district superintendent to keep an accurate record of all express matter forwarded from every point in his district. This record must show date, from whom and place, to whom and place, and express charge upon each package. Packages forwarded to the President, Treasurer, Auditor, Supply Agent or other officer at New York, will not be entered, account thereof being kept in New York. This record must be made up promptly at the end of each month, and forwarded to the Auditor.

Every package, not containing money, upon which postage will amount to less than one half express charges, must be sent by mail. Money packages, containing currency or coin, must in all cases be sent by express. Checks, drafts and bills of exchange to the order of the Treasurer, must be sent by mail.

Business franks held by agents and employees of these companies have all been superseded by this arrangement and will be treated as cancelled.

Please instruct your superintendents and offices to make up accounts in accordance with this order, beginning with July.

WILLIAM ORTON, President.

A Challenge.

The Night Owls having noticed with great pleasure the recent victories of the New York Telegraph Base Ball Club, and desiring to create an interest for the national game among telegraphers in general, hereby challenge the New York club to a game of base ball, the game to be played in Buffalo, N. Y., at as early a date as convenience will permit.

The Night Owls will also be pleased to meet any other nine composed of telegraphers in the country.

A. F. GOULD,
Sec'y N. O. B. C.

The Telegraphers' Insurance Association.

There are now connected with the organization over 500 reliable members. The number of certificates issued is 575. Applications are received daily. They come from almost every State, North, South, East, West. Many of the large cities have enrolled their entire staff. New York, Nashville, Indianapolis, Cincinnati, Buffalo, Richmond, Mobile, Memphis, Albany, Troy and others, have entered every man in service. It is a little curious to notice that a large influx of names always succeed the notice of a death.

Is it fear or sympathy which thus stimulates attachment to an organization which has accomplished so much good? We think it is both. The fact of leaving one's family desolate and penniless, of burial by charity, is a just one. It should drive hundreds more to a like resolution. Sympathy, however, has largely to do with many applications. Their money is sent to meet cases of possible distress, without special thought of themselves. Telegraphers are not the dead dissolute men they have sometimes been called.

The promptitude of the payment of calls is very gratifying. Some send the instant a death is heard of. Many send letters we would be glad to publish could we do it without hurting sensibilities which dislike publicity. To enjoy giving, the frequency of it seems essential. It comes to have a relish, a real delight in it. It comes to be easy, as if giving were like the moist earth which encourages additional rain. We are glad to see this benignant feeling extend, and feel honored in being its medium. We trust to see it widen still more.

A Telegraphic Mistake and its Consequences.

BY M. BUELL.

It was a beautiful day in the month of June, some two years ago, that Charles Fitzgerald kissed his sweet wife and bade her good bye, as the preface of a brief absence.

He had been married only a few months and during that happy time had not been called away from home; but now business of an important nature demanded his attention and he set out for Indianapolis at once.

With fond adieux and wishes for a safe journey and quick return, such as only love can call forth, and which upon this occasion shone from his wife's blue eyes like a bit of Heaven itself—the young husband started for the Hudson R. R. depot, and soon after was whirling along at a rapid rate on his journey westward.

With the usual delays of railroad travel he arrived at Indianapolis in time to meet his engagement, wrote immediately home assuring his wife of his safe arrival, and leaving a blank spot in his letter to indicate the place where he had deposited a kiss for her, was soon absorbed in his business affairs.

Two days passed quickly, and on the evening of the third he was congratulating himself on his success and how glad his young wife would be to hear of it.

After chatting a while in the office of the hotel he retired to his room, happy at his success and his heart full of love, he sung—

"Powers celestial whose protection
Ever guards the pure and fair,
While thus far from home I wander,
Be my angel wife your care;
Protect that form so fair and gentle,
Fair and gentle as your own,
Let her joyous kindred spirit
Draw your choicest influence down."

Scarcely had the last words left his lips, when knocking politely at his door, the porter entered with a telegraphic message. Fearing that something might have happened at home to make it necessary to telegraph him, he could scarcely muster courage enough to break the seal. Visions of runaway horses, his wife dangerously hurt; burglars robbing the house; every possible calamity passed before him. He took a sudden resolution, never, under any circumstances, to leave home again. Tearing open the message he turned it, of course, upside down, turned it over, read it, and was a most astonished man.

His brain began to whirl. Could he have been duped? Had the being who possessed all the love man is capable of yielding up to the one whom he idolizes practiced deception upon him?

It was as follows:

New York, June, 1867.

To CHARLES FITZGERALD, Indianapolis:

Your wife sick; had a child yesterday; doing well to-day; don't be alarmed.

Mrs. Brown, Nurse,
9872 Fifth avenue.

His name was Fitzgerald, and, when at home, he lived at 9872 Fifth avenue.

Perfect and devoted as his love had been he was alarmed. He knew nothing of any such event likely to occur; he felt deceived and alarmed.

Silently gazing for a moment into the vacant air, as if he saw the form and face of his wife supplicating for forgiveness, Mr. Charles Fitzgerald was conscious of a small hurricane arising within him. Hastily packing his trunk, he rushed down stairs, paid his bills, and demanded to be sent to the depot at once.

The clerk had told him that no train left for some hours but he did not hear him. The hours passed tediously away and it seemed to him a week before the train started and he was homeward bound, with a heavy heart.

Between Albany and New York he fell asleep, had horrible dreams of wet nurses, baby wagons, doctor's bills, tin whistles and Godfrey's cordial, all danced in their respective turns before him.

At last he reached New York and jumping into a hack, vociferated in a very decided and tragic manner to the Jehu, "Home!"

"Can't drive you home, unless you tell me where you live," answered the unterrified whip.

"Then drive to 9872 Fifth avenue, quick!"

In a few moments he was in front of his home; mounting the front steps, the bell received a jerk which brought the servant from the kitchen without much delay.

"Susy," he said, rudely seizing her by the arm, and striking an attitude very Forrestian, "how is Mrs. Fitzgerald?"

"She is better this morning, but I guess she didn't expect you home so quick," replied Susy.

"No, I suppose not, and that is the very reason why I came," replied he.

Mounting directly to his wife's room, and knocking on the door for admittance, a strange voice squeaked out—

"Who's there?"

"It's me," he replied.

"Who's me," replied the voice with the squeak.

"Charles Fitzgerald, and I wish to come in at once," he replied, getting somewhat worked up at the idea of being kept out.

"You can't come in just now," said the squeaky voice, "I'll let you in in a minute."

Charles Fitzgerald felt very bad and very much abused just then. The telegraph was right, here was Mrs. Brown, nurse, with a vengeance.

His ear was applied to the key hole, but no infantile sounds were heard, and he was fast losing his temper, when Mrs. Brown opened the door.

Entering the room hastily he was about to rush to the bedside to embrace his little wife, when he thought of her deception, and approached with great dignity and reserve, looking upon her as man looks upon a fallen idol, and simply said—

"Madame, I hope you are better this morning, I was very much surprised to hear from you by telegraph."

"My dear Charles," replied the young wife, tears filling her deep blue eyes, "why do you treat me so coldly? Are you not glad to see me?"

"Madame," he replied, "does not your own conscience tell you that you deserve no show of affection from me? Have you not deceived me?"

"Deceived you, Charles, I deceive you, why-I don't understand you, what do you mean?" she almost groaned.

"Yes, deceived me," replied Charles, "you did not tell me of this before I left home."

"Tell you what?" replied Bessie, amazed, "I did not know that I would be sick, and could not have known it. Dr. Williams says I can sit up to-morrow."

"And you did not mean to deceive me, Bessie?" replied Charles, with all his old affection returning.

"Certainly not; and now Charles do give me one kiss and tell me what all this excitement means."

"Yes, yes, Bessie, a dozen of them, here they are: and now Bessie, show me that baby!"

"The baby! Why, Charles Fitzgerald, are you crazy—the baby—what baby?"

"Come, Bessie, now don't tantalize me—show me that baby!" and as he waited a response he heard a stifled laugh, and turning around beheld Mrs. Brown, nurse, engaged in stuffing her apron down her throat in which operation she would have finally succeeded had Mr. Fitzgerald not interfered with her design.

Bessie also caught a fit of violent laughter, and Fitzgerald stood between these two laughing women scarcely sure of his own identity. After they quieted somewhat, he ventured to remark that it might be very amusing to them but exceedingly unpleasant to him.

"Ladies," said he, "if you will be kind enough to show me that baby, I will join in your fun, too."

"Why, Charles," said Bessie, "what does all you! I've got no baby. Never dreamed of such a thing."

"Thunder and Mars," cried Fitzgerald, "you have got no baby!" Mrs. Brown, look you here, Madam. Did you not send a message by telegraph to me, saying my wife was sick and had a child, and for me not to be alarmed?"

"My good gracious," replied Mrs. Brown, "I did telegraph you that your wife was sick, and so she is, she has fever now; I said she had a chill not a child."

The truth broke upon Fitzgerald's mind at once—confound that telegraph, it had made a mistake and caused all this trouble and confusion. The last "i" of the word chill had been changed by the convulsive shiver of some miserable repeater, into a "d," and a chill became a child. Unlike Micawber, he was not a father, nor any other man.

Throwing his arms around his darling Bessie, in sweet embrace, he asked forgiveness.

Bessie, with an arch smile, looked up lovingly into his face and roguishly said, "Charlie, wait!"

Charles Fitzgerald, in his fullness of joy, could only say, "I will. Meanwhile I'll lay my claim for damages before the telegraph company, for thus rudely disturbing my parental longings."

It is not known whether the claim was ever presented.

History informs us that mankind's representations of outward objects have been developed in like manner as with the child, which learns to cognize the indications of its senses only by degrees.

Samuel C. Bishop.

There is no longer a Bishop Gutta Percha Company. It is dissolved, bought out, defunct. There remains to us and the public, simple, sole, Samuel C. Bishop, Esq., owner, master, proprietor of the whole concern, and L. G. Tillotson & Co., New York, with Bliss, Tillotson & Co., Chicago, agents for the sale of the goods made by him. We like the individuality of the new concern. A man with a company on his back is too often, and always seems to be, a burdened and heavy laden concern. We thank Samuel C. for getting into his own boots. We know him now and can touch him and can feel that we have a cable maker among us. Mr. Bishop you have our bones. Go ahead and get.

Acknowledgements of Insurance Remittances for Assessment No. 8 and Anderson Fund are delayed until next number.

Telegraph Base Ball in Ohio.

CINCINNATI, July 21st, 1869.

On Saturday, the 10th instant, pursuant to an invitation from the Blue Stocking Base Ball Club of Cleves, Ohio, the Telegraph Night Owls took a trip to that place, and after a very close game of seven innings, were defeated by two runs, the score standing 19 to 21. In the afternoon, at their request, we all proceeded to Bayer's Grove, where a pic-nic was on the tapis, and where all had a very pleasant time. Some of our boys, after refreshing themselves with a fine swim in the Ohio River, paid a visit to the tomb of the late President Harrison, which is situated on a beautiful knoll, about a mile and a half from Cleves. The tomb is in a very dilapidated condition, part of the masonry having fallen to pieces years ago, and as yet has never been repaired—a lasting disgrace, to say the least, to the people of this State, if not to the whole nation.

Last Thursday the Blue Stockings' kindness to us was reciprocated here, when we had a tilt with them on the grounds of our famous Red Stockings. This time, after a plucky up-hill fight, we defeated them by one run. Game was to be called at the end of the seventh inning, and when the Owls came to the bat they found themselves in a tight spot, having seven runs to make to win. Kern was the first to wield the willow, and, as usual, made his base, and stole home on passed balls. Gould and King earned their bases by safe hits, when Spink, by a "corker" over second, fetched them both home, and went to third. Caulkins and Black added two more to the score, when Baker struck out. One out, and the score a tie! Williams, by a high hit to right field, made his second, stole to third, and coming home on Webb's "daisy cutter," scored the winning run. None too soon, for Kern immediately went out on a foul bound to Walmsley, and Gould was fielded out at first by Cooper to H. Horton. Below is the score:

NIGHT OWLS.	O.	R.	BLUE STOCKINGS.	O.	R.
Gould, 1st b.....	3	3	T. Walmsley, c.....	3	2
King, 3d b.....	2	3	Carr, p.....	1	3
Spink, c.....	0	5	Hayes, r. f.....	1	2
Caulkins, c. f.....	4	1	Cooper, s. s.....	1	4
Black, p.....	2	2	A. Walmsley, 3d b.....	3	2
Baker, f. f.....	6	0	Quinton, 2d b.....	2	2
Williams, i. f.....	3	1	H. Horton, 1st b.....	3	2
Webb, 2d b.....	1	3	Aull, c. f.....	4	1
Kern, s. s.....	1	4	T. Horton, i. f.....	1	3
	21	23		21	21

INNINGS.

	1.	2.	3.	4.	5.	6.	7.
Night Owls.....	2	2	3	4	4	0	7—22
Blue Stockings.....	2	3	7	2	3	0	4—21

Umpire—Mr. Barber, Buckeye B. B. Club.

It is proposed to get up a game between the New York Operators and the Night Owls, with what result you will be duly informed. VOYAGEUR.

Purchase of British Telegraphs.

The telegraph purchase bill passed in committee. There was a decided majority in favor of making a permanent monopoly of the telegraph lines. The bill providing money for the purchase has passed its second reading, the amount required being, as we have before stated, about \$40,000,000.

Telegraphers' Base Ball Match.

The Telegraphers' nine went to Brooklyn, Saturday, July 17th, to play a picked nine from the New York Stock Exchange, and instead of meeting an amateur nine found a nine composed of professionals from the Star, Independent and Oriental Clubs of Brooklyn. Not in the least dismayed, and although minus the services of their excellent catcher Taafe, they went to work with a good will and in the end showed the Brooklynite professionals what a nine of amateurs could do. The batting of the Telegraphers' nine, for amateurs, excelled anything we have seen, two and three bases being made on every hit.

The Stock Exchange nine had very good stock in the field, but they seemed to be unable to get near enough to make a fly catch. It put us in mind of the Cincinnati and Atlantic game.

General play of all very good.

We annex the score.

STOCK EXCHANGE.	O.	R.	TELEGRAPHERS.	O.	R.
Merritt.....	5	2	F. H. Seibert.....	4	5
Higbee.....	4	4	Jones.....	3	7
Knight.....	2	5	Glover.....	3	6
Snevelly.....	3	5	Blanchard.....	1	8
Erwin.....	3	3	G. E. Seibert.....	4	6
Hogan.....	3	4	Maxwell.....	0	8
Lewis.....	2	3	Landy.....	4	5
Medler.....	3	3	Geo. Roberts.....	4	4
Booth.....	2	3	Dunn.....	4	4
Total.....	27	31	Total.....	27	53

INNINGS.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
Telegraphers.....	9	3	4	12	6	1	4	7	7—63
Stock Exchange.....	0	3	1	1	5	2	6	2	11—31

Fly catches—Jones 1, Glover 1, G. Seibert 1, Maxwell 1, Landy 2, Dunn 2—Total 8. Higbee 2, Knight 1, Snevelly 1, Lewis 1, Booth 2—Total 7.

Time of game—3 h. 25m.

Scorers—Messrs. Kearns and Gascoigne.

Umpire—W. Howard, of Mohagan B. B. C.

Telegraph Base Ball in Buffalo.

BUFFALO, July 15, 1869.

EDITOR JOURNAL OF THE TELEGRAPH:

The second and concluding game of the match between the operators of the Western Union Telegraph office of this city, and the Scribes of the city buildings, was played this afternoon.

On the fifth innings the game stood a tie, each having scored twelve runs, but by superior batting the Telegraphers took the lead, and at the close of the eighth innings game was called and the Telegraphers were declared victorious.

The following is the score:

TELEGRAPHERS.	O.	R.	CITY.	O.	R.
Barker, c.....	3	3	Crowley, 3b.....	2	2
Slacer, 1b.....	4	2	Pierce, c.....	3	4
Scobell, ss.....	3	4	Wright, ss.....	1	3
Mead, 3b.....	1	5	Robins, p.....	1	5
Allison, lf.....	4	3	Holley, 1b.....	5	3
Kellogg, 2b.....	3	4	Werrick, lf.....	5	1
Sapey, rf.....	2	3	Gillespie, 2b.....	3	3
Felthousen, p.....	2	3	Cook, rf.....	4	1
Boetwick, cf.....	2	4	French, cf.....	2	3
	24	31		24	25

Score of first game mislaid, but the result was two to one in favor of the Telegraphers.

The Telegraphers have played but five games, in all of which they were victorious.

Yours, &c.,

H.

Brooks' Paraffine Insulators—More Testimony.

WESTERN UNION RAILROAD CO.'S TEL. DEPT.,
RACTON, WIS., July 1st.

DAVID BROOKS, Philadelphia:

DEAR SIR—Having used your insulators for two years, I think I have given them a fair and impartial trial, and I would recommend any and all to use none other. I do not think their value can possibly be over-estimated as an insulator.

I notice no poles during these two years to have been struck or shattered by lightning, where these insulators are used.

Shall put on about 2,500 of the Brooks insulators next season.

Respectfully,

E. O. WAITE,

Supt. of Telegraph.

THE STANDARD AMERICAN WORK ON THE TELEGRAPH;
MODERN PRACTICE
OF THE
ELECTRIC TELEGRAPH.
A HAND-BOOK FOR ELECTRICIANS AND OPERATORS.
BY FRANK L. POPE.
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WHAT LEADING ELECTRICIANS AND TELEGRAPHERS
SAY OF IT.

"Your illustrative diagrams are admirable, and beautifully executed.

"I think all your instructions in the use of the telegraph apparatus judicious and correct, and I most cordially wish you success."—Prof. S. F. B. Morse.

"There is no other work of this kind in the English language that contains in so small a compass, so much practical information in the application of galvanic electricity to telegraphy."—Prof. G. W. Hough, Director of Dudley Observatory.

"I have read the book carefully through and have been both interested and instructed by it. It is just the sort of book that was wanted in America—clear and to the purpose."—ROBERT SARGENT.

"I feel assured that it will prove of great value to all interested in the science or practical details of the Electric Telegraph, and supply a deficiency that has long existed."—Gen. ANSON STAGER.

WHAT THE PRESS SAYS OF IT.

"There was a felt necessity for just such a work as Mr. Pope has given us. * * * There are portions of the work which no operator can afford to be without."—The Telegrapher.

"From a careful perusal of this work we are assured that it supplies a long felt want. * * * It will tend much to improve the knowledge of electricity and practical telegraphy amongst the operators."—London Mechanics' Magazine.

"We cannot err in commending the book to all who desire accurate knowledge in the art in which their life and labor are so much connected."—Journal of the Telegraph.

PRICE \$1.50.

On receipt of price, it will be forwarded by mail, post-paid, to any part of the United States or the British Provinces. Money sent by Post-office Order or Registered Letter, will be at the risk of the Publishers.

Orders may be sent to the Editors of the JOURNAL OF THE TELEGRAPH, THE TELEGRAPHER, or RUSSELL BROTHERS.

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DURANT'S

NONPAREIL RELAY,

A PRACTICAL

SELF-ADJUSTER

ON ALL ORDINARY CIRCUITS.

Price, \$30.

Mr. GEORGE E. SEIBERT, Western Union operator, 145 Broadway, says:

"I have worked Durant's Self-adjuster on the Cincinnati wire for two days, and can testify to its being a Self-adjuster in every respect."

For a full description of the construction and advantages of this instrument see Journal of the Telegraph of December 15, 1868.

Goods sent to all parts of the Continent with bill C. O. D.

Parties remitting in advance by certified check, payable in New York, or by Post Office Order, will save the expense of returning funds by express.

Address all orders to

CHARLES DURANT,

Office and Factory, 86 Nassau Street,

NEW YORK CITY.

Agent for the sale of the Nonpareil Relay on the Pacific Coast,

Mr. STEPHEN D. FIELD,

San Francisco, Cal.

Journal of the Telegraph.

SUPERINTENDENT Hubbard and Mr. Ed. Creighton, with their wives, are on a trip to San Francisco, to be gone about two weeks. Manager Lehmer attends to the duties of Mr. Hubbard's office during his absence.

THE line from Helena to Fort Benton, Montana, is now completed.

Syracuse, New York.

OFFICE OF THE WESTERN UNION TELEGRAPH COMPANY.

For several years past the Western Union Telegraph Company has occupied a portion of the building on the corner of Washington and Salina streets as an office. Recent improvements caused the temporary removal of the Company's office, but those improvements having been completed, the office has again been returned to its former location, and at present the Company occupy rooms fitted up with especial reference to the rapid transmission of the immense business done by the Western Union Company. The rooms fitted up will compare favorably with those occupied for similar purposes in any portion of the country. The public entrance is on Salina street, immediately from the sidewalk, and stepping down four stone steps, one finds himself in the

RECEIVING ROOM,

where all messages are received for transmission. The receiving room is separated from the office by a wood and stained glass partition through which arches are left for receiving messages or transacting other business. Around the sides of this receiving room are arranged handsome desks and other facilities for the inditing of messages. Opening off from the receiving room is the messengers' room, for the especial accommodation of the messengers, which is connected with the office by a low railing. The operating room is provided with five large black walnut tables divided into quarters by heavy glass partitions to prevent the confusion of sound which would otherwise occur. Each table has four sets of instruments, all of the latest improved make. Each table accommodates two operators, each of whom takes care of two sets of instruments. Gas burners, situated at the intersection of the partitions furnish light for the operators. The receiving room, office and operating room occupy a space of forty-eight by twenty feet in area. At the east end of the operating room is a large wardrobe for the accommodation of the operators. The new office was fitted up under the supervision of

SUPERINTENDENT S. B. GIFFORD,

who occupies a room in the third story of the building. Superintendent Gifford is well known to the majority of our citizens. He commenced his career in telegraphy many years since as messenger boy, and by his integrity and close application to business, has risen step by step until he occupies the superintendency of the Seventh District, extending from Albany to Buffalo, east and west, and to Watertown and Elmira, north and south. The Company, in their selection of superintendent for the Seventh District, could not have found a more competent man than Mr. Gifford. The office in this city, since the resignation of Mr. John D. Stone, has been under the supervision of

MANAGER D. L. PIKE,

who, with an able corps of assistants, has given the most complete satisfaction to the public generally. Mr. Pike is assisted in his official duties by the following corps of assistants:

Chief Operator—D. V. Ferris.

Assistant Operators—J. C. Kelly, P. Kelly, H. L. Gramzow, J. H. Topliff, A. J. Schall, C. H. Parr, E. H. Crawford.

Night Operator—E. N. Taylor.

Day Clerk—C. H. Pierce.

Night Clerk—W. H. Barnes.

Office Boy—J. Cummings.

Messengers—J. Marquardt, E. Patterson, E. McCormick, J. McCanna, Thos. Tyrell.

Battery Man—D. Leary.

Repairer—E. Powell.

The entire outfit of the Company's office at this point corresponds favorably with that of most metropolitan offices, and under the superintendence of Mr. Pike, the Company may rest assured of a prompt and energetic management of their interests in Syracuse.

SPECIAL NOTICE.

L. G. TILLOTSON & CO.,

11 DEY STREET, NEW YORK,

AND

BLISS, TILLOTSON & CO.,

171 SOUTH CLARK STREET, CHICAGO, ILL.,

Respectfully inform their customers, and all parties purchasing

TELEGRAPH AND ELECTRIC MATERIALS,

that they have been appointed by

SAMUEL C. BISHOP, OF NEW YORK,

General Agents for the sale of any articles manufactured by him

FOR TELEGRAPHIC AND ELECTRICAL USE.

They are now prepared to fill promptly any orders for goods on hand, or to be manufactured, at Mr. BISHOP's prices in New York. The long experience of Mr. BISHOP in the manufacture of

PURE GUTTA PERCHA GOODS,

and the reputation he has gained and enjoys for the superior quality and perfection of manufacture of his

SUBMARINE TELEGRAPH CABLES

AND

INSULATED WIRES,

of various kinds, insulated with pure Gutta Percha, renders this arrangement a very important one for our numerous patrons throughout the country, and we confidently recommend these goods to their especial notice as being fully equal, if not superior, to any other in use.

The principal articles manufactured and offered for sale are

SUBMARINE TELEGRAPH CABLES,

(Any size required.)

Gutta Percha Covered Telegraph Office Wires, in great variety of size and style.

Subterranean Wires, covered with Gutta Percha and Lead outside, various sizes.

Subterranean Wires with Gutta Percha and braided fibre, and Bishop's Patent Compound outside.

Subterranean Wires, with Fibre and Bishop's Patent Compound outside.

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Bridge's Patent Electric Cordage.

Bridge's Patent Double Covered Cordage.

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for out-door use and office connections.

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with two Conductors, both plain and with braid outside, and a great variety of other kinds made to order.

Cotton and Silk-Covered Wires, both twist and braided.

This arrangement with Mr. BISHOP, together with our own extensive Manufactory in New York, and our great variety of Telegraph Material in stock, fully establish our claim that our stores are the depots of telegraph supplies in this country.

Western Union Telegraph Company.

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A. H. Watson, Storekeeper, New York.

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Anson Stager, General Superintendent.

Residence, Chicago, Ill.

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District	Superintendent	Residence
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" 2—	R. C. Clowry,	St. Louis, Mo.
" 3—	W. B. Hibbard,	Omaha, Ia.
" 4—	T. B. A. David,	Pittsburg, Pa.
" 5—	E. P. Wright,	Cleveland, O.
" 6—	John F. Wallick,	Indianapolis, Ind.
" 7—	George T. Williams,	Cincinnati, O.

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Thos. T. Eckert, General Superintendent.

Residence, New York City.

ASSISTANTS.

District Superintendents.

District	Superintendent	Residence
District 2—	Robert T. Clinch,	St. John, N. B.
" 3—	James S. Bedlow,	Portland, Me.
" 4—	George W. Gates,	White River Junction, Vt.
" 5—	Charles F. Wood,	Boston, Mass.
" 6—	A. B. Chandler,	New York.
" 7—	S. B. Gifford,	Syracuse, N. Y.
" 8—	D. H. Bates,	Philadelphia, Penn.
Metropolitan District—	J. C. Hinckman,	New York City.
B. & O. Railway District—	A. G. Davis,	Baltimore Md.
Erie Railway District—	W. J. Holmes,	New York.

SOUTHERN DIVISION

John Van Horne, General Superintendent.

Residence, Louisville, Ky.

ASSISTANTS.

Superintendents of Districts.

District	Superintendent	Residence
District 1—	J. R. Dowell,	Richmond, Va.
" 2—	J. W. Kates,	Lynchburg, Va.
" 3—	J. A. Brenner,	Augusta, Ga.
" 4—	C. G. Meriwether,	Mobile, Ala.
" 5—	James Compton,	Jackson, Miss.
" 6—	James Coleman,	Memphis, Tenn.
" 7—	Thomas Johnson,	Corinth, Miss.
" 8—	Geo. W. Trabue,	Nashville, Tenn.
" 9—	L. C. Baker,	Little Rock, Ark.
" 10—	G. M. Baker,	Shreveport, La.
" 11—	D. P. Shepherd,	Houston, Texas.
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INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK.

I. This association shall be known as the Telegraphers' Mutual Life Insurance Association, and be organized under the general State law of the State of New York.

II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary.

W. O. LEWIS,

A. S. BROWN,

W. H. HILL,

Executive Committee.

DIRECTIONS TO APPLICANTS.

1. The number admissible as members of the Association at any one time, having been limited for the present to *fifteen hundred*, it is necessary to apply early if membership is desired.

2. Apply by letter, enclosing one dollar and a half and a three cent postage stamp for each application, to D. R. Downer, Secretary Telegraphers' Mutual Life Insurance Association, 145 Broadway, New York, and a certificate of membership will be sent by return mail.

3. Every applicant must be known to the Executive Committee, or to some responsible Manager of a Telegraph Office, and evidence of this, and of good character and of ability to work, must accompany each application. The endorsement of a reputable Manager will be regarded as denoting eligibility as stated, and the signature of the applicant, with date, amount and recommendation, will be all the form of application necessary.

4. Each applicant must file with the Secretary written directions respecting the disposition of the money to which he or she may be entitled at death.

5. No letters can be answered unless a stamp is enclosed for postage; and as the officers labor without compensation, correspondence requiring answers should be as limited as possible.

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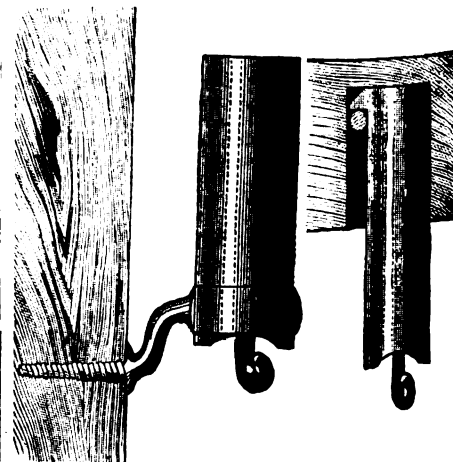
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WHOLE NO. 43.

The Sun and the Earth—Curious Influence—A Magnetic Storm.

[From the London Spectator.]

On September 1, 1859, shortly before noon, two astronomers—Messrs. Hodgson and Carrington—one at Oxford, the other in London, were at the same instant scrutinizing a large group of sun spots. On a sudden, two intensely bright patches of light appeared in front of the cluster. So brilliant were they that the observers thought the darkening screens attached to their telescopes must have become fractured. But this was found not to be the case. The bright spots indicated some process going on upon the sun's surface—a process of such activity that within five minutes the spots traveled over a space of nearly thirty-four thousand miles. Now, at the Kew Observatory there are self registering magnetic instruments which indicate the processes of change by which the subtle influences of terrestrial magnetism wax and wane. At one time the line traced by the pointer will be marked by scarcely perceptible undulations, indicating the utmost quiescent state of the great terrestrial magnet. At another, well marked waves along the line exhibit the pulsations of the magnetic system, influenced in a manner as yet unintelligible to the observer. And then there is a third form of disturbance—the sharp, sudden jerks of the pointer exhibiting the occurrence of those mysterious phenomena termed “magnetic storms.” When the records of the Kew observatory came to be looked over, it was found that at the very instant in which the brilliant spots of light had appeared to Messrs. Hodgson and Carrington, the self registering instruments had been subjected to the third and most significant form of disturbance—a magnetic storm broke out on the sun's surface. But this was not the only evidence of the sympathy with which the earth responded to the solar action. It was subsequently found that soon after the spots of light had appeared the whole frame of earth had thrilled under a mysterious magnetic influence. At the West Indies, in South America, in Australia, wherever magnetic observations are systematically made, the observers had the same story to tell. In the telegraphic stations at Washington and Philadelphia, the signalmen received strong electric shocks. In Norway, telegraphic machinery was set on fire. The pen of Bain's telegraph was followed by a flame. And wherever telegraphic wires were in action, well marked indications of disturbance presented themselves. Even this, however, was not all. The great magnetic storm was not a mere instantaneous electric throes. Hours passed before the disturbed earth resumed its ordinary state. And thus it happened that in nearly all parts of the earth night fell while the storm was yet in progress. During the night magnificent auroras spread their wavering streamers over the sky, both in the northern and southern hemisphere. As the disturbed needle vibrated, the colored streamers waved responsive, and it was only when the magnetic storm was subsiding that the auroral lights faded from the heavens. Now it is evident that these

phenomena show the most intimate relation between these peculiar disturbances in the sun and the magnetic currents of our own earth. Directly one of these changes takes place, upward of 90,000,000 of miles away, the electrical condition of our planet is changed in some mysterious way, of which our instruments, and even the condition of our sky, bear record. The pens of all our telegraphic wires may some day trace in flame a handwriting more ominous of human destiny than was the handwriting which during Belshazzar's feast traced a warning on the wall of the fall of the Babylonian dynasty. Moreover, note this, that these changes in the condition of the sun take place at intervals of about eleven years. The variable star which swings around it, as well as supplying us with light and heat, and (apparently) magnetism, clouds over eleven years these spots, so that it seems most likely that every eleven years certain magnetic conditions recur which have not occurred in the interval. If so, perhaps the magnetic excitement of 1859 will recur, and it may be in much greater force next year, in 1870; and if it does, how are we to say what may or may not occur with it? Even now one such epoch of magnetic storm seems to be thought pretty near at hand. The sun has been exhibiting the most surprising forms of disturbance, and presenting to scientific eyes less “fixity” of essence than ever. Spots so vast that we must estimate their dimensions by millions of square miles have broken out from time to time, and have presented rapid changes of figure, indicating the action of forces of inconceivable intensity. Clusters of similar spots extending over yet vaster areas have exhibited every form of disturbance known to the solar observer, and every degree of light, from the apparent blackness (in reality only relative) of the nuclei, to the intense brilliancy of the fabulous ridges. And we now know that these appearances are not merely matters for the curious, with which, as they happen at a distance of above 90,000,000 of miles, practical men need not concern themselves.

Too Much Electricity.

Every man his own telegraph operator is becoming the rule in Chicago. The wire is about to be introduced—indeed it has already been introduced—into private houses in the West, in connection with a little box which contains a lettered dial with a steel pointer revolving and stopping at the letters of the message. It is much used for calling in the services of the physician.

This application of the telegraph is convenient, but it is liable to abuse. For impromptu invitations to dinner, arranging a drive to the park, summoning the doctor, as just mentioned, asking the washerwoman about the clothes, &c., it would be all very well; but what scandal will not be talked by electricity: and what are you to do with the bore whose interminable twaddle will amount to assault and battery? These matters make us pause.—*Ex.*

There are few if any chemical actions which can not be made to produce electricity.

THE DRUNKEN OPERATOR Olimmerley Gap.

[From the Galaxy.]

I.

Henry Clay Glenning, telegraph operator at Lindenbury railway station, sat at his desk as the dusk closed in of a gloomy April evening, a dozen or more years back. A tall, light-built young man of maybe seven-and-twenty, with a full, close-cropped brown beard, and a clever, good-looking face; but, about the eyes and mouth there were troubled lines that seemed to indicate some present, wearing care. The cold northeasterly rain beat drearily on the panes; the sashes rattled dismally in the eddying wind. There was nothing going through the line this hour or more, and Glenning leaned back in his chair in thought that his attitude showed was not at all pleasant company. He got up after a while and took down his hat and coat from the wall. It was nearly seven by the office clock. The station-master relieved him three-quarters of an hour; there was no train due until the Lake Mail, nine minutes of eight. He went out, and up the bleak, wet streets. Getting home, he left his wet coat in the passage, and passed on up the stairs. He leaned back on the landing a minute, with eyes looking down, and face compressed in distasteful revery. Then he stepped forward quickly, and went in. The table was set for two. Beside it a lady sat stitching upon some needlework in her lap. Her cheek flushed as he came in; but she did not look up. He came and sat down opposite. The angry flush remained; her lips were firmly shut; she worked on, loop over loop, and did not raise her eyes or turn her head.

“Mary,” he said, his tone was low and gentle, “Mary, I want to tell you a story.”

She glanced up askance at his face, as though surprised. But her eyes went instantly back to her lap, and her fingers worked on, loop over loop. Glenning went on; his voice a little graver, but gentle and low as before.

“On the North Rock Road, just below the South-down Mills, there is a little country store, kept by one John O'Neil and his wife, Jane. I have known the pair by sight a long time now—honest, simple, hard working folks, and prosperous, too, as things go. They have no boys and only one girl—Jenny, after her mother. I remember her a little, toddling thing, in a pink frock and gingham apron, as I used to see her playing about the place when I went out and in from the farm. She was a bright, merry child, and a great pet at home, as you may suppose. John was never tired of talking about her as a child, and praising her cleverness and winning ways. He vowed he'd make a scholar of her if he worked his nails off to do it. Well, the girl grew and grew, and last summer finished the course of the common school, and in the fall went off to Fort Hill Institute, in Tidewater. The old couple missed Jenny sadly, of course, and found the house lonely enough when the girl was gone. Their only consolation was their weekly letter, which came in regularly every Wednesday afternoon by the

Through Mail. They used to come in together in their old buggy, every week, on Wednesday, in almost any weather, and get the letter. It got to be a standing saying among the men about the station, 'There's John and Jane wants a letter from Jenny.' When I went down to the office to-day I saw them coming over from the post-office. They came in. Both looked anxious and troubled."

"Mr. Glenning," says John, "we haven't no word from our girl to-day. It's the first time it's missed, and we feel a little doubtful like. We want you to send word by the telegraph, and ask how it is."

"I sent the message to Jenny, at Fort Hill:

"No letter to-day. Anything wrong?"

"In half an hour the answer came back:

"Nothing wrong. Well and happy,

JENNY O'NEIL."

"The old pair were in great glee over their 'letter by telegraph.' They went off as happy as birds. That was about two o'clock. At three-fifteen this came." He took out some telegraph slips from his pocket, selected one and pushed it across the table. She turned her head and read:

"Jenny O'Neil died here by an accident this afternoon. Will you break the news?"

It was addressed to a clergyman of Lindendbury, and signed by the principal of the Tidewater School.

Glenning watched her as she read. He had thought the sad story would soften her. She had a woman's heart, I think; it did soften her. She too remembered the bright, fair-faced young girl on the North Rock road. But she seemed to strive against the feeling; summoned her pride to steel her against letting him see. Her face flushed up with a thrill of pity and sympathy; she could not see the work in her lap plainly for a dimness in her eyes. But she bit her lip, and kept back the tears that almost brimmed over, and forced her fingers to work on, loop upon loop.

"Mary," he said—his voice was sad and low, "I was wrong to say what I did. I was hot and ill tempered then, and hardly knew what I did. I'm sorry, Mary. Won't you let it go?"

He leaned his head on his hand, looked into her face, and waited for her to speak. She did not raise her eyes. He went on, with a very mournful tone. There was a wounded look in his eyes; she knew it, though she did not turn her own, or lift them from her lap. Very gravely he talked on to her, pleaded with her earnestly and sadly. There was no reproach in his words, no note of blame, though there was room.

She kept her mask on well; he thought she was unmoved. But I think the white teeth closed upon the lip inside, and the woman's heart throbbed hotly underneath. Suddenly she started visibly; he must have seen it. But it was not for anything he had said. She felt in her pocket, turned over the work box by her side; got up and looked about the room, pulled out a drawer or two, lifted a book or paper. She did not seem to find anything; but came back and sat down as before.

"Henry," she said, "when you're ready, we'll have our tea."

Her voice was low and calm—plainly forced; she did not lift her head. He started up at that as if she had struck him. A look of sharp pain leaped into his face. He got up quickly, and walked about the room, his head bent and his hands behind him, in a pitiful, aimless way. After a little, he stopped suddenly, facing the window.

"Mary," he said, "come here." His voice was stern.

She got up and stood beside him. The curtains hung apart. He swept them wide with his hand, and pointed through the glass.

"Look," he said.

Across the street she saw a lighted window, with

the curtains drawn aside. Inside a thick set and common looking man was playing about the room, with a curly haired child; a woman by the table looking on with a happy smile. As they looked a peal of ringing, childish laughter came dimly to their ears. He let the curtain fall, leaned back against the wall, and looked her in the face. Her eyes flashed bright, an angrier flush swept up, and dyed her cheek deep red. Her words were bitter when she spoke.

"Well," she said, "what of that? Why didn't you marry Sue Stuart yourself? The fool would have had you for asking." She laughed a bitter, mocking laugh.

"I wish to God—" he began. But he stopped. She went back and sat by the table. He came and sat down opposite. He sat silent awhile, his head sunk in his hands. The attitude was one profoundly mournful—the air of a traveler lost in some unexplored forest, who sits down disheartened at last, finding no path, seeing no way to the light. A straggling lock of his hair fell down upon his face. He lifted his hand and drew out, one, two, three gray hairs. "Look, Mary," he said, "I'll be twenty-seven in June."

That arrow touched her visibly; his hair and face were not like that when they two married, nineteen months ago. He went on, with a mournful voice: "I was alone in the world. I was lonely, and wanted help. I told you that two years ago; you must remember, Mary, I said I'd be true to you through good or evil. God helping me, I'll keep my word. I said I'd try to make you happy; I meant to be happy myself. I meant to do right by you. In the main, I think I have; at least, I've honestly tried. I've said hard words at times, when I hardly knew what I said; for them I am honestly sorry, as for all my failings in love and duty. We ought to be happy together; we are neither of us that; I hardly know why. I hardly know how we came to this miserable pass. I see no way out of it now, for you or me. God help and forgive us both!"

She lifted her eyes from her lap at last, and turned upon him, flashing scorn. "Henry Glenning," she said, fronting him full with a hot, flushed face, "what do you want? What would you have? Am I happy? Have I no heart? no pulse? no nerves that can be cut and strung? Because I am too proud to show my pain; because I will not mope or whine; because I laugh to hide the bitter ache and void; bite my lips till they bleed, and crush back the sob that chokes, and the tears that blind me, do you think I am ice or stone? Must you turn on me, too? Had I not enough? You know why I married you. Was it my own free choice? I was a fool; I know it, but I say it was not; I say it was not. You say no one forced me—how do you know? No one said, you shall or you shall not; we are past that day. I wish to God they had; I would have laughed, and had my way. But is that all? Do you know how a petty household tyranny can wear and warp? A father's preference, a brother's sneers and scoffs, a sister's anger, a mother's averted face? I was a coward; I know it. If I had it to live over, I'd walk through fire, first. You were clever and handsome; they all liked you. You know what I mean. You knew it then, and should have set me right. For you I broke my faith; I was afraid of the world's silly laugh—poor, blind fool that I was! I broke my faith, I say; that was your sin and mine. Your sin, I say; for you knew, and should have died first. Do you pity me? Do you grieve for your part in making my life a shame and a lie? Pity? You blame my neglect, taunt me for my coldness of heart. Heart? I tell you I have no heart. You hear men's lies to my blame. You distrust your own wife's word. You are passionate with me; harsh, hard, cruel. You spoke to me to-day as no man has a right. I will not hear it again. I will not bear it. I warn you to beware. You may make their lies come true."

"God forgive you!" he said. That was all. He got up and went out. His head was bent, his face was haggard, but neither angry nor stern.

II.

Slowly and sadly he went down the stairs. He wondered how it would end. He could not quite understand her persistent anger, her fierce rejection of his overtures. He had been wrong; he owned it freely. His temper was hot at times; but she could not but know that she had tried him beyond patience. No, he could not understand, or see his way. Drawing on his coat, his face was turned toward the stair. The gaslight shone upon a folded paper lying on the second step, soiled and torn. He stooped and picked it up. He glanced inside; it was written in capital letters, apparently unmeaning. A horrible suspicion flashed upon him—might not what he had overheard be true? He opened the door and went out. He stopped at the corner, under the lamp, opened the paper, and held it to the light. It was a sheet of common note paper, folded in three. A wet boot-heel had apparently trodden upon one side as it lay in the fold, and ground off a part of the writing just below the first four words. A pulpy shred connected the parts, and showed what space was gone. This was what remained:

(1) O & RQQT FGCT OCT &—

—DQP I

TT—HTU ATSUG. (3) FI SR BSIV

KYEVH. (4) NET YB EREH TEG.

AJDXN XARENE

The rain dripped down upon the paper; he sheltered it with his hat, and stood, with head bare, in the beating rain. He felt in his heart that that fourth word could be but one. He found the key in a minute's time; a simple schoolboy trick. He felt that word must be *Mary*. He tried it through the sentence, counting two letters back: o-m-c-a-t-r-&y. "My poor, dear Mary."

The rain dripped from his hair; he shivered—was it with cold? He felt sick and faint; he thought he should fall. He saw the lights of the Merriman House over the way. He staggered across, through mud and water half-knee deep, heeding neither gutter nor pool, went in and up to the bar.

"Brandy," he said. He lifted the bottle; but his hand shook too much. "Pour it." His voice sounded hoarse and strange. The barman took up the bottle and half filled the glass. Glenning steadied himself by the bar. He spilled a little as he lifted the glass. He set it down empty. "More," he said. He drank it off, and went out. The church clock was striking eight. He ran on down to the station; he was half an hour late. He sat down at his desk. There was nothing going through the wires from L; only now and then some message about the trains on the railway line. The cipher changed after that first line. The burning spirit set him all ablaze; his brain was on fire, his heart a leaden weight. He studied those next legible words with a mad anxiety. They were plainly the end of a sentence, the rest of which was gone. He tried the words this way and that—counted forward, backward, one letter, two letters, three, four, five. He felt sure it was some simple trick of spelling; but he could make no sense of them for a long time. Some one came stamping in now and then out of the rain; but he paid no heed, worked at that terrible puzzle that seemed so like child's play, and was, in fact, such deadly, earnest work.

"It may well be doubted," says Poe, "whether human ingenuity can construct an enigma of this kind which human ingenuity, if properly applied, may not also resolve." In a certain sense, this is, no doubt, true. In the hiding of thought, as of treasure, it is always possible that a second mind may invent or happen upon the same method and place of conceal-

ment, and so discover the buried store. But I think I may safely engage to conceal a thought under a riddle of this sort which shall be as long in the finding as the buried gold and jewels of the pirate-captain Kidd. Here is this simple cipher, which so cruelly perplexed poor Genning that April evening. The head that constructed it was none of the cleverest, and, by consequence, the riddle was of the rudest and simplest. In these next four words the writer had hit, by good chance, upon an expedient so simple that you may easily get at the hidden meaning if you have quick mother-wit and good luck. Yet I challenge any reader to go to work systematically, and unravel the enigma by any more logical process than that of happy guessing. Take the words before reading further :

DQPI TT—HTT ATSUG.

Glenning wearied and fretted himself, to no purpose, with trial on trial. Then he tried the system commonly used with these riddles, depending upon the known excess in the number of letters, e, a, o, i, d, and so on, in their order. It would not work. He was out again. The trouble with that system, and similar ones, is that they provide only for cases in which each character of the cipher refers uniformly to one certain thing in the underlying expression ; and even here the system may be easily stultified by the omission of the articles, and the use of a little care in the selection of the words employed.

In this particular instance, the writer had happened upon a pretty good plan, but showed himself plainly indebted to good luck rather than cleverness, by a blunder which a little skill would have made him easily avoid. There was a flaw in the construction which gave you a clue to the possible plan. Glenning had worked over the phrase till he was in despair of solving the terrible riddle. He leaned back in his chair and closed his tired eyes, with a baffled, beaten look. Those cabalistic words stood out before his sight, burned upon his brain in letters of fire. I do not think he would ever have construed them but for the blunder of which I speak. It struck him suddenly now; he started forward and looked. The second word of the four was "TT." By the common assumption, upon which he had worked all along, these two T's must refer to the same certain character. "TT" might, indeed, not be a word at all; it might be a number or a contraction. But the presumption was that it represented a word of two letters. Then, if the common assumption applied, this underlying word must be the double of some single letter. That was absurd on its face; no such combination, from double a to double z, forms any English word. Glenning caught at the suggestion with an eager flash; he cursed his own blindness, for not seeing it before. He saw that these two T's could not stand for the same thing—in other words, that the cipher must have been formed upon a variable plan: that a character might have different meanings, dependent upon its place in the sentence, or other pre-arranged relation. He saw how this might be easily done in a hundred ways. He tried the simplest possible—counting from the first letter one forward; from the second, two; from the third, three—and so on.

D-E, Q-S, P-S, I-M—Eessm.

No; out again, d—but stop. Is that the simplest possible method? Hardly. The writer would naturally count forward; we must count back.

D-C, Q-O, P-M, I-E—Come.

Ha! He counted out the letters with a fierce haste.

—Come on—all right.

It was maddening. What could it mean? It frightened him to think; some devil's work, he felt sure. He tried the next words. The cipher had changed again; he saw what those numbers meant now—saw it,

and cursed them. "(1)-(3)-(4)." The (2) was doubtless gone with the part shredded off. These numbers meant four different ciphers pre-arranged.

Just then Station-master Farley came in and spoke to him something about a sick friend, and a request that Glenning would attend to any business that should come in for him, till he got back. Glenning tipped back in his chair, with his head thrown back, and his eyes staring up in the other's face. But while his eyes stared wide, his mind was all the while working away at the clumsy puzzle that yet had power to torment him intolerably. He nodded his head when Farley had done; but, when he had gone out, what semblance of an idea Glenning had of the whole was some dim notion that Farley wanted him to answer messages that might come in about the trains. Farley had told him something of a train off time; but of that he remembered nothing.

He worked on at the next four words. His whole being seemed to center upon that one torn, crumpled, mud stained shred with its terrible hieroglyphics. He saw, knew, thought, felt, heard no other thing. After a while the familiar sound of a message struck upon his ear, and partly roused him. He took off the message mechanically :

"Where is the Lime Lake Mail?"

He read it over and over. The words conveyed no meaning to his brain. What he did about it he knew not. The same message might have come many times, for all he knew then. What answer went back, or whether any, he knew no more.

He tried the words of the cipher back and forth, this way and that, over and over again. But he got the key at last—a stupid one enough—straight forward, counting four letters ahead.

"ALL RIGHT—COME ON. BE ON YOUR GUARD."

What could it all mean? He worked away at the rest, as one might work a problem in a nightmare dream. All else seemed dim and strange, and far away; men's voices, now and then; doors opening and closing again; once the bustle of a freight train going through. He heard these sounds in a strange jumble, without definite idea of their cause or meaning, and yet without surprise, like one in a real dream. There was little or no work for the wires. What there was he did without thought or understanding, with the machine like motions of long acquired habit.

He missed the key of the cipher this time from its very nearness and simplicity. The thought could hardly be said to be hidden. He counted forward, two letters, three, four, five, six, one; backward the same. He twisted the words and the letters; vexed himself fiercely to no purpose; all the while devouring with eagerness to know the meaning of this terrible riddle that fate had set him to solve. He cursed himself for his stupidity, when at last he saw; the sentence was simply spelt backward; letters and words reversed.

"GET HERE BY TEN."

Just then a telegram clicked off the wires. He sat a moment like one dazed; then the instinct of long habit moved him again, and he worked the instrument with his hand, God knows, not with his heart or brain.

He looked up at the clock on the shelf; it wanted five minutes of ten. He staggered out to the door, and let the cold rain drive upon his head.

III.

My name is William Thurlow Whipple. I have been a conductor on the Tidewater and Lime Lake Railway since the summer of '51. On the 21st of April last, I ran the Lindenbury Night Express out of Tidewater at seven o'clock. We had the "George Grant" engine, James Morris, driver, and nine cars in all. The distance from Tidewater to Lindenbury is sixty-three miles; we were due at L. at 10:07.

At Wendall, fifteen miles out, we passed the East Branch Accommodation, bound in, on the switch. As we ran in, I saw Henry Brown, conductor of the Branch train, cross over and stand by our track. He did not see me yet when I hailed him :

"Helloa there, Brown! What is the word?"

"That you, Whipple?" he called. "Telegram for you from Clark's."

There was no office at Wendall; Clarksville is the next up station. It was quite dark by this time; I read the message by the station lamps :

LINDENBURY, 7:05, P. M.

To W. T. WHIPPLE, NIGHT EX., CLARKSVILLE.

Lake Mail off track between Fetterley and Glenbrook. Can't get on before 8. Come to Ashley—then look out.

MICHAEL FARLEY, S. M.

Farley was station master at L. Ashley was three stations ahead. We were due there at 8:02. I looked at my watch as we ran in. I recollect we were a minute ahead of time. I jumped down as we slowed, and ran ahead into the telegraph office. A message from Linden was waiting :

"Lake Mail off yet, west of the Junction. Come on till 9."

We ran on west, making good time. Glenbrook is twenty-two miles west of Lindenbury; we should have passed the Lake Night Mail at Winterville, next west of Clark's. I felt a little anxious about it as we thundered on through the darkness; there was no moon that night, and west of Wamona the sky was overcast and the air full of misty rain.

It was five minutes past nine as we ran into Clairwell Station. I telegraphed to L. for orders. They came :

"All right. Come on."

The rails were slippery with the thick mist ; we had lost time on a heavy up grade, three miles back. I waited for no explanations, ran out and started the train. At Wrexell, the East Branch Freight was due; the branch joins the main line at Glenbrook. I went forward and watched for her lights when the whistle blew at Blackman's Crossroads. There was the bright head light of the great "Sampson" freight engine, a mile away, waiting for us on the turnout. I stood on the engine steps as we ran in. As we came up with the "Sampson," and ran slowly past, I hailed the engineer :

"Hallowell! Helloa! Hear anything of the Lake Mail?"

"Passed Clannerlane at Glenbrook. Had men to work on his feed pipes. Said he'd be right in half an hour."

Half an hour? He must be at Cunningham by this time—or Whewell's Bend at farthest.

I telegraphed to Lindenbury :

"Where is the Lime Lake Mail?"

Directly the answer came :

"Come on. All right."

The same words over again. Not a word of that train ahead. It was strange; but we were behind time yet. "Go ahead!" I called. "Make up lost time."

It was twenty-seven minutes past nine. We had nineteen miles yet to Linden. It was five miles to Brentford, the next station west.

At Brentford I telegraphed again :

"Where is the Lime Lake Mail?"

I knew the Brentford operator, of course; his name was John Murray. He sent off the message, repeating the words aloud :

"Where is the Lime Lake Mail?"

Waiting the reply, I asked him :

"Have you had any word of the Mail this side of the Branch?"

"Not a word. No messages west of here, except to you, since half after seven."

The return message clicked off the wires. You may be sure I watched Murray's lips for the words. Again the very same ;

"Come on. All right."

Not a word more.

I had no time to wait. We were still a little behind. My duty was to make that up and obey my orders.

"Give me the slip," I said.

I had the other two in my pocket. I remembered that, and was thankful for so much. They would clear me, whatever happened. But, none the less, I was fretted by the thought of that off time train somehow ahead in the dark. I signalled Morris to increase the speed. I stood by a lamp and took out the three slips of telegraph paper. There was no mistake. I read each one over carefully. The words were plain: "All right. Come on."

You say I had no cause for such anxiety as I describe? that I was pretty close on time; the words of the telegrams simple, and such as would naturally occur in such a case; that the same words should be repeated was no more strange than happens every day. You think I exaggerate for effect? I say you know nothing about it. I say it was strange that those words were three times repeated. It was strange that they should come at all in answer to my message; they did not answer my question. Hallowell said Clannerlane expected to be after him in half an hour. By that we should have met him at Brentford Station. I say I was horrible anxious; ten times more than I've written down. One says, I was mad to increase the speed, fearing what I did. I tell you I did my duty. I was bound to keep on time and obey my orders. They have no right to taunt me; it was bad enough without that. I say I did my duty. It was only three miles and a half to Hackerby. I was thankful to hear the whistle at the last cross roads. I was in the office before the train had stopped.

"Marks," I cried, "do you know where's the down mail?"

"No."

"Telegraph Linden; quick! Say, 'For God's sake, where is the Lake Mail?'"

I thought the answer would never come. I longed and feared to hear it. Here is the slip now, with those same terrible words:

"All right. Come on."

As Marks read those words, I broke out with a curse.

"What's the row?" he said. "Hold on. There's more."

I jumped at that.

"Go on. Quick!"

"All right. Come on. *Be on your guard!*"

I rushed out. Morris was watching. I waved my arm. The train moved on. It was scant four miles to Garrowfield, the last this side of Lindenbury. I went forward and looked out ahead. We were running pretty fast; thirty-five miles to the hour, I should say. We were up to our time at last. We were running through the Clitheroe Hills, the road winding up the valley of the Garrow; to the left the river flowed dark and silent. Now and then you caught a gleam from the gloomy current; here and there, the sound of its brawling over a stony bed. You saw the lights of a village, now and again, twinkling among the looming hills across the Garrow. Here we crossed a roaring culvert; then, the river running to the right, ran out on the high embankment at Mack's Ford, and so across by Half Mile Trestle Bridge.

I kept my eyes ahead; a horrible fear tormented me. That strange, four times repeated telegram tortured me. The words were constantly in my ears. I heard them in the roar of the rushing train—"Come on, come on, come on!" And those other added words; what could they mean? Why were we to *be on our guard*? Where could that Lake Train be? Why had

they not sent me word? It was a terrible muddle altogether. In nine years' running on railway trains I had never known anything like it. All the messages had come from Linden. The Lindenbury telegrapher I had known for years. His name was Harry Glenning, a tall, brown bearded man of twenty-nine or thirty. I say I had known him long; I do not mean that I was intimate with him, but that I knew him as one knows the men he meets every day. He was a superior man every way, as we railway men go. We all owed to that in a tacit way, and most of us liked and respected him much. He was the last man on the line that any of us would mistrust. Temperate, punctual, somewhat taciturn, he was always at his post and never made mistakes. Of late, he had grown more quiet than ever; it was evident that some secret trouble was wearing on him. His face had got a careworn look; we noticed a streak of gray here and there in his hair and beard. But, if anything, he was more faithful than ever in his work in the Linden office. Of course, we never spoke to him about the change in him; but we did among ourselves, and we were all sorry for him, in our way.

Farley said it was his wife was leading him a sorry life of it. He had married, a year or two before, a girl from Caromel Corners, they said, named Mary Winton, I think. Only the day before, coming down with the Garrow and Glen Kilns Express, I had met Blissom, with the up mail, at Hackerby Station, and said to him:

"What's up with Glenning, now? He looks dreadfully cut up."

Blissom was a Lindenbury man; I live at Tidewater, myself.

"That Mary Winton's a-leading Glenning a naggy tramp of it, I hear," says Blissom; he knew Mary before she was married. "They do say she's a tarrier to go on when her back's up, and gives it to Glenning all-fired." Blissom was a good fellow, but rough.

But, as I said, Glenning seemed all the more faithful since his home troubles; I never thought of doubting him. So we plunged on through the darkness. We had a passenger car that night, as it uncommonly happened, directly behind the tender. I stood on the forward platform, and kept an anxious lookout. The air was full of a thick drizzle; our speed made a strong west wind there, outside. On we went, keeping our pace well up—we had no right to go ahead of time—through Sadler's Drop, in the Clitheroe Hills, out then into the level country beyond. As the whistle blew for Garrowfield Station, I passed back through the forward car. The telegraph office in Garrowfield is a little east of the platform. Seeing the passengers look hard at me, I then first noticed that my clothes were dripping wet. Near the rear end of the car, an Irish woman sat, with her head on the window, fast asleep. I shook her roughly; I hoped she might get down here. She started up with a confused flutter.

"This Hackerby, sir?"

"Last station back," I said. "You're too far on."

"Ow, thin, an' what'll I live I do?" says she. "Shure, Dennis is afther expictin' of me, an' he'll think I'm kilt intirely."

"You must get off here," I said. "Come, be quick." The train was beginning to slow speed.

"Shure, thin, sir," she pleaded. "It's meself has an own sister, in a laundry in Lindinbarry, itself. If ye'd be so kind to lit me down there. I haven't no money, sir; but I'd bring it to you bright in the marnin'."

"Can't do it," I said. We were close upon the station. I hustled her out, roughly enough, I suppose.

A gentleman, sitting by with his wife, had been watching us. I saw his face fire up as I hustled the woman out. He jumped up and faced me.

"What do you mean?" he says, all hot. It's a

brutal shame to put the woman off in the night in a strange town, with no money. Here, I'll pay her fare!

I pushed her through the door; gave him no answer. He held me by the arm.

"Your name?" he demanded, sternly. "Mine is Charles Holden. I'll report you."

I was not angry with him—he did not know.

"My name is William Whipple."

I saw a fellow I knew on the platform.

"Caley," I calls; "show this woman a decent lodging. Pay—I'll make it all right."

I telegraphed to Linden:

"Shall I come on? Why don't you send me word of the Lime Lake Mail?"

I don't think I breathed till the answer came:

"Come on. *Be on your guard.* GET HERE BY TEN."

Good Heaven!—it was maddening. What did it mean? what could it mean?

I rushed out, waved my arm madly to Morris.

"Go on, there—quick!" I yelled.

I ran ahead, and climbed up the engine. I looked at my watch. It wanted six minutes of ten! I held the slip before his eyes. His face blanched white as a corpse.

"Good God, Whipple! it's seventy miles an hour!"

"I don't know it means. It's some mad work. But we've got to obey orders. Drive like h—!"

I ran through the train taking the fares. How could they laugh and talk?

Every minute I heard the scream of the train ahead that I dreaded as I shall never fear death. The speed increased steadily. The cars rocked on the springs. The passengers grew uneasy; the women looked fearfully one to another. Some men expostulated:

"Why are you running so fast? Do you want to murder us all?"

"We are ordered to be at Lindenbury by ten," I said. It wanted just four minutes. I saw the glare of Bell's Rolling Mills flash by—five miles and a half to L.!

I ran forward to the platform of the first car. By the forward door sat a lady, with a child in her lap, asleep—a little fair haired girl of three or four. I see it as plainly now as I saw it then. I hardly know why, but little things that occurred that night seemed burnt into my memory in colors of fire. I lie back now, here on this bed, where I have met, at strangers' hands, more true kindness and Christian courtesy than I had believed in before; and, shutting my eyes, I see that sweet child's face smiling in its pure dreams, the mother's beautiful face brooding above it with a look of heavenly tenderness and love. I feel the heave of the hurrying train, feel the car sway and spring with the terrible speed. I remember all, as I saw it hurrying through the car. I passed out on the platform. It wanted three minutes of ten. I knew we could not make it, though Morris was driving on with every pound of steam. I saw him standing at the lever, brawny and stalwart against the glare of the head light, flying ahead on the track, one arm raised and grasping the lever, looking steadily forward, never turning his head to the right or left. I knew what he looked for—only too well! I shudder and turn sick to think of it now.

Before Heaven, it was awful. To stand out there in that rushing whirlwind, clinging as for your life in that swaying hurling flight; to stare forward into that awful darkness; to strain your sight until you were dizzy and blind, and your eyes were fire; and yet not dare to close them or turn away—deafened and stunned by that terrible jar and roar; heart and pulse faint with a horrible fear—the fear of sudden death!

Was I a coward? who says it? May he be tried alike! God forgive me—what do I say? Pray Heaven, no—that were a fiend's prayer. I do not say I did not care for myself. I did—who cares not for his life that is man? I thought of a little humble home sixty miles

behind; of a little brown faced boy, smiling in happy sleep; of a dear heart bending over the crib, perhaps; sewing by the lonely lamp; praying for me, it might be, out of her pure, true heart. I thought of these, and I prayed to Heaven to spare me to life and love. But more than of this, I say and I know, I thought of the hundreds that trusted to me for their lives—looked to me to see to it that they encountered no needless peril. To strain ahead into that awful gloom—to think and think of those poor souls in my charge—I swear it was torment.

I lost all sense of time and place, in the intense strain of sight and thought. I could not say where we were; it seemed we were running for hours. I knew what I looked to see—what I feared with a horrible dread; I knew only that.

Morris never slackened the pace; he drove his engine on with every pound of power. They tell me we made five miles in half a minute more.

Suddenly we leaped through a belt of deeper gloom; a heavy roll of thunder struck my ears with a stunning crash. I knew it was Merrill's Gap. The road lay level through the plain ahead to Climmerley Gap beyond. Half of the way was passed; we hurried on; terrible as fate.

Suddenly, out of the blackness of Climmerley Gap, there flashed—oh God!—a great, white light!

I went in then and shut the door.

They must have seen it in my face. When I turned and looked forward again, the lady with the child stood at my side. I shall never forget the look in her face; the child was clasped to her heart. "What is it?" she said.

She spoke in a whisper, more awful than any cry. The two engines screamed like charging demons; wheels reversed, and every brake hard down, we went staggering, shuddering, grinding on to our doom. But, through all that terrible din, I heard that awful whisper from those beautiful, bloodless lips.

I pointed forward to the great, white light, glowing down the line straight upon us.

"It's death," I said.

She answered me not a word. She lifted the child to her face, then clutched it to her heart, "Louise, Louise!" she moaned, and sank back out of my sight.

I stood and looked ahead. At the first alarm, the fireman had jumped. Morris stood to his post. I saw him whistle down brakes, reverse his engine, set his bell ringing, do all that mortal could do. Then he stepped back, steadied himself, and leaped out into the dark. I saw it all; it was only a moment's time.

That terrible white light dashed straight upon us—that awful, blinding glare of death!

I heard a horrid crash, like ten thousand cannon—like the rending of a world. I felt myself lifted and hurled through the air—knocked, battered, pounded, pressed, bruised, twisted, crushed, struck on the back, as with a steam-whirled shaft. Then I was lying on the grass with a blinding glare in my eyes. I heard a low, weak moan. I turned my head—a woman lay close beside me with a child clasped tight to her heart. There was blood on the beautiful lips—both were dead.

I remember no more. Heaven spared me the rest of that horrible night. I was taken up for dead. They brought me here, to St. Stephen's, to this bed, where I have lain these six long months—long months and very weary, though all that gentleness and skillful hands could do has been done for me.

I have the papers with the account of the disasters. There is a sickening list of killed and maimed—so long that I shudder when I look. Among the dead, I read: John Blissom, driver, off duty. Ellen M. Villers and child, Louise, of Glenbrook. Charles K. Holden,

President of the Clitheroe Bank. He knows me better now—where honor, and a brave, kind heart have found their just reward.

W. T. WHIFFLE.

ST. STEPHEN'S HOSPITAL, 19th October.

[From the Tidewater Herald, 23d April.]

The wretched operator, Henry C. Glenning, of Lindenburg, whose drunken folly caused the terrible disaster on the T. & L. R. R., night before last, hung himself yesterday morning, in a barn near Climmerley Gap. The evidence at the coroner's inquest went to show that deceased had partaken freely of brandy on the evening of the collision, after he was already in a state of evident intoxication.

In another column of this morning's "Herald," we print the only full and reliable lists of the killed and injured. Among the latter, our readers will notice the name of Mrs. Mary W. Glenning, wife of the Lindenburg operator, who received "severe contusions of the head and face," and now lies at a farm house in a critical condition. Thus it strangely happens that the perpetrator of this terrible crime has his own wife for one of his victims. We learn that she intended to have taken the regular Down Night Express; but, being early at the station, caught, most unhappily, the belated Mail. Upon her person was found a through ticket from Hilary, next west of L., to this city. She was escorted, we understand, by a Mr. Mason, an old and esteemed friend of the most unfortunate lady."

J. T. MCKAY.

Mode of Condensing Magnetism Analogous to the Condensation of Electricity.

M. Jamin.—The author has caused M. Limet to make for him a horseshoe-shaped magnet, made up of bars of perfectly homogeneous steel, and fastened together by means of bolts. When this artificial magnet is properly magnetized, it is capable of bearing a weight of 300 kilos. at the armatures. When this armature is placed so as to be only in contact with one of the steel bars composing the horseshoe, it appears that the magnetism of the nine other bars is very perceptibly diminished. Under these conditions, and notwithstanding the magnet was previously already saturated with magnetism, it is possible to saturate anew with magnetism, and make the horseshoe bear again 600 kilos. This experiment can be repeated: another armature may be put on, so as to bear only upon one of the component bars, and again, more magnetism can be condensed. The learned author has already succeeded in making the horseshoe bear another 680 kilos. in this manner.

An American Atlantic Telegraph.

The New York Times states that a number of wealthy and skilled financiers have for some time past been quietly working up the means and the programme for an American Atlantic cable, to proceed direct from New York city to Europe. This line will be worked with what are known as "sounder instruments"—that is, the alphabet is indicated by sound instead of by the galvanometer reflector system, as now used on cables, and can be operated three or four times as rapidly as can possibly be done by the present system. Two sets of these instruments were manufactured for this company some time since, and have been thoroughly tested both in Europe and America—in Europe through a circuit of 3,000 miles of insulated wire, and with the most perfect success. They are constructed upon entirely new principles, and are so far wholly unknown to the public. It is confidently expected that the project will be far advanced toward completion the coming fall. For prudential reasons the European terminus of the American cable is for the present withheld; but it is perhaps worth while

to mention that the consideration of amity, present and prospective, of any foreign government has entered into the calculation of the new projectors in the selection of a terminus. It is expected, indeed it is intended, that by constructing a direct line from New York city, and working it upon these plans, the company will be enabled to do business at rates scarcely, if at all, in advance of present rates on American land lines.

Scintillations from Scientific Authors.

BY MADISON BUELL.

The motion of heat interferes with the motion of electricity.

In 1748, Jallabert at Geneva, Switzerland, submitted invalids to electrical treatment.

There exist a host of daily phenomena which are evidently due to the continuous action of air and water.

Volta, the antitype of Prometheus, first enabled us definitely to relate the force of chemistry and electricity.

Bucholz was the first to show that metals may form with their own solutions and water, whether pure or acid or saline, electric currents, the action of which precipitates the metal.

Mr. Airy, the Director of the Royal Observatory at Greenwich, is, of all astronomers, the one who has directed his attention most continuously—and with the greatest success—to the application of the electric telegraph for astronomical purposes.

Almost all thermal springs suffer at the approach of storms a particular agitation, which is manifested by an extraordinary bubbling, or by other symptoms, which show the electric condition of the deep places whence they arise, and from which they have probably been borrowed.

M. Steinheil was the first who proved the fact of the transmission by the earth of voltaic electricity for telegraphic purposes. The conductor of the telegraph constructed at Munich in 1837, was formed of a copper wire, terminated at its two extremities by two plates of copper buried in the earth.

Who knows whether the noise which accompanies the electric explosion, and which constitutes the element of thunder—might not be due to the recombination of the water, decomposed by the propagation of electricity in the cloud? The decomposition and recombination might follow each other immediately, without leaving any other trace than the noise arising from the combination of oxygen and hydrogen.

Heat is not the clash of winds; it is not the quiver of a flame, nor the ebullition of water, nor the rising of a thermometric column, nor the motion which animates steam as it rushes from a boiler in which it has been compressed. All these are mechanical motions into which the motion of heat may be converted, but heat itself is molecular motion, it is an oscillation of ultimate particles.

The editor of the Waterbury (Conn.) American telegraphed the other day to Col. A. H. Fenn, at Plymouth: "Send us full particulars of the flood." Fenn replied: "you'll find them in Geres's."

EVEN Tom Hood is inexcusable for such a description of music as this: "Heaven reward the man who first hit upon the very original notion of sawing the inside of a cat with the tail of a horse."

Journal of the Telegraph.

This Journal will be issued on the 1st and 15th of each month, commencing with December 1, 1867. It commences with an issue of 4,000. The Western Union Telegraph Company have ordered 2,000 copies for its officers and offices. All its 5,000 stockholders will require it for information of interest to them. So of other telegraph companies and their stockholders.

TERMS:

One Dollar per Annum in Advance.

FOUR DOLLARS FOR FIVE COPIES.

Address—

JAMES D. REID, Editor,
Executive Rooms, Western Union Tel. Co.,
145 Broadway, New York.

NEW YORK, AUGUST 16, 1869.

Special Telegraphic Service.

There has been, unquestionably, much progress made in the promotion of greater efficiency in telegraphic operations. This has been done, in part, by that unperceived skill which attends the prosecution of any pursuit, a certain dexterity which continued devotion to the management of a business or the manipulation of its details never fails to confer. In addition to this, however, there has been much deliberate study of whatever presented itself as needed or likely to secure perfection in the instrumentalities for the rapid and correct transmission of dispatches, as well as in the arrangement of the labor by which the telegraphic duties of the country are performed. The lines, to-day, present most gratifying proof that this attention has not been in vain, however much may yet appear unattained and imperfect.

New wants, however, arise as the telegraph comes to touch, as it must, more and more intimately both social and commercial life. Its more social uses, indeed, have scarcely had existence. These can not fail, in time, to be both numerous and various. Neither has the telegraph attained that certainty of instant service which is needed to satisfy contingencies which, every one knows, at some time or other arise in the lives of men or in the exigencies of their business. There are daily perils which greater assured celerity than the present system seems to permit would dissipate or relieve. If a citizen could be positively assured that within a certain number of minutes a message could be ensured delivery, or his correspondent brought into direct communication with him without delay, the telegraph could relieve many a great and overwhelming perplexity. There are critical periods in the affairs of merchants which an instant interview with a distant partner would enable them to pass unscathed. So in the thousand griefs and emergencies of social life, a message whose delivery could be assured within a certain number of minutes, and an answer obtained, would deepen the hold of the telegraph on the public mind by securing a relief more felt, and therefore more valued, because touching the more sacred emergencies of our homes.

The difficulty in making such a service as this possible has been the rule, indeed the State law, which requires that no message shall have preference over another, and that each must take its turn. This law is just and necessary. It has been carried out with very general fidelity. It should be maintained, how-

ever hard it bears on parties using the wires. An operator should have no right even to discriminate between the value of an invitation to tea, and the demand for a surgeon by a train about to start so as to save a precious life, however humiliating this subordination of his own sense of fitness may seem or be felt by him.

On railroad wires, the officers demand instantaneous service and have it. It is essential to them and to the public safety. We want to know how shall such a service be secured to the public which also has its dangers to be avoided, its perils to be met? We have heretofore resisted all proposals to introduce a service which would at all discriminate in favor of any call short of death or public justice. We have pleaded the justice of the law which requires that all must come alike and wait on each other as at a barber's Saturday night levee. We are now constrained to ask whether, even under the existing laws, it is not possible for the telegraph to meet the greater perils of society, which as in governmental dangers, demands the instant use of the telegraph wires.

The great panacea for telegraphic delays will, we have long been assured, ultimately be found in automatic machinery which shall have the power of transmitting, without personal manipulation, autographically, and with a speed which shall always secure a clear wire for every one who comes, except in cases of general public calamity, when men simultaneously crowd their communications upon the lines. That time is not far distant, and is as certain as the coming of the rain.

Until machinery of this enlarged capacity be introduced, there is only one other way in which we conceive it possible to perform service of the character under consideration, and that is by the provision of special wires for instantaneous service and by conveniences arranged for parties demanding distant personal conferences by the wires. The charges for such service would have to correspond with the cost of maintaining it. If a man's peril or profit will justify his paying four prices for the privilege of instant service which he may see performed, and get the evidence of it while he waits, he can resort to this extra wire. The service thus secured would often justify any cost. The law can operate on such a wire as on all others, each applicant taking his turn, and yet, by its exceptional employment, almost always securing the instantaneous use of it when required. The question is, are these exceptional necessities so frequent as to justify the provision of exclusive wires for this class of business? We think they are. The very provision of such facilities awakes attention and creates demand for their use. Such wires need not remain idle when not used for this special service. At night it can be utilized for the ordinary service. In many hours of the day they may be used. This general use will prevent loss, while at the same time they could be held ready for instant service whenever demanded.

In Europe this is largely done. In some Kingdoms no promptness is promised, or at all certain, without the payment of extra tariffs. The low foreign tariffs so much vaunted by our statesmen are largely shams.

They pay for a slow service, and parties desiring dispatch are compelled to resort to ensured messages at higher prices. The old adage is true here as in many other things that "it is not all gold that looks like coin." We commend the subject of this special service to those whose duties lead them to study the arts by which telegraphic efficiency and adaptation may be secured.

OFFICIAL STATEMENT.

Western Union Telegraph Company.

	June, 1869.	June, 1868.
Total Receipts.....	\$590,994 31	\$579,911 00
Total Expenses.....	381,546 85	353,375 50
Net Profits.....	\$209,447 46	\$226,535 50

Return of Hiram Sibley, Esq.

After an absence of a year, the Cunard steamer Russia brought us back on Tuesday, the 3d inst., the veteran so long identified with the history of the Western Union Telegraph Company, when its stock went laughing at the rate of 200. Mr. Sibley returns much improved in health, a very portly, well preserved, very happy man.

A few days before his return, Mr. Cornell, Surveyor of the Port of New York, himself an old telegrapher, and as skillful at the key as any other man, invited a large circle of friends to accompany him on a revenue cutter to meet Mr. Sibley on the arrival of the Russia in the Narrows. Of course, everybody accepted. It was a very happy and jolly season. Everybody was happy. Mr. Sibley was in most radiant humor, and would we, had we not been unluckily absent on a recreative trip in the West. We believe in such receptions and especially when held on a Government steamer with such a jolly company and with so inspiring appurtenances. We welcome Mr. Sibley home. May his shadow never be less.

THE Atlantic Cable Company have greatly added to the effectiveness of their land lines. Every month also improves the capacity of their two cables, one of which is used to send, while the other receives, the messages passing between America and Europe. The time occupied in transmission is thus reduced to the lowest minimum of which the art is at present capable. No one can complain of the remoteness of Europe when, telegraphically, its cities are brought as near to us as the villages on the Hudson.

By the circular on next page it will be seen that the tariff to Great Britain has been reduced to seven dollars and a half gold for ten words. Press messages half price.

CORRESPONDENTS who find their communications unattended to, and who miss expected matter, must charge apparent neglect to our absence in pursuit of health out in the clear air of the country. We will atone for all on our return.

Married.

FARRELL—RYAN. At Georgetown, Ont., July 5th, by Rev. Father Dellabois, James F. Farrell, Manager Western Union Telegraph Office, Bay City, Mich., to Annie, youngest daughter of P. Ryan, Esq., of Georgetown.

Rule No. 4.

We have again to call attention to this rule. Offices are constantly in the habit of forwarding messages received from other lines without designating their own office so as to permit their being properly checked. This produces confusion, correspondence, labor and delay. Let each message bear distinctly upon it both its proper date and the name of the office where the one line delivers it to the other.

We sympathize with all who, tired of the hot stones of the city pavements, and the tug of daily toil, crave to see the green grass and smell the fresh air of the harvest fields. We have just left the iron seat of one of Wood's reapers after seeing a fine field of barley cut and laid aside ready for the wagon. What a grand shaking of the body corporate a ride on a reaping machine over a rough field gives! What an appetite it creates! How it drives out all superfluous gas! If some such invention could be provided for corporations by which now and then they would be shaken up, it would surely prove a sanitary process. As we write this by the light of the twilight, on the sill of an open window, with the new moon and the evening star shining before us, the low of homeward cows in the distance, and in hearing of the conversation of the harvesters as they water their tired horses before us, we feel all the delight which such circumstances seldom fail to impart to emigrants from the toil and noise of city life.

The Simonds' Insulator.

In a few hurried words respecting Mr. Simonds insulator which we found very handsomely illustrated in the *Scientific American*, we gave the idea that it was the fruit of a suggestion of our own. As the date of the patent appears to be as early as our own suggestion, and the thought of the device must have preceded the patent, we desire to give Mr. Simonds proper credit for his invention, and to recall any word of ours which might seem to detract from the merit of its invention. Our suggestion was crude and un-studied, but written under an impression that an advantage lay in that direction. We hoped that some one, perhaps Mr. Brooks himself, or Mr. Farmer, or some other electrician would give it what thought it merited. A cheap, durable, perfect insulator, even admitting the excellence of those in use, is still by many a demand. At least there must exist a desire for all possible improvements in an article so radically connected with telegraphic success.

One feature of the Simonds' insulator we overlooked in our notice of it. The glass bell is not a simple arc as in the ordinary insulator, but is made to arch down in the center and thus enters and is immersed in the paraffine cup which is supported on the pin. This gives continuity to the insulator until it reaches the outer edges of the paraffine cup. The merit of the insulator, therefore, would appear to be in retaining all the strength and economy of ordinary forms with the intercepting qualities of paraffine in such condition as to be retained.

An article from Mr. George B. Prescott is necessarily delayed until next number.

Westbrook's Self Recorder.

We regret to see among the list of patents one granted to our good friend C. Westbrook, for the transmission of messages by the action of a lever, the end of which by passing over the surface of the letters of the Morse alphabet indented on stout paper, performs, automatically, the process of manipulation. We regret it only because, some time ago we took special pains to point out that this very process was one of Prof. Morse's earliest devices, that it forms part of his early papers, and, if we mistake not, is one of the specifications in his patents. The same plan has been tried in Europe by the use of metal strips indented in a similar way and to accomplish a similar purpose. They have all been laid aside as not fulfilling the conditions desired, and, although apparently susceptible of profitable employment, have been regarded as methods for accomplishing celerity without promise of success and inadequate to the demand.

We have no doubt Mr. Westbrook supposed his invention original, and there is no one we could more heartily wish to be successful in any invention to which his mind may be devoted, but we feel that the patent office should not have accepted fees for a device it must or ought to have known was as old as telegraphy itself.

The announcement by Mr. Payne of Newark, N. J., of his experiments with electricity for motive power, though poohed at by scientific journals, we are not inclined to laugh at. Mr. Payne has succeeded in developing enormous power by an application of battery very insignificant. He claims to have lifted a ton by a battery of nine cups with the face of a five inch magnet removed quarter of an inch from the mass. He is now constructing a 25 horse power engine which he expects to work with a battery of nine cups. If Mr. Payne succeeds in these experiments, he will solve the question of car power in cities, and a vast range of other uses to which electric power can be applied.

The French Emperor.

Napoleon III. has been presented by the American Institution of Civil Engineers with a diploma of honorary membership, which he has accepted with much apparent pleasure, as well as welcoming the gentlemen appointed to present it.

The French Emperor is a scientist of no mean abilities. His interesting paper on magnetism we have already published. In the manufacture of ordnance his skill is well known. Indeed, he has constantly under his private pay several men of science working out problems connected with the peaceful arts as well as the arts of war. In this he is an example to all rulers. His hardest task now is to reconcile the personal and popular power in safe and liberal government.

Telegraphers' Mutual Life Insurance Association.**ASSESSMENT NO. 8.—ASSESSMENTS RECEIVED.**

W. H. Blanchard,	T. L. Brown,
W. C. Long,	W. L. Ives,
J. H. Way,	A. J. Jarvis,
J. P. McKinstry,	E. Rider.

The Anderson Fund.

E. Sammis.....	\$1 00	J. P. McKinstry.....	1 00
Lila E. Atwater.....	1 00		

TARIFF BUREAU.**Semi-Monthly Circular.**

EXECUTIVE OFFICE,
Western Union Telegraph Company,
145 Broadway, New York,
August 15, 1869.

To all Offices on W. U. Lines:

The following changes in tariff have occurred since August 1st, the date of the last tariff order. Please note them in your tariff books:

NEW OFFICES.

Duxbury, Mass., tariff same as Plymouth, Mass.
Espytown, Pa., tariff same as Bloomsburgh, Pa.
Kingston Springs, Tenn., reopened, tariff same as heretofore.
Normandy, Tenn., tariff same as Tullahoma, Tenn.
Rockbridge, Alum Springs, Va., tariff same as Covington, Va.
Stepney, Conn., tariff same as Newtown, Conn.
Trezevant, Tenn., reopened, tariff same as heretofore.

NEW OFFICES ON OTHER LINES.

Flahkill Village, 25 and 2; Hopewell, 25 and 2 and Washington
Four Corners, N. Y., 30 and 2 from Flahkill. Check Flahkill.

OFFICES CLOSED.

Adams' Mills, O., Lowell, Wash'n Co., O., Milan, Tenn., Magrolla, Miss., and Mattituck, L. I.

GENERAL INFORMATION.

Rates to following offices on "other lines" have been made as follows, to take effect from receipt of this order:

Sloux City, Iowa, 60 and 4 from Missouri Valley Junc., Iowa.	
Onawa, Iowa, 40 and 3 from " " "	
River Sloux, Iowa, 35 and 2 from " " "	
Blair, Neb., 35 and 2 from " " "	

Hereafter the tariff to Hunter's Point, L. I., N. Y., will be 15c. more than New York city, and Hokenauqua, Kingston, Pittston, Slatington, White Haven and Wyoming, Pa., 25c. more than Philadelphia. Offices having "Special Sheet A" will use special rate to Philadelphia and New York when computing tariff to points named.

Executive Order No. 79.**REDUCTION OF TARIFF ON ATLANTIC CABLE BUSINESS.**

On and after Tuesday, August 10, 1869, the rates of tariff on Atlantic Cable business will be as follows:

Tariff in gold, to any point in Great Britain and Ireland.

	For 10 words or less, count- ing address, date and signature.	For each word over 10
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From all points in Nova Scotia, New Brunswick and New England States, and from New York City,	\$7 50	.75
From all points in New York (except New York City), New Jersey, Pennsylvania, Delaware, Mary- land and District of Columbia,	7 80	.78

From all points in Virginia, West Vir- ginia, North Carolina, South Caro- lina, Georgia, Alabama, Missis- sippi, Louisiana, Tennessee, Ken- tucky, Ohio, Indiana, Illinois, Michigan and Wisconsin, from St. Louis, Mo., and from Western Union Co.'s offices in Florida,	9 00	.90
From Pensacola, Florida,	10 00	1 00

From all points in Texas, Arkansas, Missouri (except St. Louis), Kan- sas, Nebraska, Iowa, Minnesota, Colorado, Dakota, Wyoming, New Mexico, Utah, Idaho, Montana, Nevada, California and Arizona,	10 50	1 05
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From all points in Oregon, Washington Territory and British Columbia,	12 50	1 25
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The additional tariff to places beyond Great Britain and Ireland will remain as heretofore.

We are notified of the following modification of the rule relating to

PREPAID REPLIES.

Should a prepaid reply contain more words than the number specified and paid for by the sender of the original message, the additional words must be paid for by the sender of the reply on presenting it for transmission.

WILLIAM ORTON, President.

The French Cable.

It is understood that the managers of the French cable have agreed to acquiesce in any conditions that Congress may prescribe upon the part of this country. We hope then it will be remembered that this Company enjoys an absolute monopoly for twenty years, and that it is a great deal better that this cable should not be laid at all upon our coast than that we should acquiesce in the monopoly. The *Evening Post* says that the objection to the landing of the cable is foolish, because it will certainly be laid upon the shore of Canada if we forbid it ours. That is very possible; but that does not implicate us, nor tie up the hands of American enterprise for the next twenty years. The *Post*, as the defender of a chartered monopoly, appears in a new role. For the sake of its own principles we hope that it may plead in vain, and that the assent of Congress to the French enterprise will be withheld until the monopoly is renounced.—*Harper's Weekly*.

Platinum.

A few facts concerning this metal, put as it is to so many uses in telegraphy, may interest your readers. It strongly resembles silver in appearance, and it was, in consequence, first called Platina by the Spaniards, from their word *Plata*, signifying silver. It is distinguished as being the heaviest and most infusible of metals, is nearly twice as heavy as lead, and 22½ times weightier than water; but it is owing chiefly to the latter quality that it is used so extensively in the practical operation of the telegraph. It is not affected by the most intense furnace heat, and can only be melted by the oxyhydrogen blow-pipe, consequently we find it used in relay and key points, where it often remains unimpaired for years, successfully resisting the intense heat developed by the opening and closing of the electric current. Platinum is a little softer than silver, and of such remarkable ductility that it can be drawn out in a wonderfully fine wire. Wollaston obtained one not exceeding 1-2000th of an inch in diameter by filling a space in the axis of a silver wire with a small piece of platinum wire, then drawing this compound wire into the most attenuated form possible, and dissolving the silver from the outside, exposing a filament of platinum finer than a spider's thread.

The metal is worked with more difficulty under the hammer than cast steel, and when pure may be welded upon itself, or upon iron or steel at a white heat. In its chemical properties platinum is remarkable for resisting the action of the most powerful acids, as well as of high temperatures. On this account it is well adapted for chemical utensils, for plates and bands used by dentists for artificial teeth, and for retorts and stills in the manufacture of sulphuric acid. It is dissolved by nitric acid only when alloyed with a considerable proportion of silver. Its true solvent is aqua regia. When a perfectly clean surface of platinum is presented to a mixture of oxygen and hydrogen, it has the extraordinary property of causing them to combine, so as to form water, and often so rapidly as to render the metal red hot.

It was first obtained from the gold regions of Choco and Barbacoas, head of the Atrato River, South America. About 900 lbs. a year were sent from this region to Europe. Then from the island of Borneo 600 to 800 lbs. were exported. In the Russian gold mines platinum was noticed in 1819 by the miners, who called it white gold. Its true character was known by Professor Lubarski, at St. Petersburg, in 1823. It is also found in Estremadura, in Spain, and in very small quantities in other countries.

"In modern times platinum was first brought into notice by Ulloa, a Spanish traveler, 1735, but there

are reasons for supposing it was known to the Romans, and worked by them, and was employed by some of the alchemists. About the middle of the last century it was carried from South America to Europe. Several French silversmiths were among the first to apply it to useful purposes; some time after Wollaston devised the methods of working it which are still practiced.

Platinum is very scarce. It is found in grains and small lumps, and very rarely in nuggets of several pounds weight. It is found in the sands of gold deposits with a number of other metals, which are seldom if ever found, except with platinum. These alloys contain from five to ten per cent. of iron. Humboldt brought a large lump from South America and put it in the museum at Berlin. It is about the size of a pigeon's egg, and weighs 1,088 grains. In the museum at Madrid is a lump from Condoto, in South America, weighing 11,651 grains. In 1827 a lump was found in the Ural Mountains, near the Demidoff gold mines, weighing over 11 lbs. troy. In 1831 the largest piece known was found there—it weighs over 22 lbs., and is preserved in the Demidoff Cabinet. At Rutherford, North Carolina, a lump of 2,541 grains was found. D.

A Revolution in Steam Engines.

The Jersey City *Times* has a description of a machine, now in operation in that city, which is destined to work a revolution in one department of mechanical industry—namely, a new steam engine, which, one-quarter of the weight, and occupying one-quarter the space required for an ordinary ten-horse engine, will give the same power with twenty-five per cent. less fuel.

This little machine sets at defiance all preconceived notions on the subject. Its motive power is all contained within the circumference of a broad, stout wheel, about three feet in diameter, revolving upon a hollow shaft which receives the steam and delivers it alternately into two opposite reciprocal cylinders, each fixed between the center and the periphery. The power, therefore, instead of being at the centre, presents the singular anomaly of being at the circumference. Or, in other words, the true center of power is at the periphery of the wheel.

To use a familiar simile, the wheel is like the band or drum of a squirrel cage, in which two squirrels were simultaneously, one in the usual position, the other in the opposite, but with his head down, and with a motion similar to that of a fly walking on the ceiling—both, of course, in continually reversing positions as the wheel turns. It is an application of the simple principle by which, as any one can see, a grindstone may easily be turned by placing the hand upon its surface, while only with considerable muscular exertion a man's hand grasping the shaft can produce the same motion.

The inventor, Mr. Ruset, a Frenchman, resided at Communipaw until quite recently, where he was well known as the author and patentee of several useful minor inventions.

The *Times* says it is expected that a stock company will be formed immediately for the manufacture of the Ruset Engine, whose value for all uses requiring lightness of construction combined with economy of fuel, may be seen by the simple statement that it will give ten-horse power with no more fuel than would be required in a caloric engine of two-horse power, occupying one-fourth of the space, and at a much less first cost.

THE French Atlantic cable opens for business to-day, August 15th. The Western Union Company have erected a line direct to Duxbury from New York to accommodate those who desire transmission by that route.

Messrs. Gray & Barton.

The firm of *Shaw & Barton*, Electricians and Machinists, Cleveland, O., have dissolved, Mr. Shaw having sold his interest in the concern to Mr. Elisha Gray, an electrician well and widely known throughout the West, the new firm being now known as GRAY & BARTON. Mr. Shaw takes charge of the concern at Cleveland, O., as foreman, while the new firm attend to the establishment of a house in Chicago. During the short time the firm of Shaw & Barton has been in operation, we learn that they have met with marked success. It could scarcely fail to be otherwise. Good character, skill, fidelity, enterprise and a wide field, made success certain. We wish our friends ample success.

The Effect of Charcoal on Flowers.

A correspondent of the *Revue Horticole* says, that not long ago he made a bargain for a rose bush of magnificent growth and full of buds. He waited for them to blow, and expected roses worthy of such a noble plant and the praises bestowed upon it by the vender, but when it bloomed all his hopes were blasted. The flowers were of a faded hue, and he discovered that he had only a middling multiflora, stale colored enough. He therefore resolved to sacrifice it to some experiments which he had in view. His attention had been directed to the effects of charcoal as stated in some English publications. He then covered the earth in the pot in which the rose bush was about half an inch deep with pulverized charcoal. Some days after he was astonished to see the roses which bloomed of as fine a lively rose-color as he could wish. He determined to repeat the experiment, and therefore when the rose bush had done flowering he took off the charcoal and put fresh earth about the roots, and waited for the next spring impatiently to see the result of this experiment. When it bloomed the roses were as at first, pale and discolored, but by applying the charcoal as before they assumed their rosy red color. He then tried the powdered charcoal in large quantities upon petunias, and found that both the white and violet colored flowers were equally sensitive to its action. It always gave great vigor to the red or violet colors of the flowers, and the white petunias became veined with red or violet tints; the violets became covered with irregular spots of a bluish or almost black tint. Many persons who admired them thought they were choice new varieties from the seed. Yellow flowers appear to be insensible to the influence of charcoal.

We notice from *Les Mondes*, June 17th, the few but interesting words written by the Rev. Father Secchi, S. J., to M. F. Mazco, at Turin, on electricity:

"I believe that the true theory of electricity will result from the principle that electricity is not a motion (*movement*), but a change of the quantitative and dynamic equilibrium of the ether which constitutes the atoms of the substances, and that the propagation of such a change is brought about by the moving of the ether from one atom to another; this motion shakes, disturbs the ether of the atoms, and thus produces heat."

BEES.—The most curious instance of a change of instinct is mentioned by Darwin. The bees carried to Barbadoes and the Western Islands ceased to lay up honey after the first year. They found the weather so fine, and the materials for honey so plentiful, that they quitted their grave, mercantile character, became exceedingly profligate and debauched, ate up their capital, and resolved to work no more, and amused themselves by flying about the sugar houses and stinging the negroes.

Telegraphers' Mutual Life Insurance Association

ASSESSMENT NO. 8.—ASSESSMENTS RECEIVED.

B. F. Ely,	F. J. Howell,
James Lytle,	Joseph E. Powell,
R. B. Lown,	John A. Wright,
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The Anderson Fund.

We invite a full and generous subscription to the fund for the benefit of the family of Mr. Anderson, of Memphis, whose sudden death we have already recorded. We appeal specially to those who are not members of the Insurance Association to interest themselves in this fund. His associates in Memphis have, with characteristic generosity, contributed a fund of \$140. Let there be an effort to quadruple that sum. Remittances may be addressed to D. R. Downer, Secretary, or to J. D. Reid, 145 Broadway, New York.

The following sums have already been received:

Martin Barth.....\$2	Miss Carrie A. Hinds.....\$1
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Miss Catterfield.....1	C. H. Standliffe.....1
Miss L. H. Snow.....1	Anonymous.....1
John Coyne.....1	

Why do they Die so Fast?

TAUNTON, July 13, 1869.

D. B. DOWNER, Esq., Sec'y.

Dear Sir:—Our association fully demonstrates to my mind the necessity of our examining into the cause of so many deaths among telegraph operators, and although you gentlemen do so much for our welfare I think you can do much more, if you will only give this subject your earnest attention. Is it close confinement to business, combined with excessive labor and extremely long hours of toil; or what is it? If we search the records of other associations of this kind (and there are many) I think we might reach a satisfactory solution, and our duty hereafter is plain before us. If any assistance of mine would be of service to you I would heartily give it as I feel there is a duty we owe to our brother operators. Very truly, yours,

JOHN A. WRIGHT.

The Manufacturer and Builder, edited by John Phin, Esq., is one of the most welcome, largest and best edited journals which enter our sanctum. Almost every article is original, and at least one half of the entire contents is the work of the editor himself. Mr. Phin is a Scotchman, thoroughly posted, a hard worker, discriminating and just.

Chemical action in a definite direction and through a chain of particles produces electricity.

What Chemistry Tells us of Life.

We clip from the *Scientific American* the closing remarks of the eloquent and forcible Faraday address of M. J. Dumas, delivered before the Chemical Society in London, June 17th. It shows that there is a boundary to human knowledge beyond which faith alone can guide:

"If I question the physiologist, on the subject of these millions, or milliards, of compounds, misnamed organic, of which the chemist transforms, reproduces, or creates at pleasure the species, he will reply to the three following questions: Are these compounds living? No! Have they lived? No! Are they capable of living? No!

"If I ask the chemist himself if these compounds belong to mineral chemistry—to the chemistry of raw (brut) substances, he will reply, Yes!

"Organized matter, not capable of being crystallized, but destructible by heat, the only matter which lives, or has ever lived—this matter, a subordinate agent of the vegetating power in plants, of the motion and sensation of animals, can not be produced by chemistry; heat does not give birth to it; light continues to engender it under the influence of living bodies.

"Every organized being is born of a germ; every plant from a seed; every animal from an egg. The physiologist has never seen the birth of a cell, excepting by the intervention, or as the produce, of a mother cell.

"The chemist has never manufactured anything which, near or distant, was susceptible even of the appearance of life. Everything he has made in his laboratory belongs to 'brut' matter; as soon as he approaches life and organization, he is disarmed.

"Thus for a century past, the empirical elements of matter have been recognized and separated; their combinations have been multiplied to infinity; physical forces have been brought back to a common origin—motion—and one has been at pleasure changed into the other; and yet

"Is the intimate nature of matter known to us? No! Do we know the nature of the force which regulates the movement of the heavenly bodies and that of atoms? No! Do we know the nature of the principle of life? No!

"Of what use, then, is science? What is the difference between the philosopher and the ignorant man?

"In such questions the ignorant would fain believe they know everything; the philosopher is aware he knows nothing. The ignorant do not hesitate to deny everything; the philosopher has the right and the courage to believe everything. He can point with his finger to the abyss which separates him from these great mysteries—universal attraction which controls 'brut' matter, life which is the source of organization and of thought. He is conscious that knowledge of this kind is yet remote from him, that it advances far beyond him and above him.

"No; life neither begins nor ends on the earth; and if we were not convinced that Faraday does not rest wholly under a cold stone, if we did not believe that his intelligence is present here among us and sympathizes with us, and that his pure spirit contemplates us, we should not have assembled on this spot, you to honor his memory, I to pay him once more a sincere tribute of affection, of admiration and respect!"

By motion, or arrested motion only, could the phenomena of magnetism ever have become known to us. A magnet, however powerful, might rest forever unnoticed and unknown, unless it were moved near to iron, or iron near to it, so as to come within the sphere of its attraction.

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Journal of the Telegraph.

The Aerial Steam Carriage.

We have at last a description of the "aerial steam carriage" in San Francisco, of which we have heard so much by telegraph. The *San Francisco Times* describes it as follows:

The carriage, which is merely a large working model, is a balloon, shaped like a cigar, both ends coming to a point. It is 37 feet long, 11 feet from top to bottom and 8 feet in width. These are the measurements at the center of the balloon, from which point it gradually tapers off toward either end. Around the balloon lengthwise, and a little below the centre, is a light framework of wood and cane, strongly wired together and braced. Attached to this frame, and standing up as they approach the front of the carriage, are two wings, one on either side. They are each five feet wide at a little back of the center of the carriage, and do not commence to narrow down until they approach the front, where they come to a point. These wings are made of white cloth fastened to a light framework, which is braced securely by wires. The main frame is secured in place by means of strong ribbons, which go over the balloon and are attached to corresponding portions of the frame on the other side. To the frame at the hind part of the carriage is attached a rudder or steering gear, which is exactly the shape of the paper used in pin darts, four planes at right angles. This, when raised or lowered, elevates or depresses the head of the carriage when in motion; and when turned from side to side guides the carriage as a rudder does a boat. At the center and bottom of the balloon is an indentation, or space left in the material of which it is built, in which the engine and machinery are placed on framework. The engine and boiler are very diminutive specimens but they do their work handsomely. The boiler and furnace are together only a little over a foot long, four inches wide and five or six inches in height. Steam is generated by spirit lamps. The cylinder is two inches in diameter and has a three inch stroke. The crank connects by means of cog wheels, with tumbling rods which leads out to the propellers, one on either side of the carriage. The propellers are each two bladed, four feet in diameter, and are placed in the framework of the wings. The boiler is made to carry eight pounds of steam. When not inflated, the carriage weighs eighty-four pounds. The balloon has a capacity of 1,360 feet of gas. When inflated and ready for a flight it is calculated to have the carriage weigh from four to ten pounds.

An engineer's private trial trip was first made in the presence of the constructing engineers, several of the shareholders of the Aerial Steam Navigation Company, a number of the employees and residents in the neighborhood. The morning was beautiful and still—scarcely a breath of air stirring. The conditions were favorable to success. The gasometer was fully inflated, and the model was floated out of the building. In six minutes steam was got up—the rudder set to give a slight curve to the course of the vessel—and the valves opened. With the first turn of the propellers she rose slowly into the air, gradually increasing her speed until the rate of five miles an hour was attained. The position of the rudder caused her to describe a great circle, around which she passed twice, occupying about five minutes each time. Lines had been fastened to both bow and stern, which were held by two men, who followed her track, and had sufficient ado to keep up with her at a "dog trot." As she completed describing the second circle, a pull given to the head line, unintentionally, caused the rudder to shift to a fore-and-aft position when the model pursued a straight flight

about a quarter of a mile; she was then turned round, and retraced her flight to the point of departure; whence, being guided, she entered the building. The fires were drawn, and the first extensive flight of a vessel for aerial navigation was accomplished. The total distance traversed was little over a mile.

The following dispatch was sent to New York, recently:

"I lent you one year ago from to-day four dollars and eighty-five cents. If you have not had it long enough, please keep it one year longer."

We give the answer—

"Had forgotten it, and hoped you had. Let her run another year."

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II. Its officers shall consist of a Treasurer and Secretary.

III. There shall be an Executive Committee of five, of which the Treasurer and Secretary shall be members, who shall exercise a general supervision over the affairs of the association and decide all questions which may arise.

IV. No officer shall, at present, receive any remuneration for his services.

V. No expense of any kind will be allowed except for expenses of incorporation, stationery, postages, circulars, certificates and advertising.

VI. Any person, regardless of sex or class, may become a member of this association provided they are or have been employed in the telegraph business and subscribe to these articles, and are unobjectionable to the Executive Committee.

VII. The initiation fee shall be one dollar and fifty cents, one dollar of which shall go to the contingent fund, and the balance to the expense account.

VIII. Upon the death of a member the Treasurer shall immediately, on application by the proper parties, pay over to them the fund which is on hand for that purpose, that is, the whole of the contingent fund on hand from the previous assessment.

IX. It shall be the duty of each member of this association to leave in writing, the name of his or her executor or heir, failing to do which the amount of insurance shall be used, first, to pay the expenses of burial, and the balance to be given to such relations of the first degree as are dependent on the deceased, or should there be none such, to be subject to the disposition of the Executive Committee for the benefit of the association.

X. Immediately on the decease of a member, the Treasurer shall assess each remaining member \$1, payable within thirty days of the issue of the assessment call, neglecting to pay which during the time specified, the delinquent shall forfeit all claims to membership or the benefits of the association, and he shall be restorable only on the unanimous vote of the Executive Committee and the payment of dues.

XI. A meeting for the election of officers shall be held annually during the first week in November in each year, who shall be elected to serve for one year or until their successors are elected. In case of the death of a member of the Executive Committee the remaining members shall have the power to fill the vacancy until the time of the annual election.

XII. Special meetings of the association may be called upon the written request of twenty-five members.

XIII. It shall be the duty of the Treasurer to receive all moneys, sign receipts, and pay bills and claims when audited by the Executive Committee. He shall give suitable bonds for an amount equal to twice the amount of money on hand at the time of his election.

XIV. The Secretary shall keep the records of the association, maintain such correspondence as is necessary with members, and issue such notices as may be necessary. He shall also aid the Treasurer in all matters in which he may require assistance.

XV. Certificates of membership shall be given, signed by the Treasurer and Secretary.

XVI. The books of the association shall always be open for examination by any member thereof.

D. R. DOWNER, Secretary. J. D. REID, Treasurer.

W. O. LEWIS,
A. S. BROWN,
W. H. HILL,
Executive Committee.

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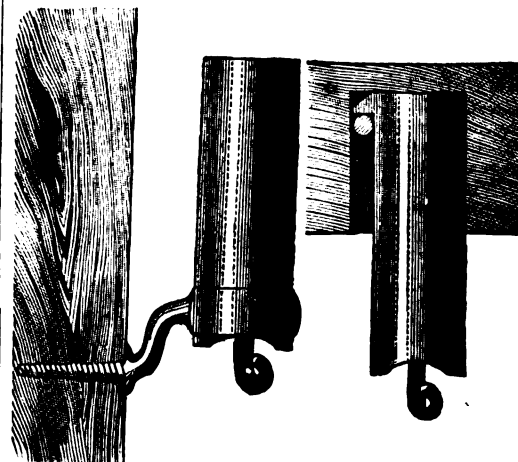
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WHOLE NO. 47.

OPERATING THE ATLANTIC CABLES.

(From Pope's Modern Practice.)

THOMPSON'S REFLECTING GALVANOMETER.—This is the most delicate apparatus of this kind which has yet been devised, and is for this reason employed in operating the Atlantic cables.

The special feature which distinguishes this galvanometer from an ordinary one, is the extreme lightness of the magnet or needle, and the delicacy with which it is suspended in a horizontal position. Instead of an index needle, to render the motions of the magnet visible to the eye, a reflected ray of light is made use of, which, of course, can be made of any required length. This arrangement is of great practical value in measuring faint electrical currents, too feeble to be indicated by any other apparatus. It is especially valuable in submarine telegraphing, because it permits the use of such extremely low battery power.

When the insulation of a cable is in the slightest degree defective at any point, a current of intensity has a tendency to aggravate the fault, and to corrode and eat away the conductor by chemical decomposition, at the point where the escape occurs, finally destroying the communication altogether.

Fig. 59 is a side elevation of this instrument, showing a section through the galvanometer coils and the outer case containing them. Fig. 60 is a cross section through the coils, showing the magnet, technically termed the needle. Similar letters refer to like parts in both figures. The magnet *A* is a small bar of steel, one half inch in length and one tenth of an inch square, cemented to the back of a very thin circular glass mirror, *a*. The mirror is suspended in a brass frame, *B* (Fig. 61), by an exceedingly delicate silk fibre, and is adjusted in height by the screw *b*. This frame slides into a vertical groove left in the center of the coil, dividing it into two parts. The coil and mirror are enclosed in the brass case *D*, this case having pieces of glass let in wherever necessary, to permit the passage of light. The object of this arrangement is to prevent the mirror and its attached needle from being disturbed by currents of air.

A narrow pencil of luminous rays from the lamp, *E*, passes through the opening, *F*, which is capable of adjustment by the slide *G*. This pencil of light, passing through the lens, is reflected by the mirror back through the lens upon an ivory scale at *I*, as shown by the dotted lines. The scale is horizontal, extending to the right and left of the center of the instrument,

the zero point being exactly opposite the lens. The luminous pencil is brought to a sharp focus upon the scale by a sliding adjustment of the lens *M*, in the tube *N*. When the needle is at rest in its normal position, and no current is passing, the spot of light which serves as an index will remain at zero on the scale.

The operator reads the signals from a point just in the rear of the magnet and coils, the light of the lamp being cut off by the screen *Y*, so that he only sees the instrument, and a brilliantly defined image of the slit upon the white ivory scale just above, which is kept in deep shadow by the screen *Y*. A very minute displacement of the magnet gives a very large movement of the ray of light on the scale *I*, the angular displacement of the ray of light being double that of the needle.

It is obvious that the ray of light from the needle

needle, in such a manner that it can be turned horizontally so as to follow the movements of the needle, or be removed nearer to or further from it vertically. If it is placed with its south pole over the north pole of the needle, it will add its directive force to that of the earth, and by holding the needle more powerfully in its position, will lessen its sensitiveness. The nearer the magnet approaches the needle the greater will be its power over it, and it can be arranged so as to hold the needle in any desired position. If it is placed in a reverse direction, so as to repel the needle instead of attracting it, it will lessen the attractive force of the earth so as to increase its sensitiveness, and in a certain position will render the galvanometer astatic. When the magnet is too near the needle it repels to the full extent of the scale. If it is raised upon the supporting rod the repelling effect will decrease, until, at a certain distance from the magnet,

the spot of light on the scale can be held at zero. The greatest sensibility is obtained at the point at which the slightest lowering of the magnet upon the rod will again repel the needle to the full extent of its swing.

An improvement in this instrument, made by Mr. C. F. Varley, consists in giving the mirror a concave form, silvered upon the back, and thus dispensing with the use of the lens above described.

MODE OF WORKING THE ATLANTIC CABLES.—Very little has been made public in regard to the precise method employed in signaling through the Atlantic cables. As before

will be reflected to the right or left of zero on the scale, according as the deflection is produced by a positive or negative current. The Morse alphabet is used for signaling through the Atlantic cable, deflections on one side of zero indicating dots, and on the other side dashes.

It will be observed that the end, and not the broad part of the flame of the lamp, is presented to the slit *F*, which is also arranged to receive the brightest part of the vertical section of the flame.

The galvanometer coils, *R*, consist of many thousand convolutions of fine insulated copper wire, and they are insulated from the case, *D*, by a disc of hard rubber, *T*, to which they are fastened.

The instrument is usually provided with a directing magnet, by which its sensitiveness may be varied to a great extent. This magnet is in the form of a bar, slightly curved, and is of considerable power. It is placed upon a vertical rod passing through its center, which is fixed above the coil immediately over the

remarked, the reflecting galvanometer is employed as a receiving instrument, and by employing deflections on one side of zero to represent dashes, and those on the other side dots, the Morse alphabet is found to answer the purpose admirably. It is said that the two cables have been looped in a metallic circuit without ground connection, and that they have also been worked separately with and without condensers. The latter method is made use of in order to avoid the disturbances generated by what are known as "earth currents."

Different parts of the earth and sea are found to be at different electric potentials. One part is electro-positive or electro-negative to another. That is to say, there is the same difference between the two parts of the earth that exists between the two poles of a battery. If, therefore, these two points are joined by a wire, a current will flow through that wire as if from a battery, and this current is termed an earth current, to distinguish it from the current generated by an ordi-

