

TELEGRAPH AGE

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NEW YORK, MARCH 1, 1908.

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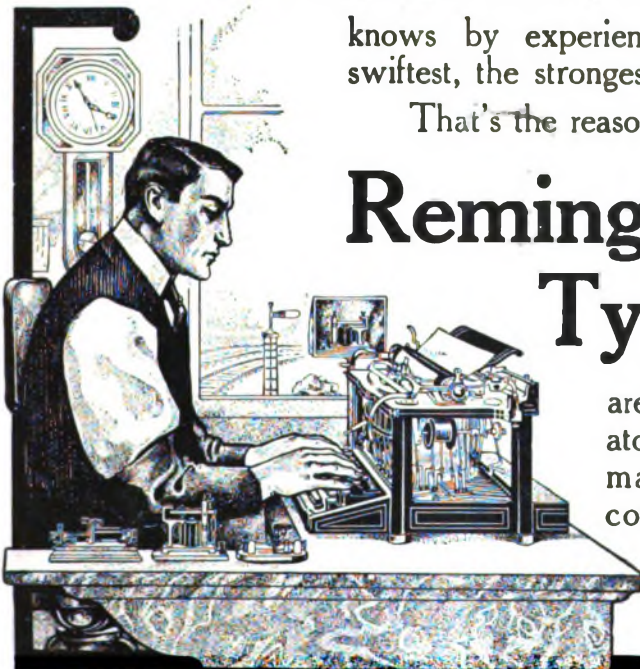
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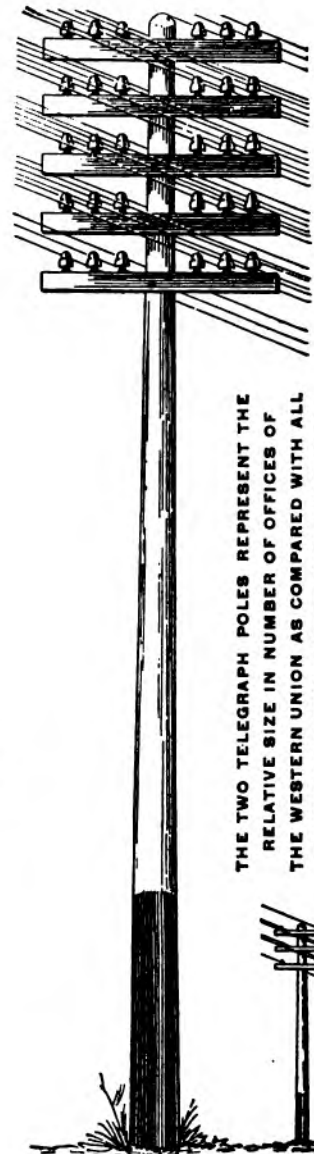
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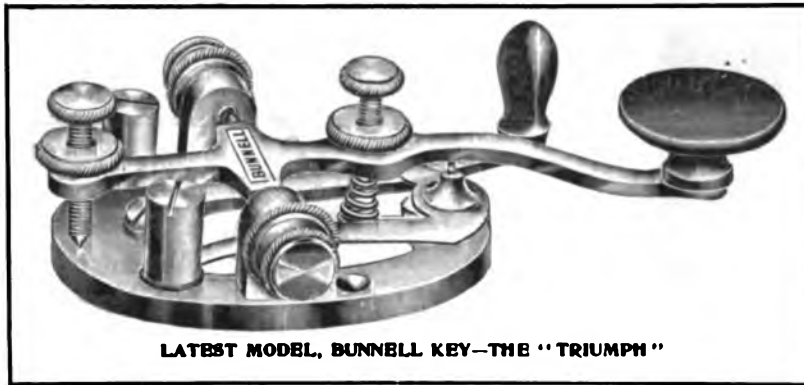
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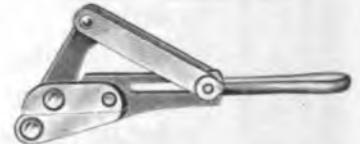
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No. 5.

NEW YORK, MARCH 1, 1908.

Twenty-fifth Year.

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SOME POINTS ON ELECTRICITY.

How to Become a Wire Chief.

BY WILLIS H. JONES.

Part V.

(Concluded.)

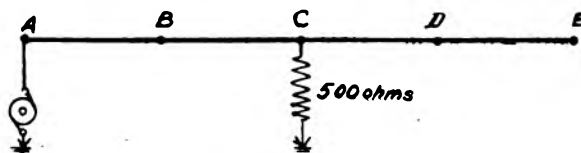
Having described in the preceding installment of this article the usual method of measuring wires for conductivity and insulation by means of the voltmeter, and also by a combination of the voltmeter and ammeter, it is in order to state that the wisdom of endeavoring to determine the actual distance to a ground by dividing the resistance so obtained by the known resistance per mile of the conductor, is somewhat open to question unless extreme precaution is taken.

If the "ground" possesses no appreciable resistance of its own its location will not be far from the point indicated by the computation. If, however, the "ground" is imperfect and possesses a great resistance, its location must obviously be at a point more or less remote from that indicated by the quotient thus obtained. To demonstrate this fact let us, for the purpose of clearness, take an exceptional case. Suppose we have a wire one hundred miles long, the known resistance of which is ten ohms per mile, or one thousand ohms to distant terminal, which is grounded permanently at that point (see accompanying diagram).

Now, if such a wire should be accidentally "grounded" at its middle point, C, with an imperfect earth contact possessing, say, five hundred ohms, the joint resistance of the "ground" and that of the five hundred ohms in the conductor between C and E would be two hundred and fifty ohms. The meter test would indicate that the resistance to such ground was apparently seven hundred and fifty ohms distant, which latter, divided by ten, the known resistance per mile of the conductor, would place the fault at D, seventy-five miles from the testing station, whereas the actual distance is but fifty miles.

Again, in the event that the wire was broken and consequently open between C and E in addition to being grounded, the resistance of the circuit would be one thousand ohms, the same as that of the total resistance of the wire under normal conditions. This would place the "ground" apparently at the distant terminal, fifty miles out of the way.

Of course, where the conditions are such as given in the first example an experienced wire chief would treat it as a very heavy escape and would



probably not attempt to locate it by the method given. But where such "ground" is sufficiently solid to deceive, yet treacherous enough to mislead, it is obvious that the location indicated must be wrong in a measure governed by the resistance of such "ground."

The only reliable way to determine the true distance in miles to such faults is by means of the "Varley test loop methods," described in a previous issue of this journal, or one of the other well-known methods which render the resistance of such "grounds" negligible. As a matter of fact, it is better policy to simply locate the "ground" between two stations in the usual way than bother with the meters. In these days stations are not, as a rule, more than a few miles apart at most. That fact will enable one to locate the fault sufficiently close for the lineman's guidance. The object in calling attention to errors which may result from figures obtained by the formulas given when applied to telegraph circuits is not to depreciate the accuracy of such formulas, but to emphasize the importance of fully understanding the existing conditions in a circuit before using them.

COMBINATION IRON AND COPPER CIRCUITS.

It seems to be the prevailing opinion among telegraphers generally that a circuit composed of part iron and part copper is for that reason alone necessarily an inferior wire.

No doubt this impression has grown out of the fact that as a rule when a copper wire is patched with an iron wire the efficiency of the original all-copper circuit is reduced owing to the greater resistance of iron as a conductor of the current. Also, for the reason that as iron wires are fast becoming obsolete for telegraphic purposes the present wires used in such patches are usually old and full of high resistance due to rust and joints from numerous repairs. The mere junction of iron and copper in itself should make no appreciable difference provided the total resistance of the circuit thus patched is not altered. In fact a circuit may be actually improved by the combination should the iron portion substituted happens to be a big four-gauge conductor and possess less resistance than the copper length it replaces.

The question may be disposed of by the statement that whenever a wire is patched with a conductor that is better than the portion thrown out, the circuit will be improved. If the substitute is inferior the efficiency of the circuit will be less. The consistency of the conducting wire has nothing to do with it. It is a question of ohmic resistance and insulation.

HOW TO DETECT THE PRESENCE OF A REPEATER IN A CIRCUIT—THE EFFECT PRODUCED BY THE PRESENCE OF MAGNET COILS IN MULTIPLEX CIRCUITS.

After the broker offices close for the day it is customary to restore their wires to regular service. Such wires, as a rule, are worked single in order to include intermediate or side-line stations. For this reason as well as others many leased circuits are equipped with repeaters at one or more points. When such is the case, before the wires can be restored to multiplex circuits the repeaters and all single-line relays must first be removed. The relays if allowed to remain in circuit will create a static "kick" on the multiplex apparatus which is difficult to eliminate. If a relay is near the middle of the circuit it is not always absolutely fatal to the operation of the duplex, though necessarily harmful, but one relay alone inserted near the terminal battery, say, at the main wire switchboard, will in nearly every case make it impossible for the quadruplex attendant to compensate for the kick created by the coils. The condenser will seem to supply alternately, either too much or too little compensating energy regardless of which side of a given point a peg is moved. When a condenser acts in this manner the presence of a forgotten relay in the circuit should at once be suspected.

To determine whether a repeater is still connected in a leased circuit where the repeating station cannot be raised promptly, ask the ter-

minal station to ground the wire in his switch-board, and then ground the home terminal in the same manner. If the wire then shows no appreciable trace of current it is safe to conclude that the repeater has been removed and the wire cut through straight. If, however, each terminal feels an incoming current under these circumstances the repeater is undoubtedly still intact, as each terminal will get a current from the repeater station.

(Concluded.)

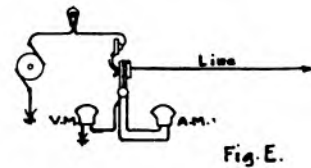
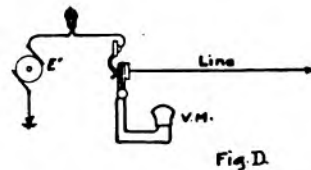
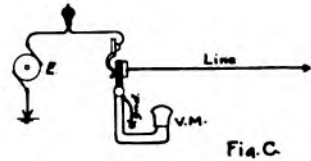
In describing the formula $X = V R \left(\frac{E}{E'} - 1 \right)$

in the previous article of this series, issue of February 16, a better way perhaps to convey a clearer meaning of a definition of the factors E and E' would be as follows:

E = the deflection of the voltmeter needle when the connection with the battery is made, as in Fig. C, or the "first reading."

E' = the deflection when the connection is made as in Fig. D, the Vm being in series with the line.

While discussing this subject it is well to explain that from results obtained by the first



formula the resistance of the battery, or dynamo lamp resistance, approximately two ohms per volt, should be subtracted from the result.

At the same time the last paragraph of the same article, referring to the formula $\frac{E}{C} = R$, may

also be made clearer by a reference to the accompanying diagram, Fig. E. In this case the readings of the Vm and Am are taken simultaneously, while the full volume of current is flowing, and as the voltage is taken at a point between the lamp and the line the resistance is eliminated from the calculation.

Recent Telegraph Patents.

A patent, No. 877,914, for a telegraphic transmitter, has been granted to Patrick B. Delany, of South Orange, N. J. The local battery circuit contains two electromagnets so arranged that when one is energized its armature closes the circuit of the second and the armature of this one then opens the circuit of the first. The local magnets thus send a succession of impulses over the line.

A patent, No. 877,915, for a telegraphic transmitter, has been awarded to Patrick B. Delany, of South Orange, N. J. A counterbalanced circular oscillator is set in motion by the key lever and in turn governs contacts so as to send a series of dots over the line automatically.

A patent, No. 878,963, for telegraphy, has been taken out by Isidor Kitsee, of Philadelphia, Pa. In telegraphing with true reversals the transmission line has a main battery and each station is equipped with a local battery, a transmitting key, a polarized receiving instrument and means to connect the line either directly or with the interposition of the local battery to the key.

A patent, No. 879,963, for telegraphy, has been issued to I. Kitsee, of Philadelphia, Pa. Arrangement for telegraphy over lines of comparatively large capacity.

The following patents have expired:

Patents Nos. 446,424 and 446,425, for a system of telegraphy, held by R. G. Brown, of Brooklyn, N. Y.

Personal.

Lee De Forest, of wireless telegraph fame, was married, on February 25, to Miss Nora Stanton Blatch, the daughter of Mrs. Harriet Stanton Blatch, and granddaughter of the late Mrs. Elizabeth Cady Stanton.

Sir William Van Horne, of Montreal, chairman of the board of directors of the Canadian Pacific Railway, the well-known old-time telegrapher, was in New York a few days ago, subsequently sailing hence to Europe.

Oscar Moll, general manager of the Deutsch-Atlantische Telegraphengesellschaft, of Cologne, Germany, in renewing his subscription recently to this journal took occasion to say: "We have been very pleased to notice the contents of *Telegraph Age*, which has been improving from year to year, and consider it one of the best educational papers for telegraphers and electricians. We shall not fail to recommend it when occasion requires."

The sixty-first birthday of Thomas A. Edison was celebrated on the evening of February 11, in Newark, N. J., by a dinner tendered him by members of his staff. It was an informal affair, and all the more enjoyable on that account. William E. Gilmore, general manager of the vari-

ous Edison interests, presided as toastmaster, and in proposing a standing toast to Mr. Edison, said: "Let us drink to the 'Old Man,' as we lovingly know him—to your very best health, sir."

E. T. Moore, Western Union Manager at Memphis.

Edward T. Moore, who, as previously announced, has been appointed manager of the Western Union Telegraph Company at Memphis, Tenn., where he succeeded W. A. McKeever, resigned, is a type of that portion of the younger element in the service who, endowed with intelligence and resolute with commendable purpose, are showing diligence and application in their work. Such men are in demand and are bound to win success. Mr. Moore was born at Belleville, Ill., August 9, 1875. He entered the telegraph



EDWARD T. MOORE,
Manager Western Union Telegraph Company, Memphis, Tenn.

business in the employ of the Postal Telegraph-Cable Company at a branch office in Denver, Colo., in November, 1892, afterwards serving the same interests as an operator at Colorado Springs. In October, 1893, he entered the Western Union service at Anaconda, later returning to Colorado Springs and Denver. As an operator he developed quickly and became expert at the key. He was a close observer and student. At the same time he showed qualities of executive ability which resulted subsequently in his being selected for positions of managership. These were filled in sequential order at the following points: Creede, Victor and Cripple Creek, Colo.; Albuquerque, N. M.; Boise, Idaho; Salt Lake City, Utah; Boulder, and Leadville, Colo.; Vicksburg, Miss.; Lexington, Ky., and Knoxville, Tenn. From the latter place he was promoted to the Memphis office on January 8.

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Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer of the company, is absent on a tour of inspection in the west, and will visit its principal cities.

Horace E. Roberts, superintendent of supplies, was in Chicago last week on business connected with the service.

J. W. Reed, manager of the Philadelphia office, was raised to the third degree of Masonry on February 18. Numerous telegraph friends were present on the occasion to witness the ceremony.

A son was born to Mr. and Mrs. Ralph E. Bristol on February 18. Mr. Bristol is the storekeeper of the company in this city, and is the son of Charles H. Bristol, general superintendent of construction.

The company is equipping a new office in Springfield, Mass., into which it will remove April 1.

The Barclay printer continues to demonstrate its usefulness, meeting all demands and fulfilling all expectations. It is being installed as rapidly as circumstances of manufacture will permit. The following comprise all circuits now equipped with this printer: Six between New York and Chicago; two, New York-St. Louis; three, New York-Boston; three New York-Philadelphia; two, New York-Pittsburg; two, New York-Buffalo; one, New York-Washington; one, New York-Cleveland; one, New York-Atlanta; one, Philadelphia-Pittsburg; one, Philadelphia-Boston; one, Buffalo-Boston; one, Buffalo-Pittsburg; one, St. Louis-Kansas City; two, St. Louis-Chicago; one, Chicago-Boston; one, Chicago-Pittsburg; one, Chicago-Buffalo; one, Chicago-Philadelphia; one, Chicago-Cleveland; two, Chicago-Kansas City.

The American District Telegraph Company, of Washington, D. C., has been incorporated under the laws of Virginia, with a capital stock of \$10,000. Robert C. Clowry, George H. Fearons, Belvidere Brooks, John C. Barclay, C. F. Patterson, of New York, and J. P. Altberger, of Philadelphia, are the incorporators.

RESIGNATIONS AND APPOINTMENTS.

George H. Nicoll, manager at Council Bluffs, Iowa, has been promoted to the position of chief clerk in the office of J. C. Nelson, superintendent at Omaha, taking the place of H. M. Goulding, who has retired to engage in other business. Succeeding Mr. Nicoll in the Council Bluffs office is O. T. Welch, who has been employed in the Omaha office. Mr. Nicoll has been in the employment of this company nearly thirty years.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Jesse Hargrave, superintendent at Birmingham, Ala., was in town a few days since, coming north for the purpose of removing his family to his new southern home.

Mr. E. W. Collins, superintendent at Cleveland, O., has so far recovered from his recent protracted illness as to be able to spend a portion of each day at his office.

Mr. W. H. McCollum, formerly superintendent of construction, New York, now attached to the office of vice-president Charles C. Adams, is ill with pneumonia at Gallup, N. M., whither he had gone on business connected with the service.

Manager F. F. Norton, of the operating department, who has been ill, is once again at his desk.

The Commercial Union Telegraph Company held its annual meeting at Portland, Me., on February 12, when the following officers were elected: Edward J. Nally, president, and Charles P. Bruch and Charles C. Adams, vice-presidents, all of New York; Clarence C. Ramsay, secretary and treasurer, of Portland. The report showed the company to be in good condition.

F. W. Sprong, cashier of the office at Cincinnati, has been appointed manager, vice C. E. Sawtelle, resigned to enter other business. Mr. Sawtelle was regarded as one of the brightest men in the telegraph business. Mr. Sprong filled the position of cashier for two years, and for twenty-three years has been a faithful employee of the company.

The Government Wireless Telegraph System in Alaska.

General James Allen, chief signal officer of the army at Washington, in a letter to Telegraph Age, dated February 25, respecting the extension of the government wireless telegraph system in Alaska, writes with much detail of statement, as follows:

"It will probably be of interest to the readers of Telegraph Age to know that a wireless system is contemplated in Alaska with which it is hoped that wireless communication can be maintained between Nome, on the western coast of Alaska, and the following stations: Fort Gibbon, Circle City, Fort Egbert, Fairbanks and thence to the proposed naval stations at Valdez, and at Dutch Harbor on Unalaska Island in the Aleutians. It is hoped that the chain of naval stations—Valdez, Sitka and Cape Flattery—will connect the Alaskan system with the United States.

"The stations at Nome and Fort Gibbon will be of ten kilowatt power, while the stations at Fort Egbert, Circle City and Fairbanks will be of three kilowatt. The naval stations at Valdez, Dutch Harbor and Sitka will be probably even larger than either of the sizes named.

"The distance from Nome to Fort Gibbon is approximately the same as that from Fort Gibbon to Valdez, namely, 450 miles, while it is thought that Fairbanks, Circle City and Fort Egbert will be within easy communication with the smaller power stations, as the distances are not over one hundred and fifty miles. These

stations will not only serve as alternatives to the existing land and cable lines in case of breakdown of the latter, but they will also be useful to establish wireless communication by means of smaller stations at various mining camps within the range of their operation. The station at Dutch Harbor, in the Aleutians, is within comparatively close range of all ships passing between San Francisco or Seattle and Japan, at the most northerly part of the Great Circle route.

"The Signal Corps wireless sets on the transports between San Francisco and Manila are of only three kilowatt power, but on at least one occasion they have operated over a distance of 2,200 miles with Sitka, and it is stated that they expect usually to open communication with the Mare Island station at San Francisco when within 1,000 miles thereof."

The Cable.

Cable communication was interrupted February 26, with:

Venezuela Jan. 12, 1908.
Hayti Jan. 18, 1908.

All offices closed to International traffic except Cape Hayti, Mole St. Nicholas and Port au Prince.

Ahvaz, Persia Jan. 26, 1908.
Messages must be addressed "Ahvaz, Post Bushire," until further notice.

Madura Island (Dutch East Indies) Feb. 3, 1908.
Sitka-Valdez cable interrupted Feb. 14, 1908.

No less than fifty vessels are constantly employed in repairing the submarine telegraph cables of the world.

A Reported New South American Cable Project.

The story published in the Financial News, London, on January 30, to the effect that a new South American cable under Reuter auspices, and to be laid by the India Rubber, Gutta-Percha and Telegraph Works Company, Limited, is denied so far as the latter company is concerned as unauthorized and incorrect. The story as printed stated:

The prospectus is in circulation of the Caribbean Anglo-Colombian Cable Company, Limited, which states that it has acquired the exclusive privilege—granted by the government of the Republic of Colombia for the period of fifty years—for the laying and working of submarine cables, or any other means of telegraphic communication between the Atlantic coast of Colombia and any point situated outside its jurisdiction already supplied with telegraphic service. Under this concession the India Rubber, Gutta-Percha and Telegraph Works Company, Limited, will at once proceed to lay a cable between Puerto Colombia (Savanilla) and Kingston (Jamaica). At this latter point it will connect with the lines of the Direct West India Cable Company, Limited, with whom it is added that favorable working arrangements have been made.

The concession carries with it the guarantee by the Colombian government of a half-yearly income of £14,384, payable monthly. It appears, moreover, that the India Rub-

ber, Gutta-Percha and Telegraph Works Company, Limited, have agreed to provide the company with the amount necessary to make the two first payments in respect of the interest on the first and second debenture stock and the sinking fund for the redemption thereof, and to make certain other payments to the company, so that the due service of the debenture stock during the period of construction is likewise assured. The concession also confers on the company the right of establishing, in agreement with the Colombian government, telephone lines from Bogota to Medellin, via Honda and Manizales, and from Manizales to Cali, via Cortago and Palmira, and to put these towns in communication with other places in the Republic. The government has undertaken to transmit free of charge, by its telegraph lines, all cables sent from abroad to places in the Republic in communication with such lines and vice versa.

The Caribbean Anglo-Colombian Cable Company, Limited, is to have a capital of £200,000, divided into ordinary shares of £1 each. There will also be £110,000 six per cent. first mortgage debenture stock and £50,000 six per cent. second mortgage stock. The directors of the company are stated to be: Baron George de Reuter, director of Reuter's Telegram Company, Limited; Albert Pam, director of Marmite Food Extract Company, Limited; Hon. Arthur Stanley, M. P., director of Buenos Aires and Pacific Railway Company, Limited, and Francis Minchin Voules, alternate director of the Para Electric Railways and Lighting Company, Limited, all of London.

It would appear that the carrying out of such a scheme as here presented would be a direct violation of the rights accorded to the Central and South American Telegraph Company by the Colombian government. When the information relative to the proposed new company reached Mr. Scrymser, president of the Central and South American Telegraph Company, he sent the following cablegram to the India Rubber, Gutta-Percha and Telegraph Works Company, at London:

Your memo January 31 received. Fernandez agreed sell his concession to our company for ten thousand pounds subject condition he have large rakeoff annual subsidy for collecting same from government. Consider payment subsidy extremely doubtful because interest Colombian government bonds reported in arrears and several subsidized Colombian railroads have prior lien of Colombian Custom House receipts. Note fifty cents is rate over cable. Colombian traffic never exceeded sixty six thousand dollars a year. Communication will be dependent on single cable from Savanilla to Halifax and no repair steamer on line. Have notified Colombian government if it discriminates against our company via Buenaventura company will close office there. Colombian government assures company Bogota Buenaventura line will be maintained and there shall be no discrimination. If we should make Colombian rate fifty cents Caribbean company would have to rely exclusively on doubtful subsidy for income. Am surprised that men of prominence should support such speculative scheme as Caribbean company.

The English Telegraph Construction Bill provides that, where a landowner refuses to give consent to the placing of telegraph poles along the high road, the postmaster-general may appeal to a county court judge and the railway commission. Power is also given to the postmaster-general to carry wires over the corners of fields and to lop trees which interfere with the lines, and he may, by provisional order, gain access to land barred by an unreasonable landowner.

The Telepost System.

Patrick B. Delany, the well known telegrapher and inventor, read a paper before the Franklin Institute, Philadelphia, on January 15, last, in which the telepost system of automatic or machine telegraphy, the invention of Mr. Delany, was discussed at length. He said in part:

"As you all know about the ordinary Morse system, comprising the relay, sounder and key, it will be easy to understand the modifications by which it is proposed to improve Morse working, to the extent of quadrupling its present message capacity, whether the wire be used for simplex, duplex or quadruplex transmission. In these days it is hardly worth while, however, to include the Morse quadruplex in any practical estimate, as its day is about done, owing to increasing underground construction and inductive interferences from power wires. Wherever operable, however, the ratio of gain will hold.

"The president of the Western Union Telegraph Company stated publicly last April that ninety-nine per cent. of the messages handled in this country were still transmitted by the old-fashioned Morse key, at a speed averaging seventeen messages an hour, and stated also that this was considerably less than the speed of several years ago. Allowing thirty words for each message, including address, date and signature, this shows an average of nine words per minute per circuit. Thus it seems that while the transfer of energy over a wire in another department of electricity has been increased from a few hundred volts to seventy-five thousand within the last twenty years, the transfer of words has fallen off during the same period, and is now about one-fortieth of what a wire is able to convey.

"Up to a few years ago there was strong opposition on the part of telegraph companies to the preparation of messages on tapes preliminary to their transmission, but it is now conceded that in no other way can the speed of a circuit be appreciably increased, and the perforated tape is coming into use even for unimportant advances in telegraphy.

"Four operators may be employed in perforating tapes by Morse key at the rate of twenty-five words per minute each, and the product of their united work sent through the mechanical transmitter and reproduced on a perforated tape at the distant station. This tape is then distributed among four local circuits where a perfect reproduction of the original characters are ticked off on the sounder and copied on the typewriting machine by the operator, just as if the characters were coming over the wire from the operator's key direct. As a matter of fact, the original manipulation of an operator in preparing the message is greatly improved by the perforating process, since all impulses, whether regularly or imperfectly made by the operator's key, make the same sized hole in the tape. The impulses over the line must therefore be all uniform. Of course,

the variations in length of dashes or spaces will be faithfully duplicated on the receiving tape, but the evenness of impulses passing over the line from the uniform perforations greatly improves the general quality of the work. Obviously, the original preparation of the message and the transcription by sound may be carried on at any rate that the operator is capable of perforating or reading by sound. For instance, a keyboard Morse transmitter can be used for perforation at fifty words per minute, there being no interruptions incidental to a line, and no operator at the distant end to limit manipulation by the perforating operator. Similarly, the operator reading by sound from the reproduced tape at the receiving station may regulate the speed of his tape to any speed that he is capable of reading and working his typewriter, and may confirm any doubtful word by looking at the perforation. Of course, transcription may be done by reading from the tape direct by those not proficient in reading by sound.

"An inexperienced operator at some way station may perforate ten words per minute, the message goes over the line at 100 words per minute, and is transcribed by sound, locally, at the receiving station at twenty-five words per minute. Ordinarily, if this message was sent directly over the line the entire use of the wire would be monopolized by the slow operator.

"For through business, New York to San Francisco, for instance, a tape can be reproduced in Buffalo and used for retransmission into a Chicago circuit, where another reproduction can be used for transmission to Denver, then again reproduced at Salt Lake, and finally at San Francisco, at one hundred words per minute, as against an average of about twelve words by the present Morse method, using five or six automatic repeaters. Instead of perforating tapes, repetition may be effected by the movement of the perforating levers, or perforation and repeating may be done simultaneously at any station. Duplexed, this system would yield two hundred words per minute in perfect Morse, and without the slightest deviation from the regular Morse method, the sender working his key, and the receiver copying by sound, while the message capacity of the duplexed wire is increased from about forty words per minute to two hundred.

"A most important application of this system will be for the distribution of press news. Drop copies can be made at one hundred words per minute at thirty or forty way offices, either perforated on a tape for operation of a local sounder at any speed desired, or recorded in plain dots and dashes for deliberate transcription by those who cannot read by sound. A linotype operator knowing the Morse code will be able to compose directly from the tape. The reproduced perforated tapes may be used for re-transmission over other circuits, so that a news despatch perforated in New York may be distributed all over the coun-

try, and newspapers now too poor to buy press matter may be supplied at a nominal charge.

Coming now to the system of rapid automatic telegraphy or the "Telepost," which records one thousand words per minute in plain Morse characters, the electrostatic capacity of a line is its capacity to hold current, and this capacity has to be satisfied before a signal can be manifested at the distant station, and the charge left in the wire after the signal has been delivered must be discharged to ground or neutralized by a reverse current before another signal can arrive. The electro-static capacity of a wire is increased by its envelope, whether it be air, or insulating material. The static discharge after each impulse runs out at the ends of the wire, about two-thirds coming back to the sending station, and one-third following the signal impulse on to the receiving station. The portion coming back is an obstacle in the way of the next signal, and the portion running out has the effect of elongating the signal which it follows, and if the signals are too close together and the wire long enough, they will appear on the recording tape as a solid line without definition, so that letter p, comprising five dots, would look like letter l, which is a long dash. The remedies for this very troublesome obstacle in the past have been transmission of reverse impulses after each signal, so as to neutralize the static discharge in the line, or connecting the line to ground after each signal, so as to let the static run out. Another way was to put artificial leaks or partial grounds at different points along the line and work over them by surplus power. The first of these remedies is the only one that is practically effective, as the static discharge can be neutralized in about one-tenth of the time taken for its discharge to ground.

"In this system three very important factors are combined for obtaining the best result from a telegraph circuit: First, a positive current sufficiently powerful to make the record electro-chemically in the shortest possible time; second, a regulable source of electro-static capacity for use where the normal capacity is not enough to make a dash; third, adapting the power of the negative current to the electro-static capacity of the line, normal, or artificially augmented, to give the record the maximum plainness consistent with safe separation of the characters, so as to make transcription easy and accurate.

"It is thought that in this organization is reached the highest signaling efficiency for all conditions of lines, overhead, underground, long or short. There are no electro-magnets to energize, no armature to actuate, no inertia to overcome, or electro-mechanical work to do. The chemically prepared tape is a part of the circuit, and the characters are made simply by the current passing through it. Once installed on a line, there is practically no adjusting to do. A change in weather conditions sufficient to put out of operation any electro-magnetic system does not seriously interfere with the electro-chemical. Half

the current might be suddenly diverted during transmission without loss of any of the characters. The record would be fainter, but no impulses would be missing.

"The system can be superimposed on a telephone circuit and worked simultaneously with telephony at about two-thirds of its independent speed.

"While our time has been taken up altogether with the main electrical methods, it may be said that there are numerous features of operation and control which are indispensable for practical commercial telegraphy. The demonstration will show that as the tape bearing the message comes from the perforator it is automatically wound upon a reel, and whether there be one or a dozen messages, or 500 words of press, the tape is a single unit, and goes through the transmitter last and first.

"At the receiving station, the tape is also wound upon a reel which brings it right end first—for transcription. The received tape is drawn in plain view of the transcribing operator by means under his own control, not continuously moving, but in fixed stops, so that it is at rest while being read. The receiving machine is under control of the transmitting station. When the transmitting lever is put down to start the tape, an impulse is sent which starts the receiving tape. When the transmitting tape runs out another impulse is automatically sent which stops the receiving tape. Should the receiving operator wish to stop the transmitting machine he can do so, and the transmitting operator can stop the receiving machine at any stage. Should the wire come accidentally in contact with another both machines would be thrown out of operation.

"It is only by the utilization of the full facilities of a wire that a telepost service can be established. Cheap rates are impossible at nine words a minute. At 500 to 1,000 words per minute the charges can be brought to apply to ordinary correspondence now sent by rail. When a letter of fifty words filed in the telepost office in Philadelphia can be dropped in a post office in Chicago or any other city within half an hour for twenty-five cents, an enormous traffic will be speedily developed. It will be entirely feasible for business houses or newspaper correspondents to compose their letters or reports on a tape in their own offices by keyboard machine, send the tape in a roll to the telepost office, where it will be forwarded without delay, and have the record tape delivered to the party at the other end, for private transcription. In this way correspondence would be absolutely private, for, if desired, the perforated tape could be returned to the sender. Here the telegraph toll would be merely nominal.

"There is nothing now between the high-priced telegram and the two-cent stamp, of which over one hundred millions of dollars worth are used yearly. The argument of the telegraph companies has been that telegraphing is an emergency business. People only use it when compelled to

and then are willing to pay the price. This position is in strong contrast with every other art or industry, and must surely give way to a more enterprising policy, and all correspondence of any importance whatever will be telegraphed. Words will go by wire instead of by train. To restrict the use of a wire by working it at from nine to forty words a minute when it is capable of carrying one thousand words, is wasteful.

"To put a letter in a bag, cart it to the train, haul it a thousand miles, and then cart it to the post office, is slow. Between those two methods of communication it is thought there is room for the Telepost."

[During the lecture one hundred words per minute were transmitted from a perforated tape and reproduced in perforations at the receiving end of a five hundred-mile artificial line. The received tape was then run through a local sounder circuit, yielding perfect Morse at speeds ranging from ten to sixty words per minute. Over the same line by the rapid automatic or "Telepost" system one thousand words per minute were plainly recorded in Morse characters on a chemical tape.]

The Railroad.

In addition to the recent taking over of the Lake Erie and Western telegraph line by C. S. Rhoads, of Indianapolis, superintendent of telegraph of the Big Four road, as already announced, the telegraph system of the Cincinnati Northern has also come under the same jurisdiction, effective March 1. Heretofore these lines have been under the supervision of the Lake Shore and Michigan Southern.

A decision by the Interstate Commerce Commission was made on February 17 on the application of the Georgia Southern and Florida Railway Company for an extension of time to comply with the law. The commission held it had no jurisdiction but to enforce the law. The company sought permission to work operators overtime in ten wayside stations, but the commission held there is no showing that other telegraphers could not be obtained, and the request was denied.

In reference to the report recently made by the operating vice-presidents of railroads that the so-called nine-hour law relating to the employment of train despatchers, telegraph operators and tower men, be suspended, the interstate commerce commission makes the announcement "that 'good cause' for extension is not shown when it is merely alleged or made to appear that the law ought not to be enforced at certain stations or classes of stations because the train orders handled is small and there is no need of increasing the force of employees. Neither would it be good cause, as we believe, to show that additional operators cannot be obtained at the wages now or heretofore offered, if it appears reasonably certain that higher wages would procure the requisite number."

Experts who testified at the recent hearing before the Wisconsin Railroad Commission on the eight-hour law expressed themselves as very much in favor of the use of the telephone for despatching trains. The testimony indicated that nearly every large railroad in that state is now using a telephone system to at least a limited extent in handling its trains. In some cases the telephone has been recently installed and is considered simply an experiment. Reference was made to the successful operation of the plan on the Chicago, Burlington and Quincy road between Aurora and Mendota during a six months' trial, as a result of which the system will be extended. It will be recalled by telephone men that some railroad men have for a long time argued that the telephone was not safe, but at this hearing W. W. Ryder, superintendent of the traffic department of the Burlington road, said positively that the telephone is as safe, if not more so, than the telegraph in the transmission of messages regarding the moving of trains. Confirmation of this opinion from numerous other railway men of experience and authority was heard by the railroad commission.

The next meeting of the Railway Telegraph Superintendents, the twenty-seventh annual reunion of that body, is scheduled to be held at Montreal, Que., on Wednesday, Thursday and Friday, June 24, 25 and 26. The Windsor Hotel has been selected as headquarters. This will be the first convention to occur in Canada since that of 1895, thirteen years ago, and it is hoped that a large number of the railroaders will be in attendance at a time which promises to be not only one of importance in respect to the subject matter coming up for consideration, but also as affording an opportunity for a demonstration of Canadian hospitality. The officers of the association are E. P. Griffith, New York, superintendent of telegraph of the Erie Railroad, president; W. J. Camp, Montreal, electrical engineer of the Canadian Pacific Railway's Telegraph, vice-president, and P. W. Drew, Chicago, superintendent of telegraph of the Wisconsin Central Railway, secretary. Mr. Camp is at the head of the committee of arrangements. The committee on topics, consisting of J. L. Davis, Chicago, superintendent of telegraph of the Chicago and Eastern Illinois, chairman; E. Parsons, Chicago, assistant superintendent of telegraph of the Illinois Central, and Percy Hewitt, Houston, Tex., superintendent of telegraph of the Sunset Route, are busily engaged in arranging for papers to be read and discussed at this meeting.

It will be noted that the address of P. W. Drew, the secretary, is now at Chicago, instead of at Milwaukee, as formerly, headquarters being recently changed.

Telegraph Age is the leading journal of its class in the world, and should be in the hands of every progressive operator; \$1.50 a year.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Here- with are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taitavall, TELEGRAPH AGE, 253 Broadway, New York.

Adjustment of Relays and Sounders Oct. 1, 1902
Altering Current Transformer for Quadruplex, W. H. Jones Mch. 1-16, 1904
American Cable Across the Pacific July 16, 1903
Alaskan Telegraphs Jan. 1-16, Feb. 1, 1905
Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1903
Barclay Combination Quadruplex Rheostat July 1, 1903
Barclay's Direct Repeating Relay for Multiplex Circuits, July 1, 1902
Barclay's Direct Repeating Relay for Multiplex Circuits, July 1, 1902
Barclay Printing Telegraph System, W. H. Jones, May 16, 1905
Barclay's Repeating Relay, Main Line Relay and Box Relay, Jan. 1, 1903
Barclay Typewriting Telegraph System Jan. 16, 1904
British Patent Office Rules Apl. 16, 1905
British System of Timing Messages Dec. 1, 1902
Buckingham Long Distance Page Printing Telegraph Sept. 1, 1902
Burry Page Printing Telegraph Apl. 1, 1903
Cable Station in Mid-Pacific, Our, Dr. Martin Crook Feb. 16, 1905
Central Telegraph Office, London Oct. 16, 1904; May 1, 1905
C. K. Jones' Automatic Telegraph Circuit Protector and Sig- naling Machine June 16, 1903
Collins Overland Telegraph May 16, 1903
Composite Teleg. and Telep. on Canadian Pacific Ry. Mch. 1, 1904
Composite Telephone Lines Mch. 1, 1905
Crehore-Squire Automatic Telegraph System May 16, 1902
Definitions of Electrical Terms, Mch. 16, Apl. 1-16, June 1, July 1-16, 1904
Delany's, P. B., Automatic Telegraph System Mch. 16, 1903
Delany's, P. B., New System of Rapid Telegraphy Apl. 16, 1904
Direct Polar Relay Repeater of the Postal Telegraph- Cable Company Oct. 16, 1903
Earth Currents May 1, 1903
Engraving of Clarence H. Mackay Nov. 16, 1902
Engraving of Col. Robert C. Clowry Apl. 16, 1902
Engraving of the Late John W. Mackay Aug. 1, 1902
Field, S. D., Quadruplex May 1-16, 1904
Flow of Electricity in the Earth Dec. 16, 1903
Ghegan's Automatic Repeater June 1, Dec. 1, 1903
Ghegan's J. J., Multiplex System Aug. 1, 1904
Gray Submarine Signaling Apparatus Jan. 1, 1904
Hand vs. Machine Telegraphy Sept. 16, 1902
Improvements of Roberson Quadruplex Feb. 1, 1903
K. B. Law as Applied to Quadruplex Circuits July 1, 1904
Life of Storage Batteries July 1, 1903
Low Resistance Relays Oct. 1-16, Nov. 1, Dec. 16, 1902; Jan. 1, 1903
Midway Islands Cable Station July 1, 1904
Passing of the Quadruplex Aug. 1, 1903
Phillips' System of High Speed Telegraphy, J. W. Larish, Nov. 1, 1904
Pollak-Virag System Mch. 1, 1903
Possibilities of Telephoning Over Tracks to a Moving Train Mch. 1, 1904
Postal Telegraph-Cable Company, History of (with por- traits of officials) Feb. 1, 1904
Postal Telegraph-Cable Company Rules Governing Con- struction and Repair of Telegraph Lines, Apl. 1-16, May 1-16, 1904
Printing Telegraph Systems, Modern High Speed, J. C. Barclay Nov. 1, 1904
Printing Telegraph Systems, Story of Jan. 1, 1903
Progress of Telegraphy During Last Thirty Years, W. Maver, Jr. Mch. 16, 1904
Proper Adjustment of Telegraph Apparatus Aug. 16, Sept. 1, 1904
Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines June 1, 1904
Random Recollections of 145 Broadway, W. P. Phillips Feb. 1, 1905
Rapid Telegraphy, P. B. Delany Nov. 16, Dec. 1, 1904
Reminiscences of New York Telegraphers a Quarter of a Century Ago Jan. 1-16, Feb. 16, Mch. 1, 1905
Repeaters: Atkinson Feb. 16, 1902
Half-Milliken Feb. 16, 1902
Horton Mch. 1, 1902
Defective Loop Mch. 1, 1902
Double Loop Mch. 16, 1902
Milliken Jan. 16, 1902
Nelson Feb. 1, 1902
Wesly Phillips Mch. 16, 1902
Wood Double Loop Oct. 1, 1903
Scott-Phillips-Barclay-Page Self-Winding Ticker Oct. 1, 1903
Simultaneous Telegraphy and Telephony Aug. 16, 1903
Specifications in Construction of 25-foot Pole Line, Ameri- can Telephone and Telegraph Company, Feb. 16, Mch. 1-16, 1904
Stevens' Wheatstone Transmitter July 16, 1902
Stick Telephone, J. C. Barclay June 16, 1904
Submarine Sound Telegraphy Mch. 1, 1904
Telautography Aug. 1, Dec. 1, 1904
Telegraph Alphabets Jan. 1, 1904
Telegraph and Weather Service Nov. 1, 1902
Telegraph, The June 16, 1902; Mch. 1, 1903
Telephone and Telegraph Bureau, U. S., Washington, D. C., May 1, 1903
Transmitting Typewriter Wire Connections, Feb. 16, 1904
Typewriting Telegraphs, L. S. Wells Aug. 1, 1904
Typo-Telegraph (Dr. Cardwell), F. J. Swift June 1, 1905
Use of Modern Telephone as Applied to Railroads Jan. 16, 1906
Vibratory Telegraph Aug. 16, 1903
Western Union Telegraph Company, History of (With portraits of officials) Jan. 16, 1904
What Constitutes a First-Class Operator Oct. 1, 1904
What Constitutes a First-Class Chief Operator Nov. 1, 1904
What Constitutes a First-Class Manager Nov. 16, 1904
What Constitutes a First-Class Superintendent Dec. 1, 1904
What Constitutes a First-Class B. B. Operator Dec. 16, 1904
Wheatstone Automatic Duplex Apl. 1, 1902
When is a Storage Battery Fully Charged Aug. 16, 1904

Wind Pressure on Telegraph Structures, F. W. Jones Dec. 16, 1903
Wire Tables—How to Remember Them, C. F. Scott Apl. 16, 1905
Yettau Transmitter (Description and Engraving) Aug. 1, 1903
Adams-Randall Telephone Transmitter July 1, 1906
Braun's New Method of Directing Wireless, A. Fred'k Collins Apl. 1, 1906
Churcher Rectifier, J. P. McCabe May 1, 1906
Electrolytic Wireless Receiver, D. L. Beardsley July 16, 1906
Fire Alarm Telegraphs, History of Aug. 16, 1906
Magill, Improvements for Practical Telegraphy Sep. 16, 1906
Morse Patents, Covering Invention of Telegraph Dec. 16, 1906
Morse Transmitters, Mechanical, F. W. Jones July 16, 1906
Murray Automatic Page-Printing Telegraph, History of Sept. 16, 1906
Phillips Code, Perfect, G. W. Conkling Apl. 16, 1906
Postal Telegraphy, Congressman Smith on Aug. 16, 1906
Pneumatic Tube Improved System Aug. 1, 1906
Reminiscences, Old Time, Dr. L. M. Rheem, Apl. 16, May 1-16, 1906
Rudd Revolving Addressed Envelope Holder Feb. 16, 1906
Seseman Pole Splicing Device Sept. 1, 1906
Standard Time June 16, 1906
Storage Batteries, Willis H. Jones, Mch. 16, Apl. 1-16, May 1-16, 1906
Telegraph Tournament, International, at Boston, May 1-16, June 16, July 16, 1906
Telegraph vs. Telephone July 16, 1906
Telephone, Invention of Apl. 1-16, 1906
Testing by Voltmeters and Ammeters, F. W. Jones Nov. 1, 1906
Train Order Rules, Chas. Selden Aug. 1, 1906
Wire, Hard Drawn Copper, History of, Thos. B. Donittle, Jan. 1-16, 1906
Wheatstone Bridge, F. W. Jones Nov. 16, 1906
Wright Keyboard Transmitter and Printer, R. Hitchcock, Apl. 1, 1906

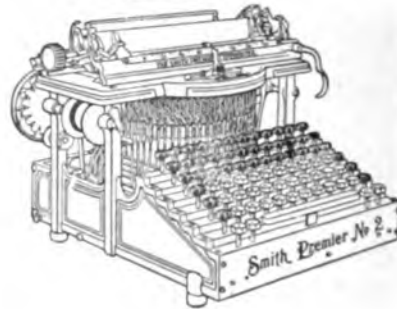
Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Montreal, Que., June 24, 25, 26, 1908.
Commercial Cable Company meets the first Monday in March, at New York.
Gold and Stock Life Insurance Association meets the third Monday in January, at New York.
Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.
International Association of Municipal Electricians meets at Detroit, Mich. Time to be chosen later.
Railway Signal Association will meet in 1908 at a date and place to be named later.
Old Time Telegraphers' and Historical Association, will meet at Niagara Falls, N. Y., in 1908, at a date to be named later.
Postal Telegraph-Cable Company meets the fourth Tues- day in February, at New York.
Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.
Train Despatchers' Association meets at Fort Worth, Tex., on June 18, 1908.
The stockholders of the Western Union Telegraph Com- pany meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

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NEW YORK, MARCH 1, 1908.

The Book Department of Telegraph Age has always been a prominent and carefully conducted feature of this journal. The desire has been and is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished; promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientele. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same.

Unfair Journalism and the Telegraph.

A great deal of cheap information, furnished under the guise of news, at once misleading in character and mischievous in its tendencies, is being disseminated from Washington and sent broadcast over the land. Some correspondents, news bureaus or syndicates, be it observed, charged with the responsibility of news gathering, are prone to take advantage of the prevailing temper of the times to write with flippant pen and thought respecting the important questions now agitating the people relative to the industrial well-being of state and nation. All industries come under impartial yet superficial consideration and review. Nothing is spared; nothing is too deep, too profound or too sacred in its broad and vital relationship to the body politic to warrant serious treatment, or escape vitiating touch. The welfare of the nation, its troubled business conditions, appear in no wise to create consideration of or responsibility for utterance; the existing situation seemingly only affording a subject to be

seized upon with avidity, a ready and convenient source of supply for the production of so much space matter.

Disguised frequently under expressions quoted as coming from unnamed yet "well known" Congressmen," "Senators" and "public men," opinions sufficiently "yellow" in tone as to arouse just indignation, reflective of viewpoints so low in ethics that properly should condemn its authors to recall and oblivion, this stuff is daily transmitted over the country to find publication and circulation in numerous journals, mainly, it should be said, in the smaller towns, many of whose editors, perhaps because of environment, either have no time or disposition to scan too closely that which they receive.

It is not sufficient to say that material of this nature, emanating as does that referred to, is given as news simply and that the line must be drawn with that understanding. The fixing of such a limit of responsibility cannot be determined by any such code of ethical reasoning. Much of what is published, coming under this head, is distinctly untrue; it is frequently so put as to confuse and mislead the public mind and so create a wrong conception of and prejudice against public utility corporations, the successful operation of which is absolutely essential to the prosperity of the country, a view of the subject which needs to be stated more frequently and with increasing force. The purveying of such news, therefore, as stated, is wrong in both theory and practice. It reflects a moral standard at which we are arriving which can only be depicted as low; for the pharisaical act of endeavoring to appear in the role of the reformer, without any too clear an understanding of the issues at stake, is lamentable.

The influence exerted by the class of journalism that permits its important telegraphic despatches to pass unchallenged, and thus by inference at least, accepting and endorsing the sentiments expressed, is reflected too often, unfortunately, in the trend of much state legislative enactment which the telegraph and the railroads are called upon to encounter. How often do we see it stated that oppressive taxation is directed against the telegraph for the privilege of doing business within municipal, town, county and state boundaries! Are such impositions actuated by motives of extortion, as a means to enforce exclusion, or, what is more likely, urged because of a lack of a correct understanding of the actualities governing the position of the telegraph?

Doubtless, many a legislator if told that the telegraph companies would be unable to stand up under the financial burdens unrestricted taxation would impose, such as are being constantly proposed, under various forms and conditions, but would seriously question the truth of the statement. Yet of its verity there can be no dispute.

Labor representatives cannot aid their cause by wilful and ridiculous misrepresentations re-

specting the telegraph, statements which too willing correspondents frequently lend themselves as a ready medium of communicating to the reading public.

The telegraph as a commercial factor and as a civilizing force making for the weal and not the woe of the people, is deserving, not of repressive measures that would curtail its usefulness, but those that lend encouragement and make for prosperity and not loss. Criticism there may be when needed, government control also (not ownership) if that be deemed essential in the light of modern ethics, but harassment never; that should cease. A clearer vision based on knowledge of telegraphic affairs, easily accessible, is sorely needed. Were a spirit of fairness, of equity and sanity of judgment exercised, the telegraphic situation might be measurably lightened and improved to the probable satisfaction of all concerned. Sobriety of thought and action respecting the telegraph should succeed rashness of demand and purpose.

The Need of Postponing the Operation of the Nine-Hour Labor Law.

It is announced that the Interstate Commerce Commission will take testimony as to the need of action by the commission postponing the day on which railroads shall comply with the law limiting the working hours of telegraphers and signalmen. This law goes in effect March 4, unless the commission shall issue an order modifying it. The proviso giving power to the commission in this respect applies only to these classes of employees (not to trainmen) and the commission has issued a notice holding that the proviso is extremely limited. It is believed to apply only in exceptional instances of unusual conditions which could not have been foreseen. Conditions common to many railroads cannot be deemed "a particular case" for relief by the commission. The fact that business is small at a given station can have no weight; neither can the commission accept testimony as to a scarcity of operators, if it appears that higher wages would secure as many as are needed. The commission cannot postpone the taking effect of the law because compliance will be inconvenient or costly, nor can a suspension be ordered after the law has taken effect. It has been given out in the newspapers, though not in a formal statement, that the commission has received thousands of telegrams informing it that operators are plenty. As these telegrams seem to have had their inception in a request sent broadcast by an officer of the Order of Railway Telegraphers, and as no evidence is adduced to support the statement as to the number of operators available, it remains to be seen how much force it should have. In his telegram to the commission one of the operators said that "10,000 telegraphers were being turned away by the railroads," and he pleaded that "the law should remain as it stands for humanity's sake." It is greatly to be regretted that

this law was not subjected to a little more rational discussion before its terms were crystallized. "Humanity" would be much better subserved by the application of more rational methods of improvement to the telegraph and signal departments of most of our railroads, than by a "strike law" which gives some men too little work and to others allows too much. There is evidence a-plenty that in Maryland, when an eight-hour law for telegraphers has been in force for a year or two, the change has done little or nothing to promote increased safety, while some of its results have been demoralizing, as where a man works eight hours a day for one company and another period of eight hours for another. In putting such a strict construction on the law the Interstate Commerce Commission seems to be only following the policy which it has adopted with rate and tariff questions and all other points which have arisen since the amendments of 1906 were passed; and the strict construction would seem to be one which the courts would be likely to sustain. But to appeal to Congress for a modification will probably be as futile as were the appeals for more rational treatment of the question a year ago.—The Railroad Gazette.

Operation of the Railroad Telegraph Law in Wisconsin.

The enactment by the previous Wisconsin legislature of a law forbidding any railroad company employing any telegraph operator for a longer period than eight hours a day has resulted in cutting off more than fifty communities in that state from telegraphic service. When the law went into effect the first of the present year, the railroads, in order to meet the new conditions it brought about, cut out entirely the telegraph service at a large number of local stations. In some of these places telephones were installed for the purpose of "blocking" trains.

A storm of protest arose from all over the state and complaints of an informal but vigorous nature were received by the state railroad commission. A hearing was held for the purpose of getting information, and as the result the commission has issued a review of the testimony, and decided that the companies have a right to close all the telegraph stations they see fit on account of the eight-hour law for telegraph operators. Statistics also are presented to show that the revenue derived from telegraph business of a general nature from the communities affected is almost nothing.

On the North-Western road the total number of stations affected is forty-one, the average number of messages per month at each office is six, the average monthly receipts per office is ninety cents, the average receipts for all the offices put together is \$36.90.

If, in order to care for telegrams for the public at these stations the railroads were required to

maintain operators, it would be about possible to hire one apprentice operator for the aggregate revenue from all the business handled.

The President on the Railroad Situation.

In view of possible serious industrial disputes in the railroad field, President Roosevelt addressed the following letter under date of February 18 to the Interstate Commerce Commission:

To the Interstate Commerce Commission:

I am informed that a number of railroad companies have served notice of a proposed reduction of wages on their employes. One of them, the Louisville and Nashville, in announcing the reduction, states that "the drastic laws inimical to the interests of the railroads that have in the past year or two been enacted by Congress and the state legislatures" are largely or chiefly responsible for the conditions requiring the reduction.

Under such circumstances it is possible that the public may soon be confronted by serious industrial disputes, and the law provides that in such case either party may demand the services of your chairman and of the Commissioner of Labor as a board of mediation and conciliation. These reductions in wages may be warranted, or they may not. As to this, the public, which is a vitally interested party, can form no judgment without a more complete knowledge of the essential facts and real merits of the case than it now has or than it can possibly obtain from the special pleadings certain to be put forth by each side in case their dispute should bring about serious interruption to traffic. If the reduction in wages is due to natural causes, the loss of business being such that the burden should be, and is, equitably distributed between capitalist and wage worker, the public should know it. If it is caused by legislation the public and Congress should know it, and if it is caused by misconduct in the past financial or other operations of any railroad, then everybody should know it, especially if the excuse of unfriendly legislation is advanced as a method of covering up past business misconduct by the railroad managers, or as a justification for failure to treat fairly the wage-earning employes of the company.

Moreover, an industrial conflict between a railroad corporation and its employes offers peculiar opportunities to any small number of evil-disposed persons to destroy life and property and foment public disorder. Of course, if life, property and public order are endangered prompt and drastic measures for their protection become the first plain duty. All other issues then become subordinate to the preservation of the public peace, and the real merits of the original controversy are necessarily lost from view. This vital consideration should be ever kept in mind by all law-abiding and far-sighted members of labor organizations.

It is sincerely to be hoped, therefore, that any wage controversy that may arise between the railroads and their employes may find a peaceful solution through the methods of conciliation and arbitration already provided by Congress, which have proved so effective during the past year. To this end the commission should be in a position to have available for any board of conciliation or arbitration relevant data pertaining to such carriers as may become involved in industrial disputes. Should conciliation fail to effect a settlement and arbitration be rejected, accurate information should be available in order to develop a properly informed public opinion.

I therefore ask you to make such investigation, both of your records and by any other means at your command, as will enable you to furnish data concerning such conditions obtaining on the Louisville and Nashville and any other roads as may relate directly or indirectly to the real merits of the possibly impending controversy.

THEODORE ROOSEVELT.

New Employers' Liability Bill in Congress.

A comprehensive employers' liability bill was introduced in the Senate and House on February 13 by Senator La Follette, of Wisconsin, and Representative Sterling, of Illinois. The authors say the bill has the endorsement of the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, and Brotherhood of Railroad Trainmen, and other railroad organizations, and that it is intended to meet the recent decision of the Supreme Court, in which the employers' liability act of June 1, 1906, was declared unconstitutional.

Kentucky is now wheeling into line with other states and is seeking to "regulate" the telegraph, telephone and express companies doing business in that commonwealth, to promote which a bill has been introduced into its legislature. It would lodge jurisdiction in these particulars in general with the railroad commission, while in particular a clerk, to be appointed at a salary of \$1,200 a year will determine whether or no these "common carriers" are practicing extortion upon the people of the Blue Grass state.

Assemblyman Johnston, the Independence League member of the lower house of the New York Legislature, has introduced two bills affecting telegraph companies. One prohibits a telegraph company from sending by mail a telegram for which it has accepted toll. The second bill compels the telegraph companies to stamp conspicuously on every telegram the hour of filing as well as the time received. Failure to comply with this provision is punishable by a fine of from \$200 to \$1,000.

An Austin, Texas, court has awarded a verdict of \$3,500 against the Western Union Telegraph Company in favor of a man who was knocked down and injured by one of its messenger boys mounted on a bicycle while hurrying to deliver a telegram. This verdict is a result of the second trial of the case. The jury in the first trial awarded the plaintiff damages to the extent of \$3,900.

The city of Anniston, Ala., is endeavoring to compel the Western Union and Postal telegraph companies to pay a license fee of \$250 each for the privilege of doing business in that place. The companies state that the amount demanded is excessive, but the mayor is quoted as asserting that he believes the companies will pay before allowing the matter to be taken into the court.

Massachusetts is also getting in line to compel the telegraph companies to place the filing as well as the receiving time on all telegrams.

The Postal Telegraph-Cable Company has protested to the city council of Beatrice, Neb., against the levying of an occupation tax of \$25 per year

on telegraph companies. The management states that the intrastate business done by the local office for the twelve months ending October 31, 1907, was but \$03.55. Comment is hardly necessary in such a case as this.

Press Service in Nebraska.

A lawyer of Nebraska has written to the state railway commission of that state urging that special newspaper rates by telegraph companies were unjust. He cited the fact that the commission had recently ordered the Bell Telephone Company not to furnish telephones to the employees of the Burlington railroad at a less rate than to other individuals, and suggested that if this action was right and proper it was also fair that the telegraph companies be stopped from giving special rates to newspapers.

Newspapers receive special rates from telegraph companies in consideration of the great amount of business transacted by them. The telegraph companies figure that on a slightly increased expense for operation and at no extra expense of equipment they are able to induce newspapers to do much more business in the aggregate at a low rate than would be done were newspapers restricted to the usual rate.

The state railway commission has written a letter to the complaining attorney, calling his attention to the statutes which provides for this reduced rate to all newspapers and inasmuch as that statute has not been changed by the legislature, and for the further reason that reduced telegraph rates to newspapers is in the interest of the public, the commission has no authority to do anything in the matter.

Municipal Ownership vs. Public Regulation and Control.*

The subjects of municipal ownership and of public regulation and control of public utilities are intimately connected with each other. Neither can be adequately discussed without reference to the other. Indeed, one is the alternative of the other. Municipal ownership is demanded largely because of the absence of proper public regulation and control. Public regulation and control, if efficient, removes the necessity or excuse for municipal ownership by securing fair treatment for the public.

If, therefore, a system of public regulation and control, which is at once fair to the corporate interests involved and efficient in securing the results to which the public is equitably entitled, can be evolved and put into operation, municipal ownership can no longer be alleged to be essential to the public interest. What the public wants is efficient and adequate service at fair prices. This is all that could be hoped for from municipal ownership, which, if successful in those particulars, would involve financial risks and political

consequences which it is of the highest importance to avoid. Leaving out of consideration those political theorists who adhere to the doctrine that the government should govern as much instead of as little as possible, and that a public official should be substituted for a private citizen whenever and wherever possible, the great body of our people prefer the original American idea, that the functions of government should whenever practicable be restricted rather than enlarged, and that undertakings of an essentially business character are best entrusted to private enterprise rather than to political manipulation. The public funds should be employed solely for public purposes and the tax levy should not be subjected to the perils of commercial enterprises.

But, adhering to these sound tenets, a large body of the public feels itself driven to the more or less favorable consideration of municipal ownership, by the feeling that in no other way less objectionable on general principles can those results to which the public is entitled be obtained. Where private enterprise results only in private gain and not at all or only insufficiently in public advantage, the demand for municipal ownership is natural and inevitable. This fact alone suggests the antidote. If private enterprise results to the public advantage as well as in private gain, the basis for the demand for public ownership is gone.

Assuming, however, as a knowledge of human nature compels us to assume, that a recognition of these fundamental principles cannot be expected on the part of all owners of private industries, we are forced to the consideration of measures to compensate for that fact. That which is now uppermost in the public mind is public supervision and control. In the judgment of your committee some form of such supervision and control is inevitable in many if not all of the important states of the Union, and we believe that it should be welcomed by the parties in interest, provided it is put, as we believe it can be, in such form as to preserve the rights and properties of the companies as well as to promote the interests of the public.

* * * * *

While an agreement may be reached upon the general principle that public regulation and control of public-service corporations is desirable in the public interest, and is not necessarily inimical to the safety and value of corporate investments, it is another and much more difficult matter to agree upon the nature and scope of it. Three systems may be suggested: First, one like the Massachusetts and New York systems, under which everything is practically left to the judicial or quasi-judicial discretion of state officials, clothed with amplest power; second, a system that, so far as possible, will be automatic or semi-automatic in its operation, through the application of statutory requirements to existing conditions by administrative officials; third, a system

* Excerpts from the Report of the Committee of Public Policy of the National Electric Light Association.

that will be a compromise between, or involve an application in part of the features of, both of the foregoing.

* * * * *

Whatever claims of superior efficiency may be advanced in favor of a system of supervision and control of the New York type are offset by the objection of placing the vast interests of stockholders in the keeping, and, as history shows, frequently at the mercy, of public functionaries, who sometimes are, but more frequently are not, fitted by education or experience for the discharge of the delicate duties of their positions. Nothing stands between the companies and the exercise of the unrestrained action of such officials but the guarantees of the federal constitution. But such guaranties only protect against absolute spoliation and furnish no redress for lesser but almost equally serious injuries which may be inflicted through official action.

One great difficulty under systems of undefined public control is the inability or unwillingness of officials to distinguish between the regulation and the operation of corporations. Regulation should stop where operation begins. Matters of business discretion should be left to the decision of those who are responsible for business results. The directors of the affairs of a corporation undoubtedly, in most instances, are better judges of questions of business expediency than outside officials, however enlightened.

But it is always the tendency of public bodies clothed with judicial powers or official discretion to enlarge their own jurisdiction, and it is not therefore to be expected that they will set proper limits to their authority.

The remedy for this difficulty is to have the obligations of the corporations and the authority of the officials so defined by statute as to make the operation of the provisions of the law upon the state of facts in hand as nearly as possible automatic, calling for the interference of public officials only to the extent of applying the law to the facts as found. The ascertaining of the facts need not, and usually would not, involve to any considerable extent the exercise of discretionary or judicial functions. In short, under such a system the supervisory officials are in the position of a jury, accepting the law directly from the legislature and merely applying it to the facts as found by them.

If the objection is made that such a suggestion needs demonstration of its practicability before it is accepted, the answer is that if the theory is sound it can undoubtedly be worked out in practice, though many details may have to be developed and perfected through experience. But that such a system is practically as well as theoretically sound, is demonstrable through the application of the so-called "sliding scale." This, when once adjusted to the case in hand, will automatically settle the great questions of rates and dividends, to the satisfaction of both the private and public interests involved. The settlement of

these two important items—one the most important from the public's point of view, and the other the most important from the corporate point of view—will go far toward removing other difficulties.

* * * * *

Entertaining as we do the thorough conviction that the interests of the public-service corporations of the country and of the communities which they serve are in truth and in fact identical, we believe these interests will ultimately be shown and acknowledged to be identical. The energies of this committee and of this association should be bent toward bringing about such relations between the public and private interests involved as will demonstrate the soundness of the conclusion as stated.—Concerning Municipal Ownership.

The Education of the Electrical Engineer.

Charles P. Steinmetz, consulting engineer of the General Electric Company, Schenectady, N. Y., recently gave his views in an address before the American Institute of Electrical Engineers, New York, on the education of the electrical engineer, a part of which appeared in our columns in the issue of February 16. In a subsequent discussion of the subject, Dr. Steinmetz said:

"Drop out a sufficiently large part of the quantity which the college now attempts to teach so as to get the time to improve the quality of the rest by thoroughly teaching it; that is, going over the subject over and over again, preaching it from different viewpoints, because after all a clear and thorough understanding of a subject is gained only by looking at it from every possible point of view. For instance, an induction motor is not understood properly by considering it as a short-circuited armature revolving in a rotated field; it is not understood by considering it as an armature acted upon through the medium of magnetic fields, or by the derivation of the direct-current shunt motor combined with the transformer action, transferring power to the motor instead of leading it in by commutator or brushes, nor is it understood by considering it as an electric circuit revolving in a magnetic field; you have to approach it looking at it from all these viewpoints before you can thoroughly understand it. There is no time for this in the present college course when you attempt to teach all you do now.

"I do not believe in text books. I agree that a good text book is better than a poor instructor. You may carry that still further and say that a good corresponding school is better than a poor college. A good text book appears to me merely a way of ameliorating a little the objectionable effects of a poor instructor, but a good instructor or professor is vastly superior to the best text book."

There is much for telegraph operators to learn respecting their calling which can be readily obtained by reading *Telegraph Age*—\$1.50 a year.

Settlement of a Canadian Wage Dispute.

In adjusting the dispute between the Grand Trunk Railway and its telegraph operators recently, the board of investigation acting under the Lemieux Act, composed of Prof. A. Shortt, J. G. O'Donoghue and W. Nesbitt, K. C., reported in part as follows:

"The board were much impressed by the suggestions that the same board had recommended a higher rate of pay to the telegraphers in the service of the Canadian Pacific than they were prepared to recommend in the present instance. We are glad to be able to report that the parties appreciated the reasons why the members of the board could not in this instance see their way to the recommendation of any higher rate than that finally agreed upon between the parties, and we desire to put upon record some of the reasons why we came to this conclusion.

"We thought, under the present conditions, that the offer of the company in the matter of increase of wages was all that could be justified. There are many considerations entering into the question. In our view, there is the right of the men to receive a living wage, and that right is paramount. The workman is entitled to get a fair day's wage for a fair day's work. What, however, often seems to be ignored is that capital and labor are both necessary in order to produce a profit, whether it is in the operation of railways, in manufacturing, or in any other branch of trade. The aim of the work should be to secure a fair share of this profit. But there is also to be considered the position of the man who advances the money to enable the undertaking to be carried on which gives employment. He, too, is entitled to receive a return for his money and his risk. A hundred millions of the capital stock of the Grand Trunk Railway receives no dividend whatever. If such dividends on the preferred stock as are now being paid are still further reduced by the wages bill being increased, what must necessarily follow? The company cannot obtain further money for expansion, for it can be more remuneratively employed in other undertakings. This certainly would be a disadvantage to the vast numbers who find employment on railways. Then there is the constant demand of the public for the betterment of the service and equipment, for increase of facilities, the bettering of the roadbed and general improvement in the accommodations. These can only be obtained where the parties asked to advance the money can see some possibility of return for the advance. Our experience on a number of these boards has led us to the conclusion that there seems to be an oversight on the part of the public of two things: First, that there is a continual demand for an increase of expenditure upon the part of the company for facilities, and, second, a continual demand for a reduction of the tariffs which furnish the moneys necessary to provide these facilities and accommodations. The growth of earnings is

not keeping pace proportionately with the growth of expenses. If the operating expenses and the wages to employees must be increased from time to time, and the public so demand, very serious considerations must be given to the proposals for the reduction of freight and passenger rates, inasmuch as every reduction directly affects the ability of the railways to pay the wages asked by their employees. There is no doubt that the cost of living has greatly increased, and that the employees of a railway company are entitled to be better compensated to meet such increased cost, but surely they are not entitled to be compensated at the sole expense of people who have invested their money and who would in return be deprived of their means of livelihood. The public should bear their share. The railway employee spends his money for the benefit of every other member of the community from farmer to manufacturer, and if the employee has to obtain more money to meet his increased cost of living, other classes of the community who receive the benefit of the money he spends should contribute their share toward enabling him to get the money he has to spend; and it is for the foregoing reasons that, under the present conditions, and having in view all the surrounding circumstances, we thought that the offer of increase made by the officials of the Grand Trunk Railway Company had gone as far as could be justified, though not necessarily to the limit which the telegraphers ought to receive under other circumstances. The deterring of the investment of capital in railway undertakings would certainly not be a benefit to the community at large, and if the property of lenders is to be practically confiscated between the demand of the public on the one side and the demand of the employees on the other, it must lead to a general reduction in wages or a shrinkage in the number of employees, with a much greater ultimate loss to labor. It has been suggested that this state of affairs may be met by the state becoming sole owner of the railways. To accomplish this the capital necessary to make railways and work them would still have to be found. The mere fact of state ownership does not bring capital down from the skies like the manna to the Israelites in the desert. If borrowed by the state, interest must be paid for it, and probably at a higher rate than the state now has to pay, for two reasons, first, because of being larger borrowers; second, because of the risk incident to industrial undertakings. If raised by taxation, this would be nothing more than getting it from the collective resources of the country. The wages, other than the living wage before referred to, which are paid by railway companies to their employees must, therefore, disguise it as we may, depend upon what a company earns after the interest on capital employed is paid. This may equally be said of all industrial and commercial undertakings, and no amount of vague philanthropic talk can alter this fact any more than it can alter the fact that two and two make four."

Original Call for the Permanent Organization of the Military Telegraph Corps.

It will be of interest not alone to the membership, but also to the telegraph fraternity in general, to read the circular call issued nearly twenty-six years ago announcing the meeting having in view the formation of a permanent society of the United States Military Telegraph Corps. The charter membership and the subsequent muster roll of these war telegraph veterans has since been thinned, but those still remaining hold fast to the society and to each other with an increasing loyalty and affection as time passes.

Chicago, August 19, 1882.

Dear Comrade:

A meeting of the members of the United States Military Telegraph Corps was held at Club Room 1, Grand Pacific Hotel, Chicago, on the evening of August 18, 1882, looking toward the organization of a permanent society.

Charter Members.—Gen. Anson Stager, Col. J. C. Van Duzer, Col. R. C. Clowry, Col. W. L. Gross, Col. S. G. Lynch, S. L. Robinson, John Thomas, F. C. Long, H. P. Darlington, F. B. Knight, J. N. Crittenton, W. A. Leary, C. G. Eddy, M. C. Bristol, W. T. Lindley, G. M. Farnham, Maynard Huych, W. R. Plum, L. D. Parker, C. G. Sholes, J. E. Pettit, E. P. Whitford, A. W. Nohe, James W. Atwell, Chas. B. Burch, H. W. Plum, C. W. Jacques, C. H. Lithgow, A. H. Bliss, W. S. Chapman, Charles L. Clarke.

Herewith you will find a copy of the constitution and by-laws adopted at said meeting, and you are earnestly requested to read the same and signify to the secretary, by mail, immediately, if it be your wish to become a member.

Your attention is urgently called to articles 6 and 7 of the constitution, in the hope that you may be able to assist in the formation of a local organization, as it is thought that more can be accomplished in that way if you are located in the vicinity of enough others to form such branch society.

It is the intention of the society to hold a grand reunion at Niagara Falls on the 21st day of September, 1882, for the purpose of perfecting a national organization, and, also, meeting the members of the Society of Old Timers.

The officers elected to serve until the first reunion are as follows: W. R. Plum (firm of Page & Plum), president; L. D. Parker, assistant general superintendent Mutual Union Telegraph Company, vice-president; J. E. Pettit, manager, Mutual Union Telegraph Company, secretary and treasurer.

Executive committee.—W. R. Plum, ex-officio, chairman; General Anson Stager, president telephone company; Col. R. C. Clowry, general superintendent Western Union Telegraph Company; C. G. Sholes, superintendent Chicago and Milwaukee Telegraph Company; Col. J. J. S. Wilson, ex-superintendent Western Union Telegraph Company; Col. S. G. Lynch, manager

Western Electric Manufacturing Company; E. P. Whitford, manager Western Union Board Trade office; H. P. Darlington, broker; S. L. Robinson broker.

You are cordially invited to attend the re-union, and by your presence promote the welfare of the society.

Fraternally yours,
J. E. Pettit, Secretary,
care Mutual Union Telegraph Co.,
Chicago, Ill.

The Telegraph Alphabet.

Very general approval has been expressed by the telegraph fraternity at the publication appearing recently in *Telegraph Age* of telegraphic characters showing the Morse and Continental alphabets, the short numerals generally used by Continental operators, together with the punctuation marks of the Morse, Continental and Phillips systems, besides other information of value in transmission, so arranged that all differences may be observed at a glance. The evident need of such a compilation in view of the numerous errors made in defining telegraphic characters, that have been allowed to find their way into some of the current books treating on telegraphy, has been made all the more manifest by the numerous requests received for the issue of the paper containing this presentation. The strict accuracy of the transcription has recommended it. As an authority it is, of course, unquestioned, and has already been the means of setting many an operator right and settling numerous disputed points. We desire to say that copies of the paper containing this valuable data, so convenient for reference, and of date February 1, may still be had at ten cents apiece, and will be mailed to any point on receipt of price. Address all orders to J. B. Taltavall, *Telegraph Age*, 253 Broadway, New York.

Secretary's Report of the Old Time Telegraphers' and Historical Association.

John Brant, secretary of the Old Time Telegraphers' and Historical Association makes this report: That at the beginning of the fiscal year 1907 there were 1,442 members on the roll. During that year forty-one applied for membership, and a corresponding number of certificates were issued. So far as known seventeen have been reported as having died during the year, five resigned and sixty-six were dropped from the roll for non-payment of dues, leaving a net membership of 1,395.

The names of the dead are: Rufus B. Bullock, Herbert Y. Bresce, William A. Hennessy, W. J. Johnston, Mrs. M. E. Randolph, Archibald Wilson, Jr., Peter T. Brady, William D. Black, Charles A. Hicks, William Koons, Edwin Rogers, William S. Humes, John Beatty, Jr., Joseph W. Fisher, William H. Harper, John S. Noble and William F. Shiebler.

What is Electricity?

The editor of London Electricity says:

Electrical engineers are very often twitted by non-technical people with the fact that they cannot define what electricity is. It seems to the outsider an extraordinary thing that electricians who work with a something which they can calculate and measure with absolute precision are unable to define its nature. A little thought, however, is sufficient to show that electricity is not the only thing which is incapable of definition. If, for instance, we attempt to define what iron is, or in fact what anything is which is in common use, we see at once that our definitions are merely definitions of what these various objects can do, or the uses to which they can be put. Thus, if we define lead as a soft white metal, which can be bent cold into various shapes, which can be cast in moulds, and whose melting point is a certain value, we do not say what lead is, we simply define its properties, and beyond that we cannot go. As a matter of fact, we can define electricity in terms of its properties and capabilities with much greater precision than we can define most other things, but what it really is, up to the present remains a mystery.

In the February number of the Grand Magazine, Dr. Gustave Le Bon essays to define specifically what electricity is, and for this purpose discusses at some length the electronic theory of matter. It is very difficult to describe any scientific phenomena in popular language which the average reader can understand. The simplest inscription in Hebrew would be unintelligible to any man who was not familiar with the Hebrew language. Similarly, no matter how simply a scientific process may be described, the description is very largely unintelligible to one who is not conversant with scientific terminology. Dr. Le Bon, however, has succeeded in putting his views into the clearest and simplest possible language, and has given an intelligible account of what is now understood by electricity.

I lest I should detract from the simplicity of the author's explanation, I give the following quotation *literatim* from his article:

From the most remote ages it has been known that if a stick of resin be rubbed, electricity is the consequence. The rubbing of a body is thus a source of electricity. Whence comes this electricity? How does rubbing produce electricity? Until quite recently it was impossible to give an answer to either of these questions. The theory of the dissociation of matter now furnishes us with an explanation.

The plain explanation is that when we rub a body, what actually happens is that its atoms are partially dissociated, and some of the energy they contain is liberated in the form of electricity.

How, now, may we prove that electricity results from the dissociation of matter?

The demonstration of this is quite simple. We find that the effluvia emitted by the poles of an electric machine in rotation possess identically the same properties as the particles emanating from bodies spontaneously radio-active, such as radium, uranium, and thorium.

Among the most important of these properties are the faculty of condensing aqueous vapor, of being de-

fectured by a magnetic field, and of traversing material obstacles. When the poles of an electric machine are separated, the particles of dissociated matter are emitted in the form of effluvia. Let the poles, on the other hand, be brought nearer together; at once the contrary electric particles attract each other and condense into a small number of lines. They then form those crackling sparks, the discovery of which places in the hands of mortals the power to engender the lightning which, formerly, was held to be one of the most jealously guarded attributes of the gods.

These particles, when the electrical tension is raised to several thousand volts, are able, as I have often demonstrated, to pass visibly through matter. When, therefore, we see sparks produced by an electrical machine, we really are witnessing the dissociation of matter. Electricity, whatever form it may take, has no other origin but this. The gigantic commercial dynamo, equally with the small experimental machines used in laboratories, serve to dissociate matter, and to do this alone. The electric current which provides us with light and transmits our thoughts through continents and oceans is provided by the dissociation of matter.

Even after having read this statement, I am a little in doubt as to whether Dr. Le Bon has really succeeded in defining electricity, or whether he has merely defined again its method of production. He tells us that the dissociation of atoms results in the liberation of a form of electricity; but after all, this does not tell us what electricity is. Nor am I convinced yet whether the friction between two bodies rubbed together is caused by the latent electricity in the bodies, or whether the electricity is the result of the friction. It seems to me, therefore, that all these attempts to define electricity or other similar forces are more or less attempts to define the undefinable and to know the unknowable.

The Canadian Yukon Telegraph.

The Dominion minister of public works stated recently in the House of Commons that the government telegraph system of the Yukon had earned \$52,725 from March 31 to December 11, 1907, but during the same period the expenses were \$136,188, and there has been no expenditure on capital account. According to reports received, says the Western Electrician, the line is in a bad condition, and a number of complaints have been received from business men at Fort Essington, Prince Rupert and Port Simpson. The main line of this system extends from Ashcroft, a station on the Canadian Pacific Railroad, about 200 miles east of Vancouver, to Dawson City. The towns of Fort Essington, Prince Rupert and Port Simpson are served by a branch which leaves the main line at Hazelton, and it is of this branch that complaint is made. It is stated that the line between Hazelton and Prince Rupert was down from October 21 to November 30, 1907, except for a few periods of one or two hours each.

TELEGRAPH AGE is the only telegraphic newspaper published in America. It is up to date, covering its field thoroughly, and no telegraph official or operator can afford to be without it.

"Don'ts" for Users of Electrical Instruments.(From *Electricity*, of London.)

Don't stand a moving coil instrument on top of an excited dynamo—unless you have no further use for it.

Don't connect up an ammeter without its shunt, or a voltmeter without its external resistance. It will only "cost you more."

Don't forget to connect an ammeter onto its shunt. A moving-coil instrument does not want much current, but it can do with just a little.

Don't connect an ammeter across the mains as you would a voltmeter. You won't hurt the generator much, but the instrument

Don't connect a voltmeter onto an ammeter shunt. Nothing will happen if you do; that's just the trouble.

Don't file up a shunt because it won't fit. You'll increase the drop; and a "drop" too much isn't good for anybody.

Don't bolt a shunt onto the back stem of a fuse and blame it for getting hot.

Don't reduce or add to the length of leads furnished with a shunted ammeter or wattmeter for connecting to a shunt. If you do, you will make your meter record high or low.

Don't abuse the maker because your ammeter is off zero. He has given you a simple means to rectify this. You might just as well send for a clockmaker because your watch was five minutes fast.

Don't forget that a watch won't go until wound up, nor will a voltmeter until connected in circuit.

Don't expect a voltmeter to work with a blown or absent fuse in series. The resistance of a fuse which is not there is sufficiently great to interfere with the satisfactory working of the instrument.

Don't be surprised if a permanent-magnet instrument won't measure alternating current; it begins to hesitate and cannot make up its mind which way to go.

Don't expect an instrument to read if it has a pointer catch holding the pointer to zero. Some instruments are so provided, and it is considered good practice to release it.

Don't send away a switchboard with the instruments bolted on to it. If you have ever traveled by freight train, sitting on a marble seat, you will understand why.

Don't open up an instrument just to "see how it works." It probably won't do so any longer. Instruments are apt to resent the intrusion, hence the seals.

Don't suppose that an instrument is sealed because the manufacturer is ashamed of the inside. It is because he is proud of it. The seals are really provided for the protection of the user, if he only knew it.

Don't think that working instructions are sent out merely to worry you. You may know all about it without reading them, or you may think you do—which is not always quite the same thing.

Don't drop a meter and then tell the maker you didn't. He may not know as much as you, but he does know a little, and he keeps a tame Sherlock Holmes who is a perfect marvel.

Don't, when sending particulars of your requirements to the manufacturer, give as few, but as many, as possible. He is pretty good at conundrums, but might guess wrong.

Don't be afraid to consult the instrument maker when you are in a hole. He does not know everything, but he earns his bread and butter by knowing all about instruments.

Don't forget that you deal in amperes and volts just as a grocer deals in tea and sugar. He cannot afford to be without a good pair of scales, neither can you without accurate testing instruments.

Don't trouble about these "don'ts" if you think you know all about measuring instruments; but if you do, don't, because you don't.

Mr. Ledwith Appreciates the Silver Anniversary Number.

R. W. Ledwith, of Chicago, telegrapher and newspaper writer, has this to say appreciative of the silver anniversary number of January 1 of *Telegraph Age*:

"I desire to congratulate you upon the artistic arrangement, typographical appearance, composition and clean editing of your silver issue. I consider it a valuable contribution to the archives of the Morse system, immensely so in accurately portraying the individuality of those intimately identified with its development.

"I thank you for sending me a copy of this issue. I will keep it as a memento of other days—days when the acme of individual ambition was measured by a laudable desire to excel. But ambition, like time, changes. I look upon it now as an iridescence."

Mr. Ledwith, who possesses a wide acquaintance in telegraph circles and with a memory which cherishes pleasant recollections of other days and of the engaging personality of many then connected with the service, concludes his letter as follows:

"By-the-by, what has become of our mutual friend, Walter P. Phillips, for whom, in a newspaper way, and I may properly say as much telegraphically, I have great respect?"

"When I recall W. J. Johnston, 'Joe' Christie, 'Billy' Wallace, the first of the old 'Operator,' the second of 'The Magnet' and the third of 'The Switch,' with others, I recall the value, journalistic ability displayed and usefulness of the craft in the broad field of literary endeavor. In a plain, unvarnished way the story of telegraphic journalism is worthy of a place in the fascinating and marvelous development and utility of Morse telegraphy. As much so, in my opinion, as the value and patriotism of the 'military corps,' or any other corps within its ranks. Some disinterested Prescott will pen it some day!"

A New Biography of Edison.

Francis Arthur Jones, an English newspaper man, has published an autobiography of Thomas A. Edison, which appears to be out of the ordinary. The author admits frankly in the preface that the sketch is in no sense an exhaustive one; indeed, it could not be within the limits observed. What Mr. Jones has done is to review rapidly a notable career, presenting information about Mr. Edison's achievements and Mr. Edison himself in an easy, journalistic style. One could wish at times that more attention had been paid to the form of the narrative. The introductory chapter, in particular, being susceptible of much improvement. However, the story as it stands is sufficiently readable, and, because of its subject, it could not fail to be of interest to members of the telegraph profession, of which Mr. Edison himself is so distinguished a graduate.

Facts concerning Mr. Thomas Alva Edison's life are easily obtainable from current works of reference and need hardly be rehearsed here. The biography prepared by Mr. Jones, with the assistance of Mr. Edison himself, of Mrs. Edison and of many friends of the inventor, contains a mass of anecdotes obtained at first hand that possess much interest for the general reader who is interested in Mr. Edison's peculiar personality. It is largely to these anecdotes that the present notice will be confined.

It was on a cold day in February, 1847, that a boy was born to a young couple in Milan, Ohio. The father, Samuel Edison, was of Dutch and the mother of Scotch extraction.

"It's a pretty child," said the nurse, "fair, with gray eyes—the very image of his mother." Mr. Edison received the news philosophically, and a little later, when allowed to see the child, he regarded it with great interest. The boy certainly was like his mother, that was a fact, and the father expressed his pleasure at the resemblance and remarked that if he grew like her in disposition as well as feature then he would indeed prove a blessing to them. His mother adored him from the moment he was placed in her arms and there was from the first an affection between them which increased as the child grew.

"I was always a careless boy," says the inventor, "and with a mother of different mental calibre I should have probably turned out badly. But her firmness, her sweetness, her goodness were potent powers to keep me in the right path. I remember I used never to be able to get along at school. I don't know now what it was, but I was always at the foot of the class. I used to feel that the teachers never sympathized with me and that my father thought that I was stupid, and at last I almost decided that I must really be a dunce. My mother was always kind, always sympathetic, and she never misunderstood or misjudged me. But I was afraid to tell her all my difficulties at school, for fear she too might lose her confidence in me.

"One day I overheard the teacher tell the inspector that I was 'addled' and it would not be worth while keeping me in school any longer. I was so hurt by this last straw that I burst out crying and went home and told my mother about it. Then I found out what a good thing a good mother was. She came out as my strong defender. Mother love was aroused, mother pride wounded to the quick. She took me back to the school and angrily told the teacher that he didn't know what he was talking about, that I had more brains than he himself, and a lot more talk like that. In fact, she was the most enthusiastic champion a boy ever had, and I determined right then that I would be worthy of her and show her that her confidence was not misplaced. My mother was the making of me. She was so true, so sure of me; and I felt that I had some one to live for, some one I must not disappoint. The memory of her will always be a blessing to me."

When "Al," as his mother always called him, emerged from baby clothes and was able to walk and talk, neighbors soon made the discovery that he was rather a remarkable looking child. He had a fine large, well shaped head, of which his mother was very proud. But his hair was a terrible trial to her. It would not curl, it would not part, it would not lie down like other boys'. He was always rumpling it with his baby fingers, and so the only thing to be done was to keep it "close," a plan which was advocated by his father, and adopted, after a mental struggle, by his mother. He had a broad, smooth forehead, deep set eyes, almost straight brows, and the sweetest, most amiable and lovable mouth ever seen in a baby. His high forehead was usually unruffled and serene, except when he asked those innumerable questions which came to his lips almost as soon as he could talk.

At four years of age he was friendly with all the neighboring children, especially boys, and every one liked him. He was fond of making his way to the shipbuilding yards. He would pick up and examine every tool he could find, ask a hundred questions of the busy workmen, get under their feet and in their path, and bother them generally. None the less they liked him, though often they thought his questions foolish, and set him down consequently as anything but bright. Even his father, forty years later, said that many folk thought he was lacking in ordinary intelligence. He was forever asking his father the reason for this and that, and when, in very desperation and thinking frankness the better policy, the unhappy parent would answer, "I don't know," the boy would reduce him to still deeper depths of distraction by instantly demanding, "Why don't you know?"

There are many people in Milan to-day who remember little "Al" Edison, and they will tell you how on one occasion he chased the old goose off her nest and tried to hatch out the eggs him-

self by sitting on them, just to satisfy a natural desire to know how it was done. A little later on he evinced his first interest in avian flight by endeavoring to persuade the hired girl to swallow some fearful concoction, with the promise that if she did so she would certainly be able to fly. The young woman firmly declined to try the experiment, but "Al," who in all probability thoroughly believed what he had undoubtedly been told, was so persistent in his entreaties that she would try even a little that at last she swallowed a small dose and immediately became so ill that the doctor had to be summoned. The boy expressed regret that she was sick, but appeared to think that her inability to fly lay with herself and not with the liquid.

Young Edison at the age of twelve became a newsboy on the Grand Trunk line, running between Port Huron and Detroit. Gaining the exclusive right of selling newspapers on this line and purchasing some old type, with the aid of four assistants he printed and issued the Grand Trunk Herald, the first newspaper printed on a railway train.

"It was a little bit of a thing, about the size of a lady's handkerchief," says one of these assistants. "Of course he did not set it up altogether on the train, because you cannot set type and have it stand up in a car, but it was printed there. Sometimes the stationmaster at Mount Clemens, who was also a telegraph operator, would catch some country news on the wires, and he would write it down and hand it to "Al" when the train came in. This news, of course, would be later than that contained in the daily papers. He would immediately retire to his caboose, set it up, put it in the little form, and before the train reached Ridgeway he would have it printed off. I sold lots of these papers for three cents each."

A stationmaster, in gratitude for his having saved his child from the front of an advancing train, taught Edison telegraphy, in which he had previously been greatly interested, and procured for him a job as night operator at Port Huron station.

Many stories are still told at Port Huron of the wonderful skill and quickness he soon developed in grappling with a difficulty. On one occasion, for instance, there was an interruption in the line to Detroit, and the day operator asked Edison to look out and try to ascertain where the trouble was. The boy immediately laid a wire from his father's house and strung it along the railway fence. Thence he tumbled down the bank by the swing bridge and fastened a wire to one end of the cable, which, as he suspected, had been parted by a passing vessel. Then he went back and was telling the day operator what he had done when George Christie, a line repairer, came along, and, overhearing the conversation, dropped his kit and wanted to lick Edison for interfering with his work. But the day operators got between them

and prevented a fight and Edison escaped. Christie was finally persuaded that the boy he was desirous of clubbing had really performed a far-sighted and commendable feat.

The young man was about twenty when he patented his first invention. This was a vote recording machine, which worked perfectly as a simple yet adequate system for "purifying" the ballot.

He had been used to handling press reports, and the time taken in counting votes as well as the ease with which they could be "manipulated" had suggested to him the idea for the invention. So he traveled to Washington, and after some little delay succeeded in exhibiting his instrument to a committee chairman, who, after examining the machine very carefully, said: "Young man, it works all right and couldn't be better. With an instrument like that it would be difficult to monkey with the vote if you wanted to. But it won't do. In fact, it's the last thing on earth that we want here. Filibustering and delay in the counting of votes are often the only means we have for defeating bad legislation. So, though I admire your genius and the spirit which prompted you to invent so excellent a machine, we shan't require it here. Take the thing away."

Whereupon Edison mournfully shouldered his vote recorder and left the committee room. "Of course I was very sorry," said Edison afterward, "for I had banked on that machine bringing me in money. But it was a lesson to me. There and then I made a vow that I would never invent anything which was not wanted, or which was not necessary to the community at large. And so far I believe I have kept that vow."

Mr. Edison, indeed, is remarkably practical, so Mr. Jones informs us. When the phonograph was in its infancy he was complimented by a well known scientist upon the wonder he had achieved, but somewhat startled his admirer by replying: "Yes, but it doesn't bring in any money."

Another story, illustrative of this side of his nature, is also connected with his phonographic days. It was after he had made the cylinders of wax and when a fine delicate brush was necessary to keep them free from dust.

The brush he used cost a dollar, and he made up his mind that it must be possible to obtain one equally serviceable for half the money or less. The hair, of course, had to be exceedingly fine, so as not to scratch the record, and he had been told that what he required was costly and a dollar was the lowest price at which the brushes could be manufactured. Edison thought otherwise, and after he had obtained specimens of hair from almost every known animal he found that the red deer provided a hair so fine that it could scarcely be seen without the aid of a microscope. This was just what he had been looking for and thenceforth his phonograph brushes cost five cents instead of a dollar.

On another occasion a visitor found Edison one Sunday morning deeply occupied with his phonographic dolls. One was in pieces beside him, and the inventor was busy scribbling figures and line diagrams in a pocketbook. When asked to explain what he was busy on, Mr. Edison said:

"The idea suddenly hit me at breakfast this morning that I might cheapen the cost of this doll, and I couldn't rest till to-morrow to put my plan to the test. It occurred to me that I could make the framework that holds this tiny phonograph cheaper by changing its shape and thus saving metal. The change in shape will permit me to substitute a small brass screw for this large one, and so I can save several cents that way, too."

From these little stories it must not be supposed that there is anything "close" about Edison. As a matter of fact, he cares little for wealth, and when experimenting or perfecting a new invention he never sits down to consider the cost. If it should take his entire fortune to attain his end he would spend it, and never since he has had the handling of big sums has he allowed expenditure to stand in the way of success."

If the inventions of Edison are remarkable, his biographer tells us, he himself is no less a physical wonder. For forty-five years he has labored incessantly regardless of the ordinary laws of nature. In the pursuit of some desired end time has been forgotten, sleep ignored, food left untouched, rest abandoned. Yet he has not suffered. To-day he looks twenty years younger than his age, and he can still work twenty or thirty hours at a stretch without feeling unduly fatigued. His juvenility is remarkable, and his capacity for recuperation is equally astonishing.

Perhaps the secret of his tireless activity is his determination never to worry. "Don't worry," says Edison, "but work hard, and you can look forward to a reasonably lengthy existence—barring accidents, of course."

Edison's passion for work has been likened to some men's love for strong drink, and the comparison is not at all bad. Recently the inventor stated one Saturday night that he intended to quit work for a spell and his manager need not expect him for a few days. That manager smiled, for he had heard the same thing before. Monday morning at eight Edison was hard at work as usual. It is probably the only thing that the inventor cannot do—give up work—and until he can invent something to make the task easy he probably never will.

Superintendent Jesse Hargrave, of the Postal Telegraph-Cable Company, as an Author.

Jesse Hargrave, until lately assistant electrical engineer of the Postal Telegraph-Cable Company, New York, and now one of its superintendents, recently essayed the role of author with distinct success. To the new and revised edition of "Elec-

trical Instruments and Testing," by Norman H. Schneider, just out, which treats of the use of the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter, the Wheatstone bridge and the standard portable testing sets, Mr. Hargrave has contributed important matter which appears in the two concluding chapters, one treating on testing telegraph wires and cables, the other in locating faults in telegraph and telephone wires and cables, in which valuable tables are given. This matter in detail may be summed up under the following heads: Early morning tests; wrecks; locating grounds by Wheatstone bridge measurements; measurement for crosses using Varley test; measurement for crosses using the two cross wires only; locating a cross by voltmeter test; insulation tests by milliammeter method; insulation tests by voltmeter method; conductivity tests; location of grounds and crosses by Varley method using multiplied arm ratios; how to find trouble after located; Varley test; Murray test; locating openings in cable conductors by bridge method; resistance measurement; fault location; to locate openings using buzzer and telephone. Mr. Hargrave's treatment of his subject has been especially well considered and embodies the best thought of this well-known telegraph authority who has devoted all the years of his business life to the telegraph service. Mr. Hargrave's experience in the class of tests he describes, respecting which telegraph people desire specific information, well qualifies him to prepare the descriptive matter he has so carefully done in this volume. There is, in fact, no other book that treats so comprehensively and with so much elaboration of detail the subjects he discusses. Mr. Hargrave's knowledge of the requirements necessary to fit a man for responsible service in telegraph employ has prompted him to furnish all necessary information to meet any probable emergency that is likely to arise in wire and cable testing.

The volume embraces 256 pages, has 133 illustrations and diagrams. Price, cloth, \$1; in full limp leather, \$2. Address all orders to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

New Catalogue.

We have received from the Leeds and Northrup Company, Philadelphia, a copy of their new catalogue, being the second edition of pamphlet No. 5, and which refers more especially to the portable testing sets and cable testing apparatus, manufactured by this concern. The pamphlet discusses with great detail the numerous products handled by this company, while the illustrations are both numerous and valuable as accessory in explanation to the subjects represented. Users of the various instruments described have learned to regard the literature of this house as being prepared with unusual care, experts in each case passing carefully upon all such matter.

The Leeds and Northrup Company will be glad to supply this catalogue to those interested, and invite correspondence.

Reminiscences in the Busy Life of an Old-Time Telegrapher.

BY JAMES F. GORMLEY, OF BOSTON.
(Concluded from issue of February 16.)

The success that had thus far attended my efforts in establishing a chain of branch telegraph offices in the city of New York to be operated in conjunction with Colonel Speed's Independent line to New England, and its western connections, was beginning to attract attention in local telegraph circles. Indeed, considerable speculative comment and criticism of competing interests was already current.

At that time, as well as for many years thereafter, A. T. Stewart was the leading dry goods merchant of the metropolis. His marble store, palace as it was called, on the east side of Broadway, extending from Chambers to Reade streets, long devoted to retail purposes, had just been abandoned for the new and larger building at Broadway, Ninth and Tenth streets, now a part of the Wanamaker establishment, while the downtown structure, now converted into an office building, was devoted to the wholesale business of its owner. The business of the great firm of A. T. Stewart and Company, the largest of the kind in America, extended over every part of the country, and its telegraph requirements were enormous. To locate an office, therefore, at the Broadway and Chambers street corner was my ambition. It would be a money maker. But my aspiration in this instance was not to be realized. Mr. Libby, partner of Mr. Stewart, with whom I endeavored to negotiate for the privilege, and to whom, as an inducement, I offered to transmit free all the local messages of the firm between the downtown and uptown stores, became much interested in the proposition, towards which he appeared to be favorably inclined. I further requested that I might be allowed to install a telegraph instrument in the ticket office at Niblo's Garden (a famous theater), in the Metropolitan Hotel on Broadway, this property also being owned by Mr. Stewart. But Mr. Stewart was utterly opposed to granting a concession to anyone having in view the opening of a public telegraph office on his premises, no matter what terms might be offered or what firm conveniences might accrue by such an arrangement. He was peremptory in his refusal. The decision was characteristic of the man, a person who was not in sympathy with the public any further than as buyers of his goods. The idea, however, appealed strongly to Mr. Libby, and he desired me to submit an estimate for the building and equipment of a private line to connect a number of pieces of property owned by Mr. Stewart. But nothing ever came of this.

Business at the various offices I had opened was flourishing, but I began to have more or less trouble with several dishonest men in charge, who suddenly quit, forgetting to turn over the receipts to me before taking their departure. On top of this rather disquieting state of affairs and

the setback I had received from Mr. Stewart, I received a request from General Marshall Lefferts of the American Telegraph Company, and a well-known merchant of New York, to call and see him. He eventually made me an offer to buy out my local telegraph line and assume direction of its offices. He proposed also that I identify myself with his telegraph interests. This I declined to do, but the proposition to purchase receiving the sanction of Frank Smith, son of F. O. J. Smith, with whom I was associated in the enterprise, the sale was effected, the line and offices being turned over to J. C. Hinchman, General Lefferts' representative.

Although my connection with this city-line business was not of very long duration, it proved to be a fairly profitable undertaking, and I was enabled to turn over to Frank Smith \$550 as his share in the transaction. But my enterprise had served to direct attention afresh to the importance and need of establishing telegraph branch offices about the city as a means of promoting local business and to act as feeders to the main office. Apparently General Lefferts profited by what I had told him respecting my endeavor to gain permission to fit up a telegraph office in Mr. Stewart's store, for not long after, in coming out one day from the former's office I met Mr. Libby going in, who greeted me with a peculiar, quizzical smile that seemed to me to be suggestive at least.

In looking back over so many years one's mind becomes freighted with confused memories; so much so, in fact, as to make it difficult to recall the incidents and scenes of long ago, in sequential order when they crowd so upon recollection. The stirring events of the war period were many. Naturally New York was a focal point. The bogus Presidential proclamation calling for 300,000 additional troops, regarding which Telegraph Age has published voluminous matter in so far as it affected the telegraph, created much excitement. Also, I well remember the draft riots and the reign of terror created, in the thick of which I was a spectator, spending one night in the house of Judge Dean on Madison avenue, into which when passing I was invited as a measure of safety by its owner, and from which point we watched first the plundering and subsequently the burning of the dwelling near by of the port warden of New York.

When my old friend, Martin Van Buskirk Finch, of Albany, who was the agent at that point of The Associated Press, and a close friend of D. H. Craig, the founder and general manager of that association, as well as of our mutual friend, A. A. Lovett, came to New York to accept the managership of the main telegraph office at 145 Broadway, I was restored to my former position on the Washington wire. This was a place much to my liking, and I continued to hold it for a long time until obliged to relinquish it on account of the severe and prolonged illness of my wife which terminated fatally.

George B. Prescott, my former co-worker in Springfield, Mass., was president of the Gold and

Stock Telegraph Company in New York. This company was seeking to introduce into public use a telephone of their own design. In this effort I became enlisted. At that time the telephone was regarded more as a toy than an instrument of utility having any practical and commercial value. Consequently the proposition I sought to lay before New York business men in its behalf met with scant consideration. It must be admitted in the light of the subsequent development of the telephone and the methods employed governing its use that the crude instruments of that day had about as little to recommend them as the plan of operation proposed. The latter was to build lines where required, connecting different business' offices, sell them outright to users, they in turn to lease them to the selling company, who would undertake their operation.

Years before, when located at Springfield, Mass., I had known Samuel J. Burrell, who at that time worked the House printer at the New York end of the Boston line. He had an office on Broad street, and was the owner of a printer that was really a good instrument. He made an earnest move to secure its adoption among downtown business men, in which I engaged to assist him, the general proposition being much the same as that urged in behalf of the telephone referred to. But in this case, as in the other, we were doomed to failure. An offer at this time coming from Boston, there to operate a Phelps motor printer on the New York wire, received my prompt acceptance, and I forthwith became a citizen of the modern Athens, where I have since resided. The position then entered upon I continued to hold until 1901, when I retired permanently from the service, the printer which I had worked being abandoned. I, as well as William Blanchard, the other printing operator, became the recipient of a pension from the Western Union Telegraph Company. This bestowal, which was marked by kindly consideration and good will on the part of the company officials, and which has been deeply appreciated, inasmuch as it has enabled me in my old age, when incapacitated for work by illness, to live in contentment, with modest desire and relieved from distress.

As I recall in retrospect the "forms and scenes of long ago," how quaint and old-fashioned seem the workings of the telegraph of my youth compared with its subsequent evolution and mighty volume and rush of the present-day business and governing methods! On Sundays the old New York, Albany and Buffalo Telegraph Company did not open its doors for business. As a result the Monday morning editions of the Albany newspapers, although members of The Associated Press, were shorn of much of their accustomed telegraphic news. This was a source of chagrin to such men as Jacob C. Cuyler, editor of the Express, and Mr. Johnson, editor of the Atlas and Argus. I was enabled to partly overcome this deficiency when I obtained permission from my

superintendent, A. A. Lovett, to make an arrangement with Mr. Harrington, the Springfield, Mass., operator to send me a synopsis of the news going from New York to Boston. In this way I managed to furnish the Albany papers with news items, for which service I received the magnificent remuneration of \$1.50 from each paper, a sum which I divided with Mr. Harrington.

Old men, you know, like to revert to the past, for it is an atmosphere in which they dwell more frequently than that of latter-day events. I was, of course, during the earlier stages of my career brought in ultimate touch with many printing-telegraph operators. As a rule they were a fine body of men, intelligent, high-minded, faithful, and in the better meaning of the term, gentlemen. Some of them have been named already in these sketches, and at the risk of repetition I recall at random the following: Rufus B. Bullock, who afterwards became governor of Georgia, and subsequently a government commissioner of the Union Pacific Railroad; James N. Ashley, manager of the Boston office of the Commercial Telegraph Company, who afterwards became associated with the American, and later assistant at New York of Superintendent A. A. Lovett; H. C. Bradford and Frank Ashley, at Providence, R. I.; Harry Lloyd and Thomas Slack, of Boston, and Edward Gibbons, New York and Boston. I remember Henry Bishop, of New York, who went to London to operate the Hughes printer, but who returned after a short stay abroad. He worked the House printer with me on the Washington wire.

The list goes on: J. C. Hinchman, M. S. Roberts, J. G. Tobey, of Boston, Springfield and New York; Samuel J. Burrell, New York; John Selden, New York and Springfield; John Murphy and Mr. Harrington, whose first name I forget, at Springfield; Thomas Miler, of Boston, Springfield, Hartford and New York; Thomas P. Scully, now living in retirement in Brooklyn.

I knew Charles and Gilbert Simmons, of New York, the latter also working in Philadelphia; William Blanchard, Boston, Springfield and New York, who is now dead, and Charles Blanchard. Both of the Messrs. Blanchard, in company with a brother of A. A. Lovett, went to California to introduce the House printer on the Pacific Coast, but their efforts in this matter were unavailing; Charles became interested in the fire-alarm business, and William went into mining, but both were glad to return East. Then there were Joseph Knittle, of New York, now retired and living in Brooklyn, and Theodore Fullon, who divided his time largely between New York and Boston. There are three names that stand out distinctly in my memory and in my regard, for I knew and loved them well for their many excellent qualities of mind and heart—Fred J. Grace, John K. Calvert and Joseph L. Edwards. At the office of The Associated Press, New York, were Oliver Bradford and Fred Barber. On the Washington

printer there were A. B. Talcott, the manager at Washington; Charles B. Noyes, whom I might designate as being "at large" he worked in so many different places; Fred W. Royce, Washington; J. P. Filer, A. J. Lombard, Richard Megenhardt, at Baltimore. Besides these there were Robert Black, George Snyder, Jacob Woodruff, H. E. Thayer and others.

This is a long list and might be extended, for as I write other names rise into recollection, but my story is told. If I have unconsciously made any errors of statement attribute it to a possible faulty memory. I rejoice that I was able to serve the telegraph. My life as passed in its service has had its vicissitudes, but as I muse over the past, as I frequently do, I would not change the course of events, for probably all things were ordered for the best.

Telegraph Literature for Telegraphers.

The American telegraph operator cannot complain of a lack of telegraphic literature, the purport of which is to afford him guidance and practical help in successfully pursuing his profession. While, of course, the best school in which to learn the rudiments of the art of telegraphy is the telegraph office itself, where theory, which though plausible, if often at fault, has no place, but where actual practice is always a visible and concrete operation, yet the science of telegraphy can only be acquired by its careful study. For this purpose books treating on the subject are necessary. Yet books are of but little value to the student who is really desirous of acquiring knowledge and a perfect understanding of his vocation, unless they impart information of a character thorough in its treatment of detail, stating fundamental facts and great truths in a manner that the average reader will readily grasp and profit by. A writer who has comprehensive and practical knowledge of his subject, based on personal experience, who thinks clearly, and is enabled to convey his thoughts and meaning intelligently to a receptive mind eager for information, possesses an enviable gift. Fortunately for the telegrapher who would seek a higher acquaintance with his calling through study, there are a number of writers, telegraphers themselves, men of fine intelligence, frequently still in active work, who have written on the great subject of telegraphy in a manner such as to render their names in effect as household words. The earnest student in telegraphy need never be at a loss for a helpful text book. There are numerous volumes extant, revised and brought down to date, any one of which should be a valuable possession. Such authors as William Maver, Jr., Francis W. Jones, Willis H. Jones, William Finn, Thomas D. Lockwood, Minor M. Davis, Charles Thom and Jesse Hargrave, all living personalities, have contributed to the literature of the telegraph in a manner that has created a wide and apparently never-ending demand for their writings. The subject of the telegraph has been

considered from every point of view, and no library of a telegrapher can be considered complete without the several books of these authors on his shelves.

Women Telegraph Operators in India.

Consul-General William H. Michael, of Calcutta, writes that the government of India, acting upon the recommendation of the telegraph committee, has authorized the employment of women operators. He adds:

The candidates must be between eighteen and thirty years of age and they must be unmarried or widows. They must undergo a training of twelve months in the telegraph training classes, during which time they will receive \$6.65 a month, the same allowance that is drawn by male learners. Selected candidates, on leaving the training classes, will be on probation for one year. On appointment they will receive the following pay: At stations in India other than Rangoon and Madras, \$13.35 a month, increasing by annual increments of eighty cents, commencing with the four year of service, to \$26.65; at Rangoon, \$16.65, increasing to \$30; at Madras, \$10, increasing to \$23.35. Service will be pensionable, and there will be no liability to transfer; but resignation will be compulsory in the event of marriage. The hours of work of women operators will be from 8 a. m. to 9 p. m., but the whole period of duty will not exceed seven hours in the twenty-four, and there will be exemption from duty on Sundays.

Book Review.

"The Hughes and Baudot Telegraphs," by Arthur Crotch, of the engineer-in-chief's department of the English post office (controlling the telegraphs in that country), has made its appearance, from the press of S. Rentell & Co., Ltd., London. The volume, which numbers eighty-four pages, contains a very full description of the two type-printing telegraph systems used so generally in Europe, the Baudot in France and the Hughes elsewhere on the Continent. The illustrations are numerous and clear, and all together, the book furnishes a fund of carefully stated information valuable to the student and also of interest to the lay reader. This book may be obtained of J. B. Taltavall, Telegraph Age, 253 Broadway, New York, and will be sent to any address, carrying charges prepaid, on receipt of price—seventy-five cents.

The McGraw Publishing Company, of New York, publishers of the Electrical World, the Street Railway Journal, and other papers, has extended its field of electrical journalism into that of telephony by the recent purchase of Sound Waves (monthly), of Chicago, and the American Telephone Journal (weekly), of New York. These two papers have been consolidated under the name of the latter and will be issued weekly, the first number having made its appearance on February 22.

Radio-Telegraphy.

A new wireless telegraph station at the Mores, Havana, has just been completed, the tower having an altitude of seventy-five meters. A new station has also been constructed in Santa Clara, and stations are in course of construction at Camaguez and Santiago de Cuba.

It is now proposed to transmit standard time by wireless telegraphy. Such a plan seems feasible. In the near future suitably equipped ocean-going craft, and land stations as well, will no doubt receive standard Greenwich time transmitted from some central wireless station.

In the English House of Commons the Postmaster General has stated that the wireless telegraphy convention would have to be ratified by the government, and notice of the reservation of the right of exemption of stations given, before the end of March.

It is announced that an extensive wireless telegraph receiving and transmitting station is to be constructed at the base of the Eiffel Tower, Paris, where an elevated station has been established for some time past. It is stated by Reuter's agency to be the ultimate object of the new station "to render possible wireless communication between Paris and New York."

A remarkable instance of wireless telegraphic communication has been verified at the Bureau of Equipment, Navy Department. A wireless station at Point Loma, near San Diego, picked up the Connecticut, then talking off the coast of Cuba, took down the message and also picked up a message sent from the wireless station at Pensacola, Fla. Experts are wondering whether the message went across the continent or in the other direction around the world.

J. G. Opp, manager at Montreal, Que., of the Marconi Wireless Telegraph Company, states that it is the intention of the company to extend the service to include commercial as well as press messages, and that offices will be opened in other cities of Canada within a short time. A flat rate of fifteen cents per word is charged for commercial messages, this rate covering transmission over the land lines from Montreal to Glace Bay, and from Clifden, Ireland, to destination of message. It is not the present intention of the Canadian-English company to have American business transmitted through the Montreal office, owing, it is stated, to difficulties in land line facilities; but the erection of a station is contemplated in the United States, possibly in the vicinity of New York, for the benefit of the American public.

President Roosevelt in a message to Congress has urged early legislation for the protection of government messages transmitted by wireless telegraphy. The restrictions suggested for enactment into law are intended to apply in times of peace, as during times of war more radical regulations can be put into effect without legis-

lation by means of executive proclamation as a belligerent right of the President. In a letter from the Secretary of the Navy accompanying the message, it is stated that on frequent occasions important messages from war vessels were interfered with and held up for a considerable time by the working of commercial wireless stations. The department asks that it be made a punishable offense to originate or transmit a false message purporting to be official; to break in and interfere with any wireless station while it is transmitting an official message; to refuse to cease or to fail to cease sending a private wireless message when called upon to do so by an operator having an official message to be sent.

The invention of a new system of wireless telegraphy with continuous waves is attributed to Egbert von Lepel, of Berlin, and a successful demonstration of its use was recently given between Reinickendorf, near Berlin, and Brunswick, a distance of 142 miles. It is stated that the essential characteristic of the generator is represented by an entirely new kind of electric discharge between metallic electrodes, and that for a given output it only weighs about one-tenth as much as the Poulsen apparatus, and is more economical in the consumption of energy. It is proposed to make experiments over a greater distance in the near future, and also to make more extensive tests with the same system in connection with wireless telephony. The inventor, who is only twenty-six years of age, was formerly a lieutenant in the army, was employed as an erector by the Allgemeine Company, and was afterwards engaged as an engineer by the Berlin Wireless Telegraphy Company. He was employed by the latter on the staff of Admiral Rezhdestvensky during the Russo-Japanese War, and had the honor of submitting technical reports to the German Emperor and of receiving his Majesty's written acknowledgements. Herr von Lepel has more recently conducted experiments in his own laboratory with a new kind of receiving apparatus for wireless messages, and carried out the work in connection with his new system for the production of undamped oscillations.

Edison Moving-Picture Litigation.

It is announced that an arrangement has been made with moving picture manufacturing interests and concerns which rent machines whereby all litigation relating to Edison patents will be withdrawn. The arrangement is in the interest of the Edison Moving Picture Company, and it is stated by the president of one of the large companies entering the combination that \$1,000,000 would be a conservative estimate of the annual returns to Mr. Edison on the moving-picture patents now that his rights are conceded. We understand that Mr. Edison's personal benefit from the arrangement will approach \$150,000 per annum.

You can't afford to be without TELEGRAPH AGE; \$1.50 a year.

New Printing Telegraph at the United States Capitol.

BY WALDON FAWCETT.

(From the Western Electrician.)

Officials of the Congress of the United States and all those holding administrative positions at the capitol at Washington have become enthusiastic advocates of recent years of the advantages of electric power. The current, generated in an up-to-date plant in the basement of the big building, is employed for every purpose to which it is adapted and its use will be still further extended upon the completion of a new plant designed to provide light and power for the capitol and its two annex structures—the new office buildings for the use, respectively, of the members of the Senate and House of Representatives. The first of these annexes—the new \$3,000,000 office building of the House of Representatives—has been completed within the last few weeks and is being linked to the capitol by various electrically operated communicative systems.

Of especial interest are the operations of a printing telegraph, with which experiments are being conducted with a view to providing a system for recording the doings of Congress and transmitting the chronicle to points more or less distant. By the aid of the new installation a brief record of all that transpires in the legislative halls can be transmitted instantaneously to Congressmen engaged in remote committee rooms or detained in their private offices, one-third of a mile distant from the scene of activities. At the outset the scope of this new "intelligence transmission system" is limited to the capitol and the new office building of the House of Representatives, but if the device does all that is expected of it the sphere of usefulness will be extended to include the Senate office building, now under construction, and all the principal government departments, some of them occupying buildings situated several miles distant from the capitol.

The provision of the new \$3,000,000 building south of the capitol, said to be the largest office building in the world, with offices for the 400 representatives in Congress, was directly responsible for the introduction of this new time-saving device. For years past there has been a growing realization of the need of some communicative system that would more closely link the various parts of the legislative headquarters, and once provision was made for outside office quarters for the members of the Senate and House of Representatives this need became imperative. Most of the lawmakers will henceforth spend a considerable portion of their time in the private offices or committee rooms of the new office buildings, and it is essential that they have means at hand to keep momentarily in touch with all that transpires on the floor of the legislative chamber to which they are accredited.

Mr. Elliott Woods, superintendent of the

United States capitol, gave much study to the subject and finally decided to make a trial of the printing telegraph as the communicative system most likely to meet the demands at the capitol. The system as installed consists of a sending station, in charge of an operator, and three receiving stations which are, of course, entirely automatic in their operation. One of the receiving stations is located in the new House of Representatives office building and the others are in the capitol proper. The system has been purposely restricted in scope until its fitness for the work in hand has been fully demonstrated. Then the number of receiving stations can be multiplied to any extent desired. Upon the formal adoption of the apparatus the base of operations, or sending station, which is now in the basement of the capitol, will be removed to a room adjacent to the office of the speaker so that the operator can receive bulletins for transmission with the utmost promptness. The statements to be transmitted by the printing telegraph will be prepared by the journal clerks of the Senate and House of Representatives and nothing will be transmitted by the machine save an official transcript of the proceedings of the two Houses of Congress.

The printing telegraph which has been selected for use at the capitol is the invention of John Burry, of New York, electrical engineer of the Stock Quotation Company. It has the keyboard arranged with letters and numerals in a double circle. In accordance with the latest approved practice a "dummy" receiving instrument is installed adjacent to the sending apparatus so that the operator has visible evidence at hand of the result of his work and can correct any mistakes or supply any omissions before the error has had time to make trouble. This facility for checking up the work as it progresses is of the highest importance in serving Congressmen who must have information of absolute accuracy.

The messages, which are transmitted simultaneously to any number of receiving stations, are printed in typewriter characters on paper of the width of ordinary letter paper. The paper unwinds from a roll and at intervals a section is cut off and bound with its predecessors in a file near at hand. This phase of the operation is of importance in the congressional work, it being designed to have the bound sheets constitute a complete skeletonized record of all that has transpired at the capitol during the day. Thus, a member arriving at the legislative headquarters late in the afternoon of a day on which Congress is in session can, by glancing through the cumulative bulletins at any receiving station of the telegraph, quickly familiarize himself with all that has occurred up to the minute of his arrival.

The primary purpose of the new system on Capitol Hill is to link the historic building with its two large "additions," but ultimately the receiving stations of the printing telegraph will, if the system is approved, be extended to embrace the White House and the various government de-

partment buildings in Washington so that Senators and Representatives visiting the departments or the executive offices while Congress is in session can keep in touch with developments at the capitol. With such facilities every member can follow closely the measures in which he is interested and be on hand when a vote is taken.

Obituary.

William S. Humes, an old-time telegrapher, and a member of the United States Military Telegraph Corps, died recently at Altoona, Pa.

Bernard J. McSorley, a well-known telegrapher in the sixties, died in Philadelphia, February 18. For many years he was connected with the General Electric Company in the city of his residence.

F. H. Duncan, manager of the Postal Telegraph-Cable Company, at Trenton, N. J., and a member of the United States Military Telegraph Corps, died February 7 after a long illness at that place.

Ernie Lynn, aged twenty-eight years, a Western Union operator at St. Paul, Minn., died at his home in Eau Claire, Wisconsin, on February 6. He was a well-known telegrapher and had worked in many brokerage offices.

John Luxon, a well-known telegraph operator, died at Worcester, Mass., January 29. He was a native of Port Hope, Ont., and was fifty years of age. For some time he was employed by the Canadian Pacific Railway's Telegraph at Montreal. Later he entered The Associated Press service at Bridgeport, Conn., and since 1903 had been day operator at Worcester, Mass., for that association.

James C. Minahan, aged fifty years, of Albany, N. Y., died at Baltimore, Md., on February 14. Born at Troy, N. Y., he entered the employ of the Atlantic and Pacific Telegraph Company at that point as a messenger in 1870, and soon rose to become an expert telegrapher. In 1889 he became manager of the Municipal Stock and Telegraph Company at Albany, of which he acquired a controlling interest. He was identified with numerous business interests at Albany.

John F. Randolph, treasurer of the various Edison companies and private secretary to Thomas A. Edison, shot and killed himself at Orange, N. J., on February 17, while believed to be temporarily insane, insanity having previously developed among other members of his family. Mr. Randolph was forty-five years of age, and had been associated with Mr. Edison for thirty years, entering his employ as an office boy. Mr. Randolph was not financially involved in any way. He was a man well-known in telegraph circles.

Frank Adams, a forty-niner of the telegraph, died at his home in Akron, O., on January 22, aged eighty-eight years. He was born at Windsor, Vt., July 5, 1819. He took charge of the telegraph office at Akron in March, 1849. John A.

Townsend, now living in retirement at Yonkers, N. Y., being messenger boy, and who subsequently and for fifty-three years served as manager of the Western Union Telegraph Company, at Dunkirk, N. Y., Mr. Adams' appointment as postmaster of Akron soon following, the telegraph office was removed to that of the post office. Abandoning the telegraph, for many years Mr. Adams engaged successfully in the manufacture of sewer pipe and was prominent as a public-spirited citizen in the affairs of his home town.

James D. Layng, a well-known railroad man, a director in numerous corporations, a former president of the Big Four Railroad and later president and general manager of the West Shore Railroad, died at his home in New York after a lingering illness, on February 12, aged seventy-four years. Mr. Layng was a competent telegrapher, and at one time had a private wire connecting his residence with the Western Union office at 195 Broadway, which he worked himself. In the early days of his career he recognized the advantages that could be derived from the use of the telegraph in connection with the railroad service, mastered the dots and dashes, and although the register was generally used in those days, he read by sound from the very first. Mr. Layng held an important place in the relation of railroads to the government during the Civil War, being in charge of the movements of large bodies of Federal troops. He had charge of the special train conveying President Lincoln to Washington to his first inauguration.

Ernest Jeunet, a well-known telegrapher, died at his home in Franklin, Pa., February 18. He was sixty-four years of age, and was a native of France. He came to America in 1854 with his father and located at Meadville, Pa., where he later learned telegraphy. He entered the Union army as a military telegrapher about 1863 and saw active service at the front in that capacity. After the war he served as operator with the Western Union Telegraph Company at New York, and late in 1865 was appointed manager of the Franklin office and given general supervision of the company's interests in that section. With the exception of a year spent with an oil broker at Oil City, Pa., Mr. Jeunet served as manager of the Western Union office at Franklin until 1892. In 1895 he was elected city clerk and city tax collector of Franklin, and was re-elected to those positions each year for ten years. Surviving him are two sons and two daughters. E. Alexis Jeunet, U. S. A., who served with the Signal Corps at Havana in the Spanish-American War, and later as a lieutenant in the 26th Infantry in the Philippines, and who has recently been selected by the government to have charge of the establishment of government wireless telegraph stations in Alaska; Achilles A. Jeunet, who has been manager of the Franklin office of the Western Union since January, 1905, and Miss Zeline and Miss Leontine Jeunet, of Franklin.

Letters from our Agents.

DALLAS, TEX., WESTERN UNION.

"It is an ill wind," etc. The storms at the north have driven quite a good deal of business out of its usual route and we have taken care of our share of the relaying to both coasts, New York and Los Angeles both having direct wires to Dallas. It is pretty hard to produce a storm that leaves Dallas with no outlet, this city being the center of such a network of railroads. If all means of wire communication fail we still have the wireless out at the fair grounds. Dallas is fast becoming "the" relay point of the Southwest. It is said that the chief operator in New Orleans when asked why it was so dull there, remarked: "Dallas is getting all the relay business."

J. P. Patton, formerly manager at Shreveport, La., is now in charge at the "news" office.

H. P. Bond is now day wire chief, and Roy Delay, night.

A. L. Burns, accompanied by his wife, has just returned from a visit at his home in Altus, Okla.

B. F. Leland is away on leave of absence and has gone to his home in Washington C. H., Ohio.

A. G. McGalin, one of the day wire chiefs, has installed telephones at Dallas, Ft. Worth and Houston. The every day convenience of this must be seen to be appreciated. The device has a "howler" instead of a bell and interferes in no way with a quad and permits of a better understanding of a situation than a good many times the amount of words in "Morse." Mr. McGalin is also working on a repeater which does entirely away with the "transmitter" or repeating sounder, and which, like Mr. Barclay's famous direct point repeaters, can be used without a local if desired.

DULUTH, MINN., WESTERN UNION.

F. E. Smith, formerly employed as chief operator in this office, but later by this company and The Associated Press at Spokane, Wash., has returned to accept the position as night chief.

William Glibbery, manager of the night watch system here, called up the watchman at the ore docks recently and told him he had not turned in his boxes. The watchman replied that he had turned them in, but the signals must have fallen off the wire, because there was a bad bend in one of the poles at the corner of Fifth avenue and Superior street.

NEW YORK, WESTERN UNION.

W. Snead, chief operator of the Great North Western Telegraph Company, at Winnipeg, Man., paid us a visit recently and was escorted throughout the building by Traffic Chief E. E. Brannin.

F. Demski, night traffic chief, city department, has fully recovered his health after a long siege of illness due to a severe surgical operation, and has returned to duty.

H. J. Pearce, son of Chief Pearce, has accepted a position on the day force with The Associated Press in this city.

J. I. Conklin, one of the veterans of the office and a member of the all night force, died suddenly on the morning of February 12 from acute Bright's disease. Mr. Conklin had perfected several inventions in connection with telegraphy and was well liked for his genial disposition.

The sympathy of the force is tendered to E. Mesler, of the Eastern division, who has suffered a double affliction in the death of his wife and of his only sister, both having passed away within a few weeks' time.

T. C. Haley, aged thirty-nine years, connected with the delivery department, died on February 9, of pneumonia.

Harry E. Bennett, chief of the newspaper division, who reached his forty-sixth birthday on February 10, died two days later at his home in Brooklyn, after an illness dating from October, 1907. Mr. Bennett came to this country from North Wales when a child, and in 1888 became associated with this company, continuing in its service during the remainder of his life. He was a man very generally esteemed for his fine traits of character and for his abilities as a telegrapher.

OTHER NEW YORK NEWS.

The New York Telegraphers' Aid Society make their statement for the quarter ending December 6, 1907, as follows:

Balance on hand December 6, 1907.....	\$20,037.56
Receipts	1,386.00
Total	\$21,423.56
Disbursements.	
Sick benefits	\$775.30
Death benefits	200.00
Expenses	166.60
	\$1,141.90

Balance on hand December 6, 1907.. \$20,281.66
Summary.

Receipts	\$1,386.00
Disbursements	1,141.90

Gain for quarter..... \$244.10
Relief Fund.

Balance on hand September 6, 1907....	\$4,008.00
Receipts	95.00

\$4,103.00

Disbursements

110.10

Balance on hand December 6, 1907.. \$3,992.90
Balances.

Aid Society...\$20,281.66	On deposit...\$24,110.06
Relief fund.. 3,992.90	Cash on hand 164.50

Total\$24,274.56 **Total\$24,274.56**

J. H. Driscoll, W. T. Rogers, F. J. Nurnberg, auditors.

Assessment No. 475 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Joseph S.

Bough, at Visalia, Cal.; John M. Fairchild, at Stockton, Cal.; Joseph W. Kates, at Manchester, Va.; William F. Noonan, at Edgewater, N. J., and George F. Randolph, at Brooklyn, N. Y.

Stock Ticker System.

A patent has been issued to Mr. John C. Barclay, assistant general manager and electrical engineer of the Western Union Telegraph Company, on an improvement in stock-ticker systems. The purpose of the invention is to provide means whereby the transmitter of a stock-ticker system in one city or locality may operate a similar system in another city or locality, the two systems being connected by a single line. The usual local transmitting and translating devices are employed, in combination with polar and neutral relays, which relays regulate the electrical impulses transmitted to the line as to sequence, duration, etc. As the impulses are received they are differentiated by means of similar instruments, thus causing the receiving instruments to perform their various operations.

General Mention.

In renewing his subscription recently H. J. Brown of the office of Superintendent E. B. Saylor, of the Western Union Telegraph Company, Pittsburg, Pa., said: "Always count me as a subscriber to Telegraph Age. I am sure I could not and would not be without it."

A man purporting to be a telegraph operator was allowed to use the wire in the Tuscumbia office lately and "wired" to a local bank an order for \$200, which the bank paid. The man, calling himself, W. R. Russell, escaped, but was afterwards arrested in Pulaski, Tenn.

Mr. C. F. Annett, Jr., of Nampa, Idaho, a son of Charles F. Annett, manager of the Western Union Telegraph Company, at New Haven, Conn., who has become a recent subscriber to this journal, writes: "I take great interest in reading Telegraph Age. It is in every way a fine paper, instructive and full of information."

The general meeting of the electrical committee of the Underwriters' National Electric Association will be held on March 25 and 26 at the rooms of the New York Board of Fire Underwriters, 32 Nassau street, New York City. The sessions will open at 10 A. M. Mr. C. M. Goddard is secretary, with offices at 55 Kilby street, Boston. The meeting is an important one to electrical interests, as some revision of the rules of the National Electrical Code will be considered. The telegraph companies are usually represented at these meetings.

Miss Mary Bannon, a telegrapher, told a coroner's jury at Altoona, Pa., on February 15, that she was responsible for a wreck on the Cresson and Clearfield Railroad, occurring on February 10, in which John E. McNellis, an engineer, lost his life and seven other persons were seriously

injured. Miss Bannon was operator at the tower at Kaylor. She said that she had received orders to hold one train on a siding until another had passed, but became confused and transmitted wrong instructions to the operator at Cresson.

The general manager of the Pennsylvania Railroad system has requested all departments to exercise the utmost discretion in using the company's telegraph lines to reduce as much as possible the number of messages sent each day, as well as to secure better attention to messages of importance. New forms of envelopes have been printed for special delivery messages to be forwarded by train mail service, and, whenever possible, this form of message will be used instead of telegrams. In 1904, when a similar notice was issued, a reduction of about 2,000 messages a day was made at the main telegraph office at Philadelphia. Since January 1 a reduction of about 1,500 messages has already been effected at the main office in the Broad street station.

The optimistic man is the successful man.

The best way to become optimistic is to establish a bank account and own a home. It is surprising how quickly satisfaction and success follow confirmed habits of saving. The Serial Building Loan and Savings Institution, 195 Broadway, New York, would like to talk with telegraphers in respect to these matters.

Advertising will be accepted to appear in this column at the rate of three cents a word, estimating eight words to the line.

Will buy or sell, in one to ten share lots, Western Union Telegraph Company and Mackay companies, stocks. Remittances by New York draft or express money order are requested. Address "Stock Investment," care Telegraph Age, 253 Broadway, New York.

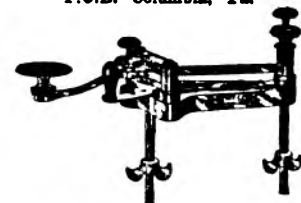
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No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Price, fifteen cents.

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North American Telegraph Co., H. A. Tuttle, general manager and purchasing agent, Minneapolis, Minn.

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Pat. Dec. 16, 1907.

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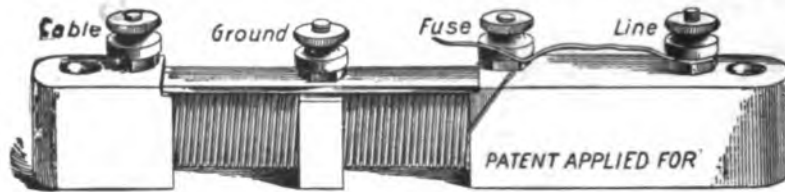
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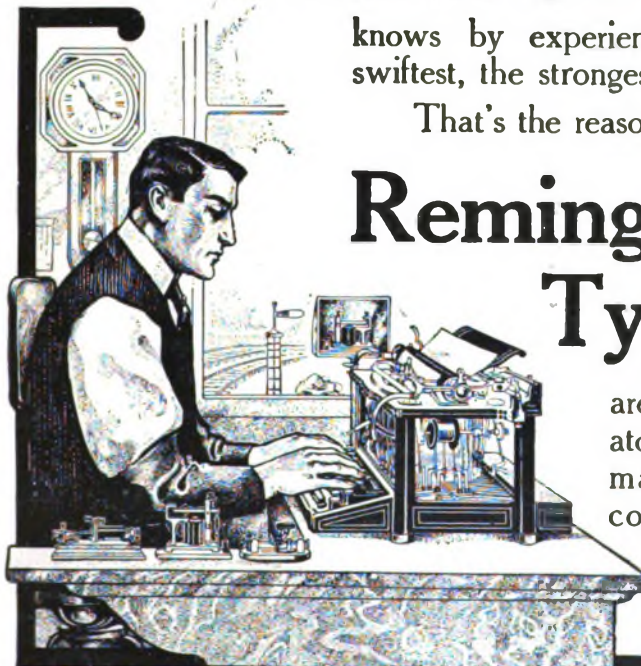
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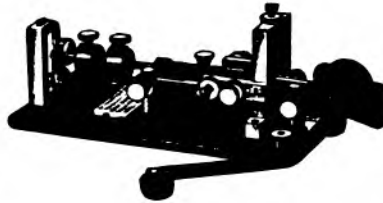
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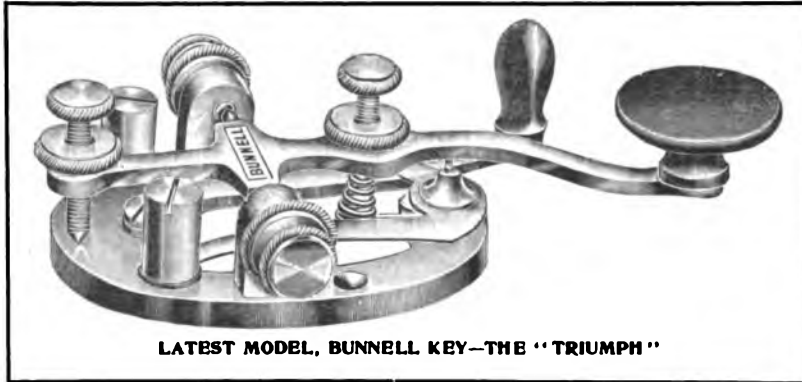
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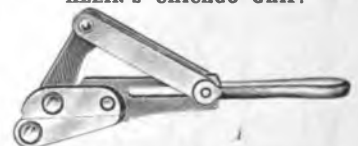
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No. 6.

NEW YORK, MARCH 16, 1908.

Twenty-fifth Year.

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A New Quadruplex Apparatus.

BY WILLIS H. JONES.

Since Edison invented the so-called "bug-trap" which places the receiving sounder in a local circuit controlled by the lever of a repeating sounder, the latter itself being in direct control of the armature lever of the neutral relay, there has nothing so far been offered which possesses sufficient merit to warrant a permanent substitution therefor.

Mr. John J. Ghegan, president and general manager of J. H. Bunnell and Company (Inc.), New York, an old time telegrapher and an inventor of considerable ability, now offers an arrangement patented by him, which he claims is far superior to the Edison instrument and which claim is vouched for by the electrical experts who have given the two devices a thorough competitive test on long and troublesome quadruplex circuits.

The accompanying diagram, Figure A, shows the theoretical arrangements of Mr. Ghegan's device.

The method of operation employed is to open or close the receiving sounder circuit for a fraction of a second by means of the actions of an induction coil, the primary of which is in the local circuit containing the lever and the contact points of the neutral relay, while the secondary is connected to

the magnet of a pony relay, the local contacts of which are in the receiving sounder circuit.

The result of this arrangement is that a momentary opening of the local circuit containing the receiving sounder occurs during both make and break contact of the neutral relay's back stop contact point.

On first reflection one is inclined to fear that the apparent curtailing of the duration of contact while forming a dot due to such opening indicates the possibility of a weakness in the method, yet the results obtained do not apparently justify the doubt. It is claimed that the electrical effect

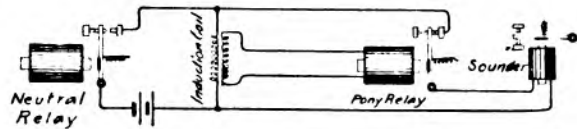


Fig. A.

created in the local circuit containing the receiving sounder by the operation of the induction coil, corresponds with, and follows more closely, the period, duration and characteristics of the line effect, than the air gap, which Edison's device provides to attain the same end, is capable of doing.

In Mr. Ghegan's original apparatus the primary of the induction coil circuit was opened by means of an additional lever attached to the neutral relay as shown in Fig. B. As may be seen by a glance at the diagram the manipulation of this extra lever is merely mechanical, depending as it does upon the opening and closing of the companion lever

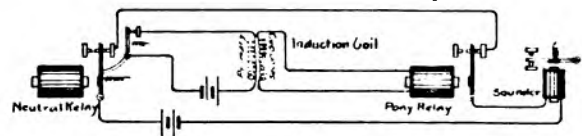


Fig. B.

against which its curved end rests for its operation.

In comparing results obtained by the original and the final arrangements, Mr. Ghegan says:

"With the former arrangement of pivoted lever for breaking the primary circuit it was found that sometimes in the event of very heavy 'kicks' being developed, there would occur a tremor in the sounder caused by a reversal occurring at the moment the neutral relay armature lever was leaving the back-stop, and therefore before the primary circuit containing the coil could be closed. With the new arrangement (Fig. A) this tremor is impossible, as the local circuit is momentarily broken when the neutral relay armature is leaving its back-stop as well as when it makes contact therewith."

Another advantage obtained by this latter method is that it requires no special apparatus, other than the induction coil relay, for its operation. The usual neutral relay and apparatus being employed in their regular capacities and places, except the repeating sounder which is discarded altogether.

The only alteration in the connections of the standard quadruplex apparatus required is that

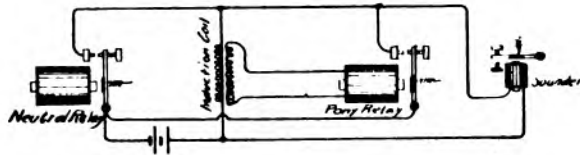


FIG. C.

when using methods shown in Figs. A and B the wires in the binding posts of the distant transmitter representing the "long" and the "short" ends, respectively, be transposed; that is to say, so connected that the short end current goes to line when the transmitter is closed instead of the long end.

The only directions given for obtaining best results is that the pony relay contact points be adjusted so that its armature will respond to both make and break impulses, while the local battery should be sufficiently strong to work the pony relay with a snap.

Another successful arrangement is shown in Figure C, in which the front contacts instead of the back ones are used on both neutral and pony



FIG. D.

relays. The contacts of the latter being connected in multiple with those of the neutral relay so that when the armature of the neutral relay is momentarily separated from its local contact by a reversal or other kick of short duration, the sounder is not affected thereby, because of the impulse from the induction coil causing the pony relay contacts to close for an instant and thus maintain the continuity of the local sounder circuit. This arrangement has the effect of slightly lengthening all dots and dashes, which is a decided advantage on long lines where the dots

come in rather light on the neutral relay. In using method C the transmitter is not changed, but the local contact points of the home neutral relay are transposed so as to operate the sounder from the front stop as shown.

Figure D shows the complete instrument combining the pony relay and coil mounted in a dust-proof case with hinged cover having a beveled plate glass top.

Recent Telegraph Patents.

A patent, No. 879,300, for a telegraph switch-board, has been granted to Albert T. Newman, of Greeley, Kan. Contacts for a number of circuits are arranged in the form of an arc on the board. A shaft passing through the board carries a bundle on one end and a disk on the other. The latter connects the different circuits.

A patent, No. 879,357, for a telegraphic transmitter, has been awarded to Clarence Brain, of Parsons, Kan. A series of spaced contact brushes has means for moving the brushes into operative relation with a series of contacts representing telegraphic code characters. Means are arranged for adjusting the space between successive active brushes to correspond to the time space of a telegraphic code character plus the separating time space between two characters.

A patent, No. 879,650, for electric transmission of intelligence, has been issued to Isidor Kitsee, of Philadelphia, assignor of one-half to William J. Latta, of Philadelphia. Means to shield receiving devices in a telegraph circuit from impulses induced through neighboring wires, comprise a direct shunt with practically no impedance but capacity for each of the electromagnetic devices, a ground for each of the shunts, in combination with a series of inductance coils distributed along the line, part of the coils provided with a direct shunt having practically no impedance but capacity.

A patent, No. 879,651, for electric transmission of intelligence, has been taken out by Isidor Kitsee, of Philadelphia. This method of making immune devices inserted in telegraph lines from neighboring power wires consists in causing to flow in the telegraph lines a prime current of the power wire of a force about equal to the induced current, but of opposite direction.

A patent, No. 879,711, for a telegraphic transmitter, has been obtained by Clyde Williams, Porter B. Mitchell and Sharpe Hathaway, of Barton, Ohio. The transmitter consists of an electromagnet, armature-carrying means, a contact point, keys and contact posts for the keys, and a pivoted plate coacting with the contact point to make and break the circuit through the armature, the plate having adjustable parts disposed on opposite sides of and operated by the armature-carrying means, whereby the period of duration of the break may be varied.

A patent, No. 880,044, for a transmitter, has been granted to Samuel W. Rothermel, of New

York. A typewriter transmitter having a continuously rotating toothed cylinder with which gears having cams are adapted to be lowered selectively by depression of the keys.

The following patents have expired.

Patent No. 447,108, for a telegraph apparatus, held by J. A. Parker, of St. Louis, Mo.

Patent No. 447,166, for a telegraph transmitter, held by S. W. Smith, of New York.

Personal.

The English postmaster-general has appointed Sir John Gavey, C. B., late engineer-in-chief, to be consulting engineer to the telegraph department of the British post office.

The wife of H. Lee Sellers, of the firm of R. H. Sellers and Company, and who is also connected with the Telepost Company, New York, died at her home in Mamaroneck, N. Y., on Thursday, March 5.

Mr. R. N. Young, of Winnipeg, Man., assistant superintendent of telegraph of the Canadian Pacific Railway's Telegraph, accompanied by his wife, recently spent a few days in New York. The visit of Mr. and Mrs. Young was of a social nature and they were made the recipients of much kindly attention on the part of friends.

The recovery of Thomas A. Edison is said at the Manhattan Eye, Ear and Throat Hospital, New York, where he has been undergoing treatment, to be now practically assured. The fever which set in immediately after the operation for mastoiditis on February 23, has disappeared entirely, and fears are no longer felt that complications may develop.

Andrew Carnegie has performed a graceful act in coming to the financial assistance of Mrs. Henry Sanger Snow, of Brooklyn, New York, wife of the defaulting former treasurer of the New York and New Jersey Telephone Company. He has settled upon her the annual income of \$25,000, amounting to about \$1,700. At the same time he has paid her \$1,500 outright. He was led to do this generous deed because of his kindly regard for Mrs. Snow's father, the late David Brooks, who was manager of the early telegraph office at Pittsburg, Pa., when the future millionaire as a boy applied to him for employment and began to earn his living at \$5 a week.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. T. J. Cooper, manager of the Bay City, Mich., office, will go abroad on March 25, sailing from New York. He expects to be absent about ten weeks, during which time he will tour Europe. His place will be filled during his absence, by A. A. Patterson, repeater chief, at Toledo, O.

Dr. P. E. Murray, who was for a number of

years assistant superintendent of the Western Union Telegraph Company at Atlanta, Ga., and who resigned about three years ago, has been appointed manager of the Western Union office at that point, to succeed Horatio Vandevender, resigned, to enter other business.

Mr. W. K. McClarin, assistant superintendent of construction of the southern division of this company, with headquarters in Atlanta, Ga., has resigned to enter other business. Mr. McClarin has been in the employ of this company for a number of years, commencing in a construction gang and working himself up to the position of foreman and general foreman, and was appointed assistant superintendent of construction in June, 1906.

Among the recent executive office visitors were: Superintendents E. B. Saylor, of Pittsburg; J. P. Altberger, of Philadelphia; C. F. Ames, of Boston; F. E. Clary, of New Haven, Conn., and D. C. Dawson, of St. John, N. B.; Managers W. A. Sawyer, of Buffalo; G. D. Butler, of Rochester; J. E. Bierhardt, of Syracuse; H. L. Waterbury, of Saratoga, N. Y.; A. E. Reynolds, of Schenectady; I. W. Copeland, of Troy; T. J. Meade, of Albany; J. B. Bertholf, of Jersey City; C. F. Annett, of New Haven; E. Ryder, of Hartford; H. J. Lockrow, of Newport, and F. E. Howell, of Utica. Some of these managers met Superintendent E. M. Mulford in his office where an informal conference was held.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

E. J. Nally, vice-president and general manager of the company, left town on March 10 for an extended business trip in the West, which will carry him as far as the Pacific coast. He was accompanied by H. F. Hawkins, assistant secretary of the company.

At the annual meeting of the stockholders held on February 25, the following directors of this company were elected: Clarence H. Mackay, A. B. Chandler, Edward J. Nally, Charles C. Adams, George G. Ward, E. C. Platt, Charles P. Bruch, J. W. Ellsworth, George Clapperton, C. R. Hosmer and Edward Reynolds.

At a meeting held by the directors on March 5, for the election of officers and members of the executive committee, the following were elected: Clarence H. Mackay, president; A. B. Chandler, chairman of the board; Edward J. Nally, first vice-president and general manager; C. C. Adams, second vice-president; C. P. Bruch, third vice-president; G. G. Ward, fourth vice-president; E. C. Platt, treasurer; T. L. Cuyler, Jr., assistant treasurer; John O. Stevens, secretary; Henry F. Hawkins, assistant secretary. Executive Committee—A. B. Chandler, G. G. Ward, Edward J. Nally, E. C. Platt, Charles C. Adams, Charles P. Bruch and Edward Reynolds, with the president ex-officio.

A new restaurant designed for Postal employees will soon be opened in this building, and will be a much needed improvement. It will supersede the old restaurant and as it will be conducted under new management, the results are likely to command general approval. It will be in charge of Thomas J. Howlett, of Chicago, an experienced caterer.

The company will establish a new main office in Pittsburg, having leased space for that purpose in the Keenan Building, at the corner of Liberty street and Seventh avenue. The operating room will be located on the seventh floor, and will have abundance of outside light supplied through windows on all four sides. This will be one of the finest and largest offices in the entire Postal system, and in its finish and equipment will embrace all modern requirements. The premises were inspected on March 11 by Messrs. E. J. Nally, H. F. Hawkins, E. B. Pillsbury, division superintendent; Minor M. Davis, and F. E. d'Humy, respectively electrical engineer and assistant electrical engineer.

The Cable.

Cable communication was interrupted March 11 with:

Venezuela Jan. 12, 1906.
Hayti Jan. 18, 1908.

All offices closed to International traffic except Cape Hayti, Mole St. Nicholas and Port au Prince.

Ahvaz, Persia Jan. 26, 1908.
Messages must be addressed "Ahvaz, Post Bushire," until further notice.

Madura Island (Dutch East Indies) Feb. 3, 1908.
Guadeloupe, Marie Galante and
Les Saintes Mar. 9, 1908.

Adolph Amann has resigned his position with the Commercial Cable Company to go into the real estate and insurance business at Arlington, N. J. Mr. Amann was employed by the Commercial Cable Company for fourteen years, eight of which he served in the office of Mr. George Gray Ward, vice-president and general manager.

International Telegraph Conference.

The International Telegraph Conference, which was to have assembled at Lisbon, Portugal, on April 2, but which was postponed on account of the assassination of the king, will be held at Lisbon on May 4.

The Railroad.

Mr. W. F. Williams, of Portsmouth, Va., superintendent of telegraph of the Seaboard Air Line Railway, accompanied by his wife, was a recent New York visitor.

W. I. Bliss has been appointed superintendent of telegraph of the New York, Chicago and St. Louis Railroad, with headquarters at Cleveland, O., vice R. W. Mitchener, promoted to the superintendency of the Cleveland division.

The March meeting of the Railway Signal Association will be held at the Great Northern Hotel, Chicago, on March 16, beginning at 10 A. M. The subjects to be discussed are the report on specifications for electric interlocking, beginning at No. 60; the report on specifications for automatic block signals; also the paper on storage batteries which was presented at New York in January.

The Lake Shore and the Lake Erie and Western railroads are making practical tests to determine the feasibility of using telephones instead of telegraph for train despatching. If these experiments succeed, it is said, the system will be instituted on all the New York Central lines. A number of short telephone lines have already been installed on the Lake Shore for use in despatching over short branches, but no attempt has been made to use the system on the main line. Considerable despatching is also done by telephone on the short divisions of the Michigan Central. The object of the change from telegraph to telephone is to cut down expenses.

The programme of many of the railroads regarding the use of the telegraph, rendered necessary by curtailment of business incident to financial conditions, and superinduced by adverse national and state legislation, varies, of course, according to locality and the needs of the service. Some of the conditions already decided on may be stated as follows: The abandonment of many stations as telegraph stations except division headquarters and junctional points; the substitution of telephones for the receipt and transmission of train orders and messages; the employment of women as agents in many stations thus transformed into telephone stations; the transaction of a large amount of office business by train letter, which formerly was transacted by telegraph; the rapid extension of the automatic electric block signal system, which will make telegraph stations largely unnecessary.

As has been previously announced, the Railway Telegraph Superintendents will hold their next annual convention at the Windsor Hotel, Montreal, Que., in June, the dates being the 24th, 25th and 26th of that month. There is a very general and pleasant impression abroad that this meeting, apart from its regular business functions, which will embrace numerous features of direct interest that are coming up for discussion, will be particularly attractive in its plan of social entertainment. It is hinted that Vice-President W. J. Camp, the electrical engineer of the Canadian Pacific Railway's Telegraph, aided by W. W. Ashald, of the Grand Trunk Railway system, have got their heads together and are "conspiring" to give their guests from "The States" a genuine good time. The plan in brief thus far arranged is that the members of the association will be taken on a trolley ride over the lines of the Montreal street railway. Then the Canadian

Pacific Railway will provide transportation for an excursion from Montreal to Quebec and return. Besides this, the Richelieu and Ontario Navigation Co. has agreed to furnish transportation at half rate over any part of their system which the superintendents may desire to travel, either from Toronto or Kingston to Montreal, or for side trips to Quebec or up the celebrated Saguenay River. The committee on topics state that a list of the papers to be read at Montreal will be furnished at an early date. It will be published in this column. In the meantime anyone seeking any further information respecting the affair should address P. W. Drew, at Chicago, the secretary, and who is the superintendent of telegraph of the Wisconsin Central Railway Company.

The Nine-Hour Law Decision.

Announcement was made on Saturday, March 7, of the formal decision of the Interstate Commerce Commission as to the application made by railroads for an extension of time in which to comply with an act of Congress, at many stations covered by the sixteen-hour provision and at nearly two-thirds in the aggregate of the stations on the lines of the applicants to which the nine-hour provision relates. The petitions alleged in some cases inability to obtain the additional force required, and in most cases the financial hardship which the compliance imposes. An order was entered by the commission denying the petition in all cases.

It is held by the commission unanimously that to grant such wholesale orders of extension would interfere in effect with the policy of the legislation in its fundamental aspects and would amount to an amendment of the law by an official body charged with its administration. It was held further that to grant an extension on account of financial distress would open the door to endless uncertainties, because there is no possible means of determining the degree of financial distress which would justify extension, and if mere financial hardship is, in the language of the law, "good cause" for postponing compliance, it was equally good cause for refusal to pass the law.

Death of George W. Balch.

George W. Balch, a forty-niner of the telegraph, a native of Vienna, N. Y., died at his home in Detroit, Mich., on March 2. He acquired a practical knowledge of telegraphy in 1848. In early life he became identified with the O'Reilly telegraph interests, both at Detroit and Chicago, his telegraph connections leading him also into railway telegraph affiliations. By reason of consolidations Mr. Balch became connected with the Western Union Telegraph Company, and in 1865 was made assistant general superintendent of the company with headquarters at Rochester, N. Y. In 1866 he was transferred to the executive department of the company at New York, continu-

ing there to act as assistant to General Anson Stager, and also for some months assistant to J. H. Wade, president of the company. In 1867 Mr. Balch's headquarters were removed to Buffalo, N. Y. Declining the superintendency at Chicago at that time tendered to him, he soon resigned and entered commercial pursuits at Detroit. Subsequently he embarked extensively in the construction of telegraph lines for the Western Union Telegraph Company in Michigan and Indiana. He also built some two thousand miles of lines for the Michigan Telegraph Company, of which he was president. Mr. Balch, with others, introduced the district telegraph into Detroit, and was also instrumental in introducing the telephone. For many years he was president of the Telegraph and Telephone Construction Company and president of the Michigan Bell Telephone Company. Of late years Mr. Balch divided his time between Detroit and New York, in both of which cities he had extensive business interests, in the latter being a member of the Produce Exchange. He acquired a large fortune.

Thomas B. Balch, aged forty-five years, son of George W. Balch, committed suicide on March 7, impelled to the commission of the rash act because of brooding over the loss of his father.

OBITUARY NOTE.

Victor H. MacCord, aged sixty-six years, a well-known old-time telegrapher, died in Linesville, Pa., on February 4. He learned telegraphy early in life, first becoming identified with the railroad service, but later taking charge of a commercial office at Pithole, Pa., at the time of the oil excitement. Abandoning telegraphy, he went to California, where he remained from 1867 to 1870, thence going to Peru. There he became general superintendent of the Southern Railway of Peru, a position he continued to hold until 1905, when he resigned to devote his time to personal interests. He represented this country as resident consul at Ariquepa, Peru, for many years.

A Useful Device.

The "Holdfast" relay springjack, an invention of practical value to all users of sending machines and portable keys, is shown in an advertisement on another page of this issue. This simple device is attached to the binding post of the relay, its construction permitting the insertion or withdrawal of any kind of wedge without interrupting the circuit. It also entirely eliminates all damage to keys caused by the prevailing method of forcing the wedge under the lip of the key; it saves the key and leaves it at all times free for use. This device is the invention of a press operator, a practical man daily engaged in the service, who has provided something so useful as to recommend it to the profession generally.

Mr. Marconi on Wireless Telegraphy.

Mr. Marconi delivered his promised address on "Telegraphy Through Space, and Some of Its Commercial Applications" before the Chamber of Commerce at Liverpool on February 24. He said that his principal object was to explain what wireless telegraphy was, what it had accomplished, and how it could be further utilized in the interests of commerce and industry. One objection leveled against wireless telegraphy was that it was not possible to work more than a very limited number of stations in the immediate vicinity of each other without mutual interference or producing confusion, but, as in the case of land telegraphs, this could be obviated by proper organization and discipline. It was often an advantage that any station should be able to pick up a message not intended for it, as in the case of a ship in distress calling for assistance, but although in many instances untuned wireless telegraphy might prove of great utility, still it was clear that for ordinary commercial purposes, so long as there remained undiscovered some method of rendering stations completely independent of one another, a very important and effectual limit to the utilization of the system would be imposed. By the invention, however, of condenser circuits, constructed so as to have definite periods of electrical vibration, it had become possible to send different messages simultaneously and without interference, and methods for preventing interference were in actual successful use by the royal navy and on the principal liners which employed his system. The facility with which distances of over 200 miles could be covered by his apparatus as long ago as 1900, and the knowledge that by means of tuning devices mutual interference could be prevented, led him to decide on the construction of two powerful stations, one in Cornwall and the other in North America, to test whether, by the employment of much greater power, it might not be possible to transmit messages across the Atlantic. It had been stated at several meetings of shareholders of the cable companies that the electric wave would never succeed in getting round or through the mountain of water, over 200 miles high, which existed between this country and America. Toward the end of 1901, experiments were made between Poldhu and a temporary station near St. John's, Newfoundland, and on December 10, 1901, signals were received with unmistakable clearness at the latter from the former, a distance of about 2,000 statute miles. In February, 1902, readable messages were received on tape on board the steamship "Philadelphia," of the American line, up to a distance of 1,551 miles, and test letters as far as 2,099 miles from Poldhu. Experiments with Newfoundland could not be continued or extended in consequence of the hostile attitude of the Anglo-American Telegraph Company, but, owing to a generous subsidy of £16,000 from the Canadian government,

a long-distance station was constructed in Glace Bay, Nova Scotia, and during the latter part of 1902 extensive experiments, which were greatly facilitated by the placing of a cruiser at his disposal by the Italian government, were carried on with Poldhu. It was then observed that intervening land or mountains did not considerably reduce the distances over which it was possible to communicate. Messages were received direct from Cornwall at points in the Baltic near Sweden; at Kiel, the North Sea, the Bay of Biscay; at Ferrol, Cadiz, Gibraltar, Sardinia and Spezia. In December, 1902, messages were exchanged between Poldhu and Glace Bay, but it was found that communication was better from Canada to England than in the opposite direction. This was due to the fact that, by reason of the subsidy granted by the Canadian government, the station at Cape Breton had been more efficiently and expensively equipped, while as regards Poldhu, owing to the uncertainty of what might be the attitude of the British government, his company was unwilling to expend large sums of money in increasing its range of power. In the spring of 1903 the transmission of news messages from America to London was attempted, and for a time these were correctly received and published in the London Times, but accidents occurred, and it was decided for the time being not to attempt the transmission of any more public messages until such time as a reliable and continuous service could be guaranteed under all ordinary circumstances. As he found that many important improvements evolved during the experiments could not be readily applied to the plant at Poldhu, it was decided to erect a completely new station at Clifden, in Ireland, for the purpose of again attempting to carry out transatlantic communication on a commercial basis, and on October 17, 1907, a limited service for press messages was commenced between Great Britain and America, but difficulty was experienced with the land companies. On February 3 this service was extended to ordinary messages between London and Montreal, the transatlantic rates proper being 2½d. a word for press and 5d. for ordinary messages. Although the stations at Clifden and Glace Bay were not yet complete, communication across the Atlantic had never been interrupted for more than a few hours since they were opened for commercial work on October 17 last. In about four months, when the latest apparatus was installed, they should be able to deal with at least 20,000 words a day. A problem of great importance which had lately occupied the attention of inventors was that of giving direction to the electric waves sent out from a transmitting station, and as the result of experiments recently made, messages could now be sent over considerable distances in the desired directions, while they traveled over only a comparatively short distance in other directions. The question of the speed of working wireless telegraphy had often been discussed, but very seldom fairly treated.

On ships using wireless telegraphy the speed of working was approximately fifteen words per minute. This, however, was dependent more upon the ability of the operator than upon anything else, as a speed of thirty words per minute had often been attained with the ordinary ship apparatus. By means of special apparatus and automatic senders he was able to demonstrate before the Royal Institution in London that a speed of about one hundred words per minute was possible, and he believed a similar speed had been attained between wireless stations operated by the post office. At stations doing transatlantic work no attempt had yet been made to work at high speed, as other more difficult problems claimed attention. At these stations, however, a speed of twenty words per minute had already been obtained, and he saw no reason why, with suitable devices, this should not be greatly exceeded.

As to the commercial applications of wireless telegraphy, taking the order in which the art had developed, he should say—(1) communication between ships and the shore and between ship and ship, (2) communication between islands and outlying places, and as a substitute for or aid to ordinary wire or cable telegraphy, (3) communication with distant countries, such as America and the colonies. The application of wireless telegraphy as an aid to navigation and as a means for communicating with ships at sea had progressed at a rapid pace. The first British ship to be permanently fitted with wireless telegraphy for commercial purposes was the "Lake Champlain" in the Elder-Dempster fleet. Now, one hundred and sixteen liners belonging to England, Italy, France, Germany, Holland, Belgium, the United States and Austria were fitted with Marconi apparatus, and there were over fifty land stations with which these vessels can communicate. During 1907 these commercial messages aggregated 1,868,500 words. The operation of the long-distance stations at Poldhu and Glace Bay made it possible at all times to transmit messages to ships, whatever their position, between Europe and North America; and to the Cunard Steamship Company belonged the credit of having greatly encouraged the long-distance tests with their steamers. The utility of wireless telegraphy in the case of ships in distress had been repeatedly demonstrated, and its use in navigation for preventing accidents could hardly be over estimated, as all the ships equipped were constantly being advised of the state of the weather ahead of them, and whether fog or icebergs were likely to be encountered on the track. Nearly every warship in the world was equipped with wireless telegraphy, and those of the British navy were enabled to keep in touch with England when far out in the Atlantic, at Gibraltar and in the Mediterranean. Experiments were being carried out with an apparatus which would enable a ship accurately to locate the bearing and position of a land station or other ship, and he had con-

fidence in their success. With regard to communication between islands, nearly all the Italian islands in the Mediterranean were in communication with each other and with the mainland, and wireless telegraphy was also used as a branch of the Italian telegraphic system for ordinary commercial purposes across the Adriatic. At Coltano, near Pisa, there was approaching completion a large wireless station, which would be used by the Italian government for communicating with many distant points, more particularly with the Italian colonies in East Africa, with Great Britain, with the American continents and eventually, he hoped, with the East. The British post office had used the wireless stations for communication between Cornwall and the Scilly Islands, and between the Channel Islands on the not infrequent occasions of the breaking down of the cables. It was evident, however, that in a country such as England, possessing such a well-nigh perfect organization as the post office telegraphs, which were, moreover, the jealously-guarded monopoly of the postmaster-general, the opportunities for wireless telegraphy to prove its utility for overland work were not numerous. In the colonies and in undeveloped countries the opportunities were, however, considerable. Thus, numerous stations had been installed in China, and stations were in operation in Siberia, India and East Africa. Numerous stations had been erected in South and North America, and the Canadian government possessed a chain of about twenty stations on the shores and Gulf of St. Lawrence, which enabled communication to be maintained between Quebec and some of the remotest parts of Labrador and Newfoundland. The Hawaiian Islands in the Pacific were also in wireless communication with each other, and he had reason to believe that the Imperial government was contemplating the further utilization of the system in the West Indian Islands and on the west coast of Africa.

With reference to transatlantic communication, he had every confidence that it would furnish a more economical means for the transmission of telegrams than the present cable service. However great might be the importance of wireless telegraphy to ships and shipping, he believed it was destined to be of even greater importance to the world when fully applied over such great distances as those which divided Great Britain from her colonies and from America. As to whether wireless telegraphy across the Atlantic would be practical enough to displace the cables, it was evident that long-distance practicability was no longer in doubt. Although the transatlantic stations had been worked for only a few hours daily, 88,374 words of press and commercial messages were transmitted across the ocean up to January 31 last, since when the service had been extended. Whether the new telegraphy would or would not injure or displace the cables was still a matter of speculation, but it depended a great deal on what the cables could do in the way of cheaper

rates. Those concerned in the development of wireless telegraphy were not in business, as some appeared to imagine, for the purpose of injuring the cables. They were endeavoring at present to demonstrate that the new methods were not only valuable for shipping, but it should also be regarded as a newer and cheaper means of communicating with far distant countries. Whatever might be the views as to its shortcomings or defects, wireless telegraphy across the Atlantic had come to stay, and would not only stay, but continue to advance. Cable telegraphy across the Atlantic had been subjected, at the commencement, to a series of discouraging failures and disappointments. But whatever its difficulties, it enjoyed one advantage over wireless telegraphy—that it was free from the hostility of vested interests representing over £60,000,000 now invested in cables, which, rightly or wrongly, consider long-distance wireless telegraphy as menacing their interests. The history of transatlantic wireless telegraphy had so far followed very much on the lines of submarine cable Atlantic telegraphy. In seven years the useful range of wireless telegraphy had increased from 200 miles to 2,500 miles. In view of this fact, he would be a bold prophet who would venture to affirm what might not be done in seven years more. It was true that the wireless telegraph could not at present give a service as good or as rapid between London and New York as that supplied by the cables, but if the wireless had to compete with only one cable he was convinced that interruptions to the cable would prove to be much more serious and frequent. True, mistakes did sometimes occur in wireless messages, but these had been proved to be mistakes which had occurred in the land transmission.

There existed at the present among a large section of the public considerable misconception as to the feasibility of tapping or intercepting wireless messages. Many persons asked what was the use of sending messages by wireless if anybody could pick them up. That was exactly what they could not do. In the case of ordinary land telegraphy, anyone who knew the Morse code could, within hearing distance of the instruments, read off the messages sent and received; but in the case of wireless telegraphy, as at present worked, this was impossible, excepting by erecting a station at the cost of several thousand pounds, and in endeavoring to get in tune with wave lengths of the messages which were desired to be tapped. In any case, the safety-guard of using a code or cipher was available.

Mr. Marconi concluded with a reference to Germany's action in calling the Wireless Telegraph Conference, and he expressed disagreement with several of the regulations made by the conference of 1906. He sincerely hoped that Great Britain, like America, would postpone the ratification of this convention, which, in his opinion, would remove the benefits of free competition between the various systems, reducing the best

to the level of the least advanced, until at least the business of wireless telegraphy had demonstrated more fully its possibilities. Others besides himself were carrying out valuable researches in the field of wireless telegraphy and wireless telephony, and he sincerely hoped their efforts in the development of a difficult branch of science might meet with success proportionate to their labors. He had every confidence that wireless telegraphy over enormous distances, and possibly round the world, would become an accomplished fact in time, and that not a very long time.

Representative Canadian Telegraphers.

PHILIP F. CANNIFF.

Philip F. Canniff, manager of the Great North Western Telegraph Company, at Belleville, Ont., enjoys the unique distinction of passing his entire telegraphic business career in the town in which he was born, May 23, 1867. When just eighteen



P. F. CANNIFF,
Manager Great North Western Telegraph Company,
Belleville, Ont.

years of age, to be exact, on May 26, 1885, he entered the local office, in which he has since been attached, as a messenger. Learning telegraphy, at which he soon became expert, he was made an operator, subsequently advancing to the position of chief operator, and from that to the post of manager. Mr. Canniff is a painstaking official, is well informed, and has reached his present place because of merit.

Another fine of \$100 and costs was assessed on February 28, at Gadsden, Ala., against the Western Union Telegraph Company for doing business without a license. This is the second fine imposed by the city authorities against the Western Union for violation of the city license tax ordinance in the last ten days. The resistance of the company to the payment of the license tax of \$225, imposed by the city, grows out of the opinion of the company that the amount is excessive and unreasonable, in view of the amount of business done.

Important Subjects Treated in Back Numbers.

TELEGRAPH AGE has published the best articles on telegraphic subjects that have ever appeared in print. Here-with are enumerated a few of the most important subjects treated, together with the date of the papers containing the same. Copies of these back numbers may be had at twenty-five cents apiece upon application. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Adjustment of Relays and Sounders Oct. 1, 1902
 Alternating Current Transformer for Quadruplex, W. H. Jones Mch. 1-16, 1904
 American Cable Across the Pacific July 16, 1903
 Alaskan Telegraphs Jan. 1-16, Feb. 1, 1905
 Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1904
 Barclay Combination Quadruplex Rheostat July 1, 1903
 Barclay's Direct Repeating Relay for Multiplex Circuits, July 16, 1902
 Barclay Printing Telegraph System, W. H. Jones May 16, 1905
 Barclay's Repeating Relay, Main Line Relay and Box Relay, Jan. 1, 1903
 Barclay Typewriting Telegraph System Jan. 16, 1904
 British Patent Office Rules Apl. 16, 1905
 British System of Timing Messages Dec. 1, 1902
 Buckingham Long Distance Page Printing Telegraph Sept. 1, 1902
 Burry Page Printing Telegraph Apl. 1, 1903
 Cable Station in Mid-Pacific, Our, Dr. Martin Crook Feb. 16, 1905
 Central Telegraph Office, London Oct. 16, 1904; May 1, 1905
 C. K. Jones' Automatic Telegraph Circuit Protector and Signaling Machine June 16, 1903
 Collins Overland Telegraph May 16, 1903
 Composite Teleg. and Telep. on Canadian Pacific Ry Mch. 1, 1904
 Composite Telephone Lines Mch. 1, 1905
 Crebore-Squire Automatic Telegraph System May 16, 1902
 Definitions of Electrical Terms, Mch. 16, Apl. 1-16, June 1, July 1-16, 1904
 Delany's, P. B., Automatic Telegraph System Mch. 16, 1903
 Delany's, P. B., New System of Rapid Telegraphy Apl. 16, 1904
 Direct Polar Relay Repeater of the Postal Telegraph Cable Company Oct. 16, 1903
 Earth Currents May 1, 1903
 Engraving of Clarence H. Mackay Nov. 16, 1902
 Engraving of Col. Robert C. Clowry Apl. 16, 1902
 Engraving of the Late John W. Mackay Aug. 1, 1902
 Field's, B. D., Quadruplex May 1-16, 1904
 Flow of Electricity in the Earth Dec. 16, 1903
 Ghegan's Automatic Repeater June 1, Dec. 1, 1903
 Ghegan's, J. J., Multiplex System Aug. 1, 1904
 Gray Submarine Signaling Apparatus Jan. 1, 1904
 Hand vs. Machine Telegraphy Sept. 16, 1902
 Improvements of Roberson Quadruplex Feb. 1, 1903
 K. B. Law as Applied to Quadruplex Circuits Jan. 1, 1904
 Life of Storage Batteries July 1, 1903
 Low Resistance Relays Oct. 1-16, Nov. 1, Dec. 16, 1902, Jan. 1, 1903
 Midway Islands Cable Station July 1, 1904
 Passing of the Quadruplex Aug. 1, 1903
 Phillips' System of High Speed Telegraphy, J. W. Larish, Nov. 1, 1904
 Pollak-Virag System Mch. 1, 1903
 Possibilities of Telephoning Over Tracks to a Moving Train Mch. 1, 1904
 Postal Telegraph-Cable Company, History of (with portraits of officials) Feb. 1, 1904
 Postal Telegraph-Cable Company Rules Governing Construction and Repair of Telegraph Lines, Apl. 1-16, May 1-16, 1904
 Printing Telegraph Systems, Modern High Speed, J. C. Barclay Nov. 1, 1904
 Printing Telegraph Systems, Story of Jan. 1, 1903
 Progress of Telegraphy During Last Thirty Years, W. Mayer, Jr. Mch. 16, 1904
 Proper Adjustment of Telegraph Apparatus Aug. 16, Sept. 1, 1904
 Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines June 1, 1904
 Random Recollections of 145 Broadway, W. P. Phillips, Feb. 1, 1905
 Rapid Telegraphy, P. B. Delany Nov. 16, Dec. 1, 1904
 Reminiscence of New York Telegraphers a Quarter of a Century Ago Jan. 1-16, Feb. 16, Mch. 1, 1905
 Repeater: Atkinson Feb. 16, 1902
 Half-Milliken Feb. 16, 1902
 Horton Mch. 1, 1902
 Defective Loop Mch. 1, 1902
 Double Loop Mch. 16, 1902
 Milliken Jan. 16, 1902
 Neilson Feb. 1, 1902
 Welny Phillips Feb. 1, 1902
 Wood Double Loop Mch. 16, 1903
 Scott-Phelps-Barclay-Page Self-Winding Ticker Oct. 1, 1903
 Simultaneous Telegraphy and Telephony Aug. 16, 1903
 Specifications in Construction of 25-foot Pole Line, American Telephone and Telegraph Company Feb. 16, Mch. 1-16, 1904
 Stevens' Wheatstone Transmitter July 16, 1903
 Stick Telephones, J. C. Barclay June 16, 1904
 Submarine Sound Telegraphy Mch. 1, 1904
 Telautography Aug. 1, Dec. 1, 1904
 Telegraph Alphabets Jan. 1, 1904
 Telegraph and Weather Service Nov. 1, 1902
 Telephone, The June 16, 1902, Mch. 1, 1903
 Telephone and Telegraph Bureau, U. S., Washington, D. C., May 1, 1903
 Transmitting Typewriter Wire Connections Feb. 16, 1904
 Typewriting Telegraphs, L. E. Wells Aug. 1, 1904
 Typo-Telegraph (Dr. Cardwell), F. J. Swift June 1, 1905
 Use of Modern Telephones as Applied to Railroads Jan. 16, 1905
 Vibratory Telegraph Aug. 16, 1903
 Western Union Telegraph Company, History of (With portraits of officials) Jan. 16, 1904
 What Constitutes a First-Class Operator Oct. 1, 1904
 What Constitutes a First-Class Chief Operator Nov. 1, 1904
 What Constitutes a First-Class Manager Nov. 16, 1904
 What Constitutes a First-Class Superintendent Dec. 1, 1904
 What Constitutes a First-Class R. E. Operator Dec. 16, 1904
 Wheatstone Automatic Duplex Apl. 1, 1902
 Where to a Storage Battery Fully Charged Aug. 16, 1904

Wind Pressure on Telegraph Structures, F. W. Jones Dec. 16, 1903
 Wire Tables—How to Remember Them, C. F. Scott Apl. 16, 1905
 Yetman Transmitter (Description and Engraving) Aug. 1, 1903
 Adams-Randall Telephone Transmitter July 1, 1903
 Braun's New Method of Directing Wireless, A. Fred'k Collins Apl. 1, 1906
 Churcher Rectifier, J. P. McCabe May 1, 1906
 Electric Wireless Receiver, D. L. Beardsley July 16, 1906
 Fire Alarm Telegraphs, History of Aug. 16, 1906
 Magin, Improvements for Practical Telegraphy Sep. 16, 1906
 Morse Patents, Covering Invention of Telegraph Dec. 16, 1906
 Morse Transmitters, Mechanical, F. W. Jones July 16, 1906
 Murray Automatic Page-Printing Telegraph, History of Sept. 16, 1906
 Phillips Code, Perfect, G. W. Conkling Apl. 16, 1906
 Postal Telegraph, Congressman Smith on Aug. 16, 1906
 Pneumatic Tube Improved System Aug. 1, 1906
 Reminiscences, Old Time, Dr. L. M. Rheem, Apl. 16, May 1-16, 1906
 Rudd Revolving Addressed Envelope Holder Feb. 16, 1906
 Seaman Pole Splicing Device Sept. 1, 1906
 Standard Time June 16, 1906
 Storage Batteries, Willis H. Jones, Mch. 16, Apl. 1-16, May 1-16, 1906
 Telegraph Tournament, International, at Boston, May 1-16, June 16, July 16, 1906
 Telegraph vs. Telephone July 16, 1906
 Telephone, Invention of Apl. 1-16, 1906
 Testing by Voltmeters and Ammeters, F. W. Jones Nov. 1, 1906
 Train Order Rules, Chas. Seiden Aug. 1, 1906
 Wire, Hard Drawn Copper, History of, Thos. B. Doolittle, Jan. 1-16, 1906
 Wheatstone Bridge, F. W. Jones Nov. 16, 1906
 Wright Keyboard Transmitter and Printer, R. Hitechock Apl. 1, 1906

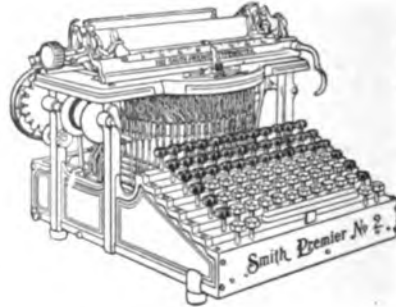
Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Montreal, Que., June 24, 25, 26, 1908.
 Commercial Cable Company meets the first Monday in March, at New York.
 Gold and Stock Life Insurance Association meets the third Monday in January, at New York.
 Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.
 International Association of Municipal Electricians meets at Detroit, Mich. Time to be chosen later.
 Railway Signal Association will meet in 1908 at a date and place to be named later.
 Old Time Telegraphers' and Historical Association, will meet at Niagara Falls, N. Y., in 1908, at a date to be named later.
 Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.
 Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.
 Train Despatchers' Association meets at Fort Worth, Tex., on June 18, 1908.
 The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

The influx of new men in the telegraph service has created an increasing demand for that standard work on the telegraph, "Pocket Edition of Diagrams and Complete Information for Telegraph Students," by W. H. Jones, conductor of the department in this journal bearing the title "Some Points on Electricity." Doubtless, this book is required to "brighten up" telegraphic knowledge, especially of those who are returning to the key after absence therefrom. As the volume was written by a telegrapher, yet in the harness, practically familiar with all the "ins and outs" of an operator's work, it conveys just the kind of information most desired. In fact, a careful reading of the book, which contains 334 pages, and a thorough study of its 160 diagrams, will teach the average operator more about telegraphy in its application to his daily work than he can possibly derive from any other source. The price of this book is \$1.50, which includes the cost of carrying charges to any point in the United States. Orders should be sent direct to this office, or to any of our agents who may be found with both the Western Union and Postal telegraph companies in nearly every large center in the United States.

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NEW YORK, MARCH 16, 1908.

The Book Department of Telegraph Age has always been a prominent and carefully conducted feature of this journal. The desire has been and is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished; promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same.

The Coercion of Telegraph Interests.

It was a sorry spectacle that the representatives of the Commercial Telegraphers' Union made on February 28, when they appeared before the Senate Committee of Interstate Commerce at Washington, at a hearing held in behalf of the bill, having for its ostensible object the regulation of the telegraphs, lately introduced in Congress through the efforts of that organization of telegraphers. Vindictiveness of purpose directed against the telegraph companies was so clearly manifest in the proceedings, as it was also no less expressed in the bill itself, although in that instance the ulterior motive was more carefully guarded against by prudently conforming to established forms of outward expression, as to approach the ludicrous, yet none the less to be condemned for its virulence.

It has often been the complaint that a certain class of telegraph operators would not hurry their work any faster than could be avoided, the impelling reason for such inertia being the same

as that so often observed in the operations of the ordinary laborer. The statement made to the committee by James T. McDermott, a telegraph operator, a member of the telegraphic union as well as a member of Congress, hailing from Chicago, who was put forward as a speaker to explain more fully the situation of the complaining operators, was not only lacking in dignity and refinement of speech, but inadvertently revealed the "true inwardness" of the disgruntled telegraphers and the animus that largely directs their present action. In referring to "young operators," inferentially honest, he said that while "it does not make any difference how many they send," they "are sometimes suckers enough to send fifty messages an hour." When questioned by Senator McLaurin, a member of the committee, "Why would the new men send more than the older telegraphers?" the significant reply was made, "Because of ambition. He expects to rise, to get up to the good operators, trying all the while to get up to a higher salary, and that is the reason they will work in that way; and it has been agreeable to the Western Union and Postal telegraph companies to allow them to do that."

In other words, as unconsciously and blunderingly expressed, the influence of the union is and has been exerted to limit and obstruct the volume of work performed by operators and thereby check telegraph business, of which it has the exquisite effrontery to declare the companies themselves are guilty. The baleful effects of this telegraphers' union is also shown in the fact that it seeks to place all operators on a common level, to discourage ambition and to reduce the expert to the plane of the least capable. Apparently the ethics of this amazingly constituted union would reward the display of ambition and honorable motive on the part of the individual by hurling at him the opprobrious epithet of "sucker!"

The pity of it! It is humiliating to reflect that any body of men calling themselves telegraphers, a word and an occupation that should stand for something high and noble in name and purpose, should lend themselves to such a movement as that here referred to. It should be distinctly understood, however, and to their honor, that the great loyal body of telegraphers in the employ of the telegraph companies of this country, have no sympathy with this agitation directed mainly by the striking element who find themselves out of employment as a result of their own folly, in an attempt to coerce telegraph interests through national and state legislation.

In the further discussion of the bill, its numerous incongruities became apparent. It transpired that in the third section, which fairly bristles with provisions determining various compulsory measures enjoined upon the telegraph, with corresponding penalties attached, that the time of filing a message be transmitted with the message itself. Failure in the performance of

this duty, it was set forth, should be of such criminal consequence as should warrant the imprisonment of the offender for the modest term of three years, or the imposition of a fine, or both. A grim and fierce purpose was no doubt wrapped up in this merciless phraseology. One feature, at least, of the appalling enormities of the hitherto lax methods governing the telegraph companies, was to be sternly rebuked! Justice was aimed at, and it was well to cause terror to seize upon an unsuspecting management.

When it was pointed out by Senator Aldrich, of the committee, that retribution in such a case would fall, not on the president of a telegraph company, whose ignominious incarceration had evidently been determined upon, but on the operator, who would be adjudged the guilty felon, Mr. McDermott could only gasp. "The bill is possibly too drastic." Senator Tillman, also of the committee, who appeared to regard the proceedings from a facetious point of view, dryly remarked that the bill as drawn "hits the other party," while Senator Elkins, the chairman, exclaimed commiseratingly: "You do not want to get the operators in jail!"

In view of the farcical character of this telegraph bill and of the causes that led to its presentation in Congress, and of its champions, Representative Cary, of Milwaukee, who introduced it on January 23, and of Representative McDermott who has appeared for it, both of the latter being telegraphers closely affiliated with the union and imbued with its antagonism of spirit to employing interests in the telegraph service, the measure should be buried in oblivion. It probably will be, and the fear of Mr. Cary that such will be its finality is plainly hinted at in a circular letter which that honorable member of the House has sent out in the most extraordinary manner, carefully concealed in packages of seeds, which he is distributing among his constituents, and in which he goes to the length of attacking the conduct of brother Congressmen for alleged gross inattention to duty (?), smartly defining his own position and acumen in the concluding paragraph in his remarkable communication, as follows: "However, I learned a few things myself while alderman and sheriff, and these fellows have found out that they cannot put me up a tree."

From such an atmosphere as matters here referred to have created in Washington, emanate much of the stuff that is being distributed throughout the country in unfair, illogical and false criticism of the telegraph. It finds inspiration in sources generally ignorantly or maliciously hostile to the telegraph, much of which is traced to the vaporings of the Commercial Telegraphers' Union, and which numerous editors, as we remarked in the March 1 issue of Telegraph Age, use in their columns either thoughtlessly or because imbued with the current desire to make a fling at corporate interests without any too clear a conception of the issues at stake.

If in the "course of human events" it should

finally appear that public interests would be better conserved by causing the telegraph to be placed under government supervision, it may be said that the demands of justice will not be ignored, that action in the matter may be relied upon to proceed with fairness and right, guided by the law of equity, of common sense and of impartial judgment.

The Irony of It All.

We supposed that Telegraph Age had made its utterances tolerably clear regarding the telegraphers' strike last summer and fall, and that the warning of evil consequences sure to follow, that it held out to telegraphers concerned therein, both before and during that disastrous occurrence, would admit of no misunderstanding. At any rate, the paper was roundly berated at that time by telegraphers actually engaged in the movement, and it would appear that if any offence was committed by this journal it was one of commission and not of omission. Now that the hurricane has spent itself and a calm has succeeded, following out a common law of nature, certain of the wrecks that strew the beach of the ocean of industrial labor by the receding storm wave, in the shape of telegraphers out of employment, moan out the plaint that if Telegraph Age in the exercise of its omniscience, had informed them, as it should have done, that such dire disaster as has overtaken them, awaited their precipitous action, they would not have vacated their positions.

The irony of the situation cuts deep. All we can say is that if any individual failed to understand what we predicted would be the outcome of the strike it is bad grace to charge Telegraph Age with ambiguity. Some obtuse minds need a bludgeon to arouse them into a state of sensibility.

The publisher of Telegraph Age urges upon subscribers to this journal the desirability of having the paper sent to their home address rather than to their place of business. The reason is obvious. If it goes to your home it reaches you without danger of obstruction or abstraction by your office associates who are sometimes prone to borrow your copy to your discomfiture and their edification, but at your expense. This naturally is a source of irritation and of course you don't like it. If a man wants Telegraph Age he should pay for it, and the individual who is paying for his copy should be guaranteed in his rights.

As we regard our subscribers as our friends, and believe we are supplying them with a telegraph paper the like of which does not elsewhere exist, we dislike to see them disappointed, and wish to protect them in their prerogative so far as we are able. We believe that a good many disappointments of non-receipt of the paper might be averted if our suggestion of sending it in all cases to the homes of its subscribers were adopted. Changes of address will be made as often as desired.

Dividends and Wages.

In a time of industrial depression the directors of a great corporation have no other problem so hard to solve as that of satisfying the conflicting claims of investors and wage earners. When earnings decline owing to a falling off in the volume of sales or of traffic, the question is presented to the managers of a corporation, shall dividends be reduced or wages? In some cases, says the Wall Street Journal, the answer must be a reduction in dividends; in other cases a reduction in wages; in many cases a reduction in both dividends and wages.

The managers of any well ordered corporation would much prefer not to disturb either dividends or wages. They are as solicitous to maintain the interests of their laborers as they are of maintaining the interests of the capitalists who have invested in their stocks.

No great employer of labor likes to be compelled to lay off men from any cause, much less that of depression in business, nor does he like to reduce the rate of wages. He is solicitous to maintain the integrity and esprit de corps of his whole system of workmen. Nothing makes for profit more, things being equal, than a staff of well paid, contented men.

Nevertheless, the interest of the investors in the property must be looked after with just as much solicitude and faithfulness. They have put their capital into it, they have trusted in its earning power, they are as much entitled to their wages, which is the interest upon their investment, as those who put their labor into the property. These are truisms, but it is well to restate them once in a while, especially at a time like this when there is likely to be, and indeed is, a conflict between these two interests. Extreme selfishness on the part either of the stockholder or the wage earner will result in the permanent injury of both.

If the stockholder insists in a time of depression upon a return upon his investment equal to the profit of prosperity and regardless of the welfare of labor, then he is pursuing a heartless and in the end a short-sighted policy. If, on the other hand, labor insists upon a high rate of wages at a time of industrial depression regardless of the rights and interests of the stockholder, then he will in the end suffer far more than he would if he accepted a reduction in his wages. He will suffer more because capital will be reluctant to make a new investment in a corporation which will sacrifice the interest of investors ruthlessly. Anything that approaches confiscation either of the fruits of capital or of the fruits of labor is sure to be calamitous.

A decision which has just been rendered in Canada by a board of investigation in the case concerning the demands of the telegraphers of the Grand Trunk Railway for higher wages involves the very principles which have here been laid down. In this case one member of the board represented labor, another represented capital,

and the third was a recognized authority on economic subjects.

The same board had recently rendered a decision in favor of an increase in wages for the telegraphers of the Canadian Pacific Railroad, and yet they rendered a decision against granting the Grand Trunk telegraphers the similar rate of wages. This would seem on its face like cruel inconsistency. But when the reasons for the decision are given it appears eminently fair. The board made no concealment of the fact that the cost of living had increased and under different conditions the telegraphers would be fairly entitled to the higher wages which they demanded; but the board showed that the Grand Trunk had been constructed through a territory which for a long time had yielded insufficient revenue to pay expenses and that the capitalists who had invested in it had therefore not been suitably rewarded. The Canadian Pacific, on the other hand, had been favored by large land grants and other advantageous conditions. The board, therefore, thought it was not fair that such dividends upon the preferred stock of the Grand Trunk as are being paid should be further reduced by an increase of wages, especially as no dividends were paid on the common stock, and it summed up its opinion in the following words:

The deterring of the investment of capital in railway undertakings would certainly not be a benefit to the community at large, and if the property of lenders is to be practically confiscated between the demand of the public on the one side and the demand of the employees on the other, it must lead to a general reduction in wages or a shrinkage in the number of employees, with a much greater ultimate loss to labor.

This would seem to be a fair principle to start from in deciding the similar disputes in this country. But it should be firmly kept in mind that any injustice either to capital or to labor in any decision will react upon the side benefited by such decision and what is worst of all, will react upon the country as a whole. The spirit of fair play must prevail.

Telegraphic Communication Across the Sahara.

A plan has been submitted to the French government for extending the telegraph lines in Algeria from Beni-Abbes to Adrar, a military post about 745 miles from the Mediterranean coast. The wires would then be laid in the direction of the Niger to Bourren, a distance of about 869 miles, of which 621 miles would be in Algerian territory and the remainder in the Soudan. By making branch lines from Bourren to Timbuktu and Say, the whole of the Soudan, Dahomey and the Ivory Coast would be connected with Algiers. The cost of the undertaking will be \$500,000, and the work is to be completed in about eighteen months.

The underground telegraph cable from Newcastle to Durham, England, will be finished in about four months. During the next financial year it will be extended to Leeds, via Stockton.

Experimental Pole Treatment.

BY WALTER R. WHEATON.

(In the Journal of the Worcester Polytechnic Institute)

At the present time the United States is facing the same problem which the European countries were called upon to face years ago—the constant diminution in the supply of timber. The two greatest consumers of our timber resources, the railroads and the power and telephone and telegraph companies using poles for transmission lines, are wondering where their future timber supply is to come from. The decrease in the supply means increase in the cost of the product, and with a constant increase in the demand the prices are constantly rising. On the Pacific Coast in the last two years the cost of a forty-foot pole has almost doubled.

There are three solutions to the problem, or, at least, three ways whereby the evil day may be put off; (1) by using some substitute for the wooden poles and ties now in use; (2) by treating all poles and ties used in the future with some preservative which will add to the life of the wood, and consequently increase the available supply; and (3) by the use of inferior woods, whose use is made possible only by the use of a preservative. The first method has been and is being tried. Steel and concrete have been used both here and abroad, but with little success. Poles of reinforced concrete are in use to some extent abroad and steel and iron poles are being used here. The Edison Electric Company, of Los Angeles, Cal., is using two types of steel poles. On its main line from the power house in the Kern River country to the distribution station in Los Angeles, a distance of 167 miles, and over which line it is transmitting 40,000 horsepower, steel towers set on a concrete base are in use. The wires are carried on porcelain insulators two feet high, set in iron pins. This is probably the finest transmission line in the country.

The Forest Service of the Department of Agriculture is doing all in its power to diminish the demand and to increase the supply of timber as much as possible by the creation of national forests, by forest planting, by inducing the use of forestry methods on lands to be lumbered, and by co-operating with the various consumers in an endeavor to find some economical method of preserving the product against decay. The pole presents a different problem from the railroad tie. The tie is in contact with the ground and subject to decay for its whole length, and consequently the whole tie is treated. A pole usually rots from two feet below the ground to one foot above. The expense of treating a thirty-five-foot to forty-foot line for its whole length to insure it against decay for only three feet of its length would be too great. Consequently a pole is treated only from the butt up to one foot above the ground line, or for seven or eight feet of its length. Owing to the unsymmetrical formation of a pole

it is almost impossible to use pressure on the butt only. A pressure apparatus was constructed by the Forest Service for use in the experiments now being carried on in Southern California, and although it was found possible to get a pressure of sixty pounds to the square inch before a leak was discovered, the cost of the treatment was found to be too great in view of the penetration which could be obtained without pressure.

There have been three methods used by the Forest Service in its experimental treatment of poles—the brush method, the butt-plate method, and the open-tank method. The former consists in painting the preservative compound on with a brush. The oil is usually applied hot. This method gives the pole a thin coating of oil, the penetration being not more than an eighth of an inch, and usually less. The oil usually used in treatments of this kind is a carbolineum made from the distillation of naphthalene. It has a specific gravity of about 1.2, and is a very heavy, high boiling oil. The objections to the use of this method are as follows: The penetration is very slight, which necessitates very careful handling of the pole after treatment; if a cant hook is jammed into the treated section of the pole, the point of the hook will penetrate below the oil and thus leave an opening for the fungus to take root. All of the checks must be filled, for if the checks are not filled, or if the pole checks after setting, the effect of the treatment is lost, since there is an available foothold for the rot-producing fungi.

The butt-plate method was designed for forcing the oil into the pole under pressure. A plate (a little less in diameter than the diameter of the pole) having a raised knife edge was placed against the butt of the pole so that the knife edge entered the wood and formed a chamber for the oil between the butt of the pole and the face of the plate. Three dogs were driven into the side of the pole and held the plate firmly against the butt. The oil was pumped through a one-inch pipe screwed into the back of the plate. When the pressure was applied it was found that the oil squirted out through the season checks in the wood, making it impossible to force the oil into the pole. Another objection to this is the fact that there is an outer layer of wood left with no oil in it and it is very essential that this outer layer be penetrated. This method was abandoned by the Forest Service as not giving the desired results.

The process used with the most success by the forest service is what is known as the open-tank process. This is an application of the old Seeley process. The wood is given a bath of hot oil followed by a bath of cold oil. The poles are submerged in hot creosote oil for a depth of one foot above the ground line, and are allowed to remain in the hot oil for from five to eight hours. They are then either placed in another tank containing cold oil or are allowed to remain in the same oil as it cools. When the timber is placed in the hot oil, the moisture remaining in the wood

is evaporated and the air in the wood cells is expanded. When the poles are changed from the hot to the cold oil or the oil is allowed to cool, the difference in the temperature induces a vacuum which causes the oil to penetrate the wood. The poles should always be thoroughly seasoned before treatment.

Patent Office Scandal.

On Thursday, February 27, an indictment was filed in the Supreme Court of the District of Columbia, against Examiner Ned. W. Barton, of the U. S. Patent Office, John A. Heany, of York, Pa., and the patent attorney of the latter, Henry E. Everding, of Philadelphia, in which it is charged that they "unlawfully and wilfully and with intent to steal and destroy the same, did take and carry away from the said patent office" certain specifications and an amendment thereto, and a letter relating thereto, the date of the offence being September 2, 1907. The specifications were filed with, and formed part of, an application, No. 241,782, filed January 19, 1905; the amendment was filed on July 27, 1907; the letter, which was addressed to John A. Heany and signed by W. A. Cowles, acting examiner of the patent office, and bore the stamp of Commissioner F. I. Allen, was dated March 28, 1905. Those charged with the crime were arrested and held on \$10,000 bail, which was furnished.

The patent involved is apparently one bearing date of issue of December 3, 1907, and relating to tungsten-filaments and electrodes for incandescent lamps. According to the newspaper accounts, applications from a large number of electrical concerns have been in interference with the Heany application upon which the patent is based, and the changes alleged were made to secure a patent that would be superior to any granted on these applications. The evidence presented to the Secretary of the Interior is stated to have been obtained by detectives in the employ of one of the large electrical manufacturing companies.

In a statement relating to the case, Patent Commissioner E. B. Moore said that early in February evidence was laid before the Secretary of the Interior, tending to show that fraudulent acts had been committed in the prosecution and procurement of a patent. The secretary at once brought the matter to the attention of the Commissioner of Patents, who immediately appointed a committee of investigation. This committee found in substance that by the connivance of an employee of the Patent Office, matter that was not in the application for a certain patent at date of filing was unlawfully introduced subsequently during its prosecution, thereby laying a foundation for claims to an invention not disclosed in the application when it was filed. The effect of such an act is to establish a false date of invention much earlier than the true date and thus enable the patentee to dominate and control all inventions falling within the scope of the claims

of his patent that were made after the filing date of the application for that patent, even though in fact they may have been made earlier than the invention covered by his claims.

The specific charge, Commissioner Moore said, is that of destroying public records. It is alleged that Barton, by reason of his position, had access to office records, and was enabled, at a very recent date, to substitute for papers filed more than two years previously, certain other papers and give them the same date as if they had been filed originally. The invention described in the substitute papers is thought to be very valuable, and a great advantage would attend it if a date of invention sufficiently early to antedate the prior inventions of others could be secured. To be successful in this plan it was necessary to destroy original records of the office, and file substitutes therefor, and by changing the dates of receiving stamps make it appear that such substitute papers were, in fact, actually filed upon the fictitious dates stamped on the papers.

Commissioner Moore added that notwithstanding the vast moneyed interests involved in patents and the consequent many opportunities for corruption arising therefrom and from the necessity of relying upon the integrity of each individual examiner, owing to the technical and judicial character of the work of the patent office, to examiner has ever been shown false hitherto to the trust imposed upon him in all the one hundred and eighteen years of existence of the United States patent system.—*Electrical World*.

Longitude by Telegraph.

It has lately been thought necessary by the Hydrographic Office of the English Admiralty to determine the longitude of the Island of Ascension by the telegraphic method, and this is now being done under the auspices of the hydrographer acting in concert with the astronomer royal. Officers of H. M. S. *Mutine* are at Ascension making observations to find local time, or, in other words, the error of their chronometer on the time of the place, and the difference between Greenwich time and that shown by the chronometer is being found by telegraphy, the Eastern Telegraph Company giving the use of their cable when required. It is necessary for this delicate work to avoid all possible loss of time in transmission, even so small a fraction of a second as might be caused by the interposition of a relay, and the company are sending signals through more than four thousand miles of unbroken cable from Porthcurnow, in Cornwall, to Ascension. The standard clock of the Greenwich Observatory is made to record the beats of its seconds by telegraphic connection on the siphon recorder at Porthcurnow, and with these beats the signals sent from Ascension are compared.

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Kelvin and Submarine Telegraphy.

Prof. W. E. Ayrton, who was a student under Sir William Thomson, at Glasgow, contributes a lengthy and highly appreciative letter to the engineering supplement of the London Times, with the title "Kelvin in the Sixties." From this we print below the portion which treats more particularly with Kelvin's connection with the development of the submarine telegraph:

During the sixties the world was very much interested in the possibilities of an Atlantic cable. In 1857 the cable had broken while being laid; the 1858 one had failed after one short month of existence; the 1865 cable snapped after 1,186 miles had been laid, and, although nine days were spent in trying to pick it up, and, although it was grappled many times, the rope broke; and this cable, like its predecessors, had to be abandoned. A few yards of this 1865 cable that had been picked up lay on the floor of the Glasgow laboratory and was often pointed to by Thomson as being what had given them heart and kept off despair. Then a prize of over three-quarters of a million sterling was offered to the Telegraph Construction and Maintenance Company if they could complete the 1865 cable and lay an 1866 one. And they won it.

While it was remaining doubtful whether the two sides of the Atlantic would ever be coupled electrically, Thomson's secretary used not unfrequently to be sent to the Glasgow railway station a few minutes before the mail train started with this urgent message from Thomson: "I have gone to White's to hurry on an instrument. The London mail train must on no account start to-night, until I come." And such was the national importance of the problem, and such the honor in which Thomson was held, that the stationmaster obeyed.

Many have used Thomson's reflecting galvanometer and have regarded it merely as an extremely sensitive instrument without knowing how it came into existence. It was devised by Thomson to enable him to utilize his mathematical solution of signaling through a long submarine cable, and was regarded of such national importance that a private Act of Parliament was sanctioned by the Privy Council to extend the normal life of fourteen years for the patent of this cable "speaking instrument," as it was originally called. The invention of this instrument marks the theoretical solution of a most important problem, which solution Thomson found great difficulty in getting the electricians of that day to accept.

As early as 1855—before any long submarine cable had been constructed—Thomson published in the Proceedings of the Royal Society the theory of the propagation of signals through a cable based on a correspondence which he had had with the late Sir Gabriel Stokes, and he showed that the book "Fourier de la Chaleur"—that "mathematical poem," as he used to call it—contained, in Fourier's mathematical equations of the flow

of heat, the entire mathematical solution of the propagation of electric waves through a cable. From "Fourier's series" he deduced that, whereas on a short overhead telegraph line the signal reaches its full strength at the distant end practically as soon as the signaler at the near end of the line begins to send it, with a submarine cable it is retarded, spreads out, and blurs the next signal. There is a past history effect as in politics and in many natural phenomena. The passing of an Act of Parliament cannot suddenly change a people; indeed, it is well known that the actual effect of an Act of Parliament promoted by well-wishers is often gradually found to be most harmful, and has to be repealed or curbed in its action.

Herbert Spencer in his "Sociology" strongly advocated legislators to study the science of politics. Thomson would perhaps have said "Study Fourier's mathematical poem."

If it were attempted to send a series of electrical signals through an Atlantic cable with the same apparatus and at the same speed as messages are sent between London and Brighton, the signaler at the far end would not have the slightest knowledge that the signaler at this end was trying to send a message, whatever were the strength of the current sent into the cable. To work a long submarine cable, either time must be allowed for each signal to grow at the distant end, or, as this would make the sending of the message very slow, the receiving instrument and the signaler receiving the message must, like a clever doctor diagnosing a disease, be able to interpret mere indications. Sending the letter "e," for example, produces at the other end of a long cable a totally different result, depending on what has preceded it. In no case, at a speed of, say, thirty words a minute with a 3,000-mile cable, will it be more than a suggestion, even at the beginning of a word; but in the syllable "toe" the "e" is as indistinct as the hurriedly written scrawl that you are very glad to get some one else to read for you.

Thomson wanted a receiving instrument which, unlike the ordinary telegraph instruments used in post offices and railway stations, could render the interpretation of such suggestions possible in the hands of an expert signaler, and he devised the mirror galvanometer speaking instrument to obtain this result.

Another most important fact that his theoretical investigation brought out was that no increase of battery power could counteract the retardation in the signals produced by any impurity existing in the copper conductor of a cable, and hence that every yard of copper wire used in the thousands of miles of a long cable must be electrically tested before being used.

But all this appeared to the electricians as arising from the ignorance of an inexperienced young man who had never erected a mile of telegraph line in his life, and would not have been given a job in any telegraph office. And so when signals through the 1858 Atlantic cable became weak, and

a message from the President to our Queen took thirty hours in transmission, although containing only one hundred and fifty words and which would need only three or four minutes to transmit through any one of the good Atlantic cables of to-day, the only remedy of those who looked down on the theories of the young Glasgow professor was to use Whitehouse's "thunder pump," a magneto-electric machine which produced a sudden large e. m. f. when the armature of the permanent magnet was jerked off the poles of the magnet. But these shocks only sent sparks through the gutta-percha insulating coating and hurried the poor cable to its doom, so that even the three words per minute which would have been the utmost limit of speed possible had this cable been entirely uninjured, were replaced by absolute silence.

But Thomson energetically struggled on and pursuing (as he told me afterward) a "Parnell-Biggar policy" at the board meetings of the Atlantic Cable Company, obstructed all business until the directors promised to have all the copper wire tested for resistance before being made into cable; and thanks to Thomson for his theory of signaling, to that engineer of energy and surprising resource, even when quite a lad, Sir Charles Bright, to Captain Anderson, of the Great Eastern, and to all those who have followed in the history of submarine cable development the London Stock Exchange is by cable to-day within thirty seconds of Wall Street.

Thomson's work in connection with submarine telegraphy has been epoch-making. But thirty-three years ago it was associated with what I felt was a national loss. I give in an extract from a long letter which he wrote to me in Japan, December, 1874: "My dear Ayrton—You will be very sorry to learn of the terrible loss which has befallen us in the loss of *La Plata*, cable ship, with my nephew, David King, on board. * * * David King and I had worked together for Thomson. I had seen them much in company with one another. In appearance, independence of thought, and in many ways there was great resemblance between them, so that I used to hope that a corner of the mantle of William Thomson might rest on David King."

Thomson has been called an engineer. In creative power, yes—a great engineer. But not in the '40s, nay, even in the '60s, could a university student either at London, Glasgow or Cambridge learn to be what to-day is called even a college engineer. Thomson had never learned to make a working drawing, he designed in metal. We students could not help him with the T-square and drawing board as we might have done had we received the college engineering training of to-day. He thought of a new instrument, a new method of accomplishing some result flashed on him, and he sketched in his pocketbook a rough indication of what he wanted constructed; I took the idea, or what I understood of it, in my head to

Messrs. White, so it was not to be wondered at that alteration after alteration was necessary before the thing that was in Thomson's mind's-eye became realized in metal.—*Electrical World*.

Effects of a Sleet Storm.

The blessings of this resourceful age are never fully realized until the facilities of communication fail, and then only is it that we come to an intimate realization of what life must have been in the days of our forefathers, before the inventive and practical genius of Morse, Bell, Edison, Stephenson and their successors made communication easy and annihilated time and space, writes J. H. Baker in the *American Telephone Journal*. To be shut in a city, with no way to get out, not a wheel turning nor a light burning, telegraph, telephone, trolley and electric light wires hanging in the streets endangering life and limb, everything held in a grip of ice, was the experience undergone by the people of Atlanta, Ga., on February 10 and 11.

The storm was as unexpected as it was severe. Sunday morning, February 9, broke with a slaty sky but moderate temperature, and the weather bureau had received no warning of what was to come. Toward five o'clock Sunday afternoon, the air grew crisper and somewhat moist. A little later a mixture of sleet and snow and rain began coming down, and by eight o'clock the whole town lay still and white in a mantle of ice. A cold rain then set in which froze as fast as it fell, covering the trees and house-tops. At 10.30 P. M. nearly all the trolley cars had been forced back toward the barn, a good many not reaching there, being blocked by the ice and falling trees. By eleven o'clock electricity had been shut off from all wires, with the exception of those connected to the down-town sub-station, which kept a few lights sputtering, the immediate district being all underground. Outside of this everything was in total darkness. At midnight the wind, whipping out of the northeast, began to congeal and solidify the particles of sleet and drops of rain that hung in big clusters from the trees and wires, and all night long the icy coating gathered. At day-break the work of the elements was accomplished. They had noiselessly conquered the city, and an entire population of 150,000 people, peering through their misty windows, beheld a wonderful sight.

Ice was everywhere. Trees were grown to astonishing proportions, bending over, groaning with their added weight. Overhead wires looked like icy cables, and the sound of falling ice as the wires parted was constantly heard. At eight o'clock, the hour for most men and women to leave for their work, not a street car was running, nor trying to run. In fact (by orders of the city electrician) the current had not even been turned on, as telegraph, telephone and police service wires had fallen and become entangled with the trolley and power circuits all over the city.

The Damping in Sending and Receiving Circuits in Wireless Telegraphy.*

BY K. E. F. SCHMIDT.

The waves emitted from a sender in wireless telegraphy suffer damping in consequence of a variety of circumstances. One important source of damping is connected with the electrical phenomena of the atmosphere. To study such matters as these it is important that the apparatus worked with, both at the transmitting and the receiving ends, should be of such a nature as to exert as little as possible of their inevitable damping action. The sending system available for the present experiments consisted of a plane harp of ten straight phosphor-bronze wires, each two millimeters diameter and twenty meters long, spaced one meter apart. When this was connected to an artificial earth the natural wave length of the system was about three hundred and six meters. The spark-gap was double, each partial gap being eight millimeters. By the aid of a Donitz wave meter and a thermo-element in series with a galvanometer the resonance curve was determined and drawn. Similar measurements were made also when the vertical harp, instead of being connected to the earth, was connected to an equivalent electrical counterpoise. This counterpoise was also a harp of wires, held insulated about five meters above the ground. Under otherwise precisely the same conditions as before, the resonance curve for the sender was again determined and drawn; with the result that the logarithmic decrement was now 0.19 where, with the directly earthed radiator, the logarithmic decrement was about unity. Using the harp radiator together with the harp counterpoise, the author proceeded to examine how varying the length of the spark-gap affected the damping. Contrary to expectation, and, in fact, contrary to the measurements by Rempp of the spark resistance in closed oscillatory circuits, he found that the damping was smaller the longer the spark-gap; so that two gaps of eight millimeters each in series was the best disposition possible with his apparatus. Rempp found a minimum of damping in his experiments, which occurred with a gap of about four millimeters to five millimeters.

The capacity of the harped radiator was about three hundred electrostatic units. When it was directly coupled to a Braun circuit containing 13,000 centimeters in Leyden, the values of the logarithmic decrement for the two resultant waves were less than half the magnitude of the logarithmic decrement for the previous arrangement. While these measurements were in progress it was noticeable that great variations existed between the logarithmic decrements measured on different days. This points to some influence exerted by the atmosphere (through

ionisation of the air?), and is a variation often attaining a twenty-five per cent. difference. Moreover, marked differences in logarithmic decrement may on occasion be perceived at short intervals on the same day. For example, on June 2, 1907, at Halle, A. S. Cröllwitz, the logarithmic decrement between 11 and 11.35 o'clock was 0.164, and between 11.45 and 12.10 o'clock was 0.142. At the same times the "ratio of transmission"

Galvanometer deflection recording received current

Galvanometer deflection recording sending current

to a receiving station eight kilometers away was, during the first interval, 0.61, and during the second interval 0.71. During the first period the sky was cloudy and the atmosphere sultry, during the second period a violent wind was clearing the sky; corresponding to the thirteen per cent. alteration of the logarithmic decrement, and the seventeen per cent. change in the ratio of transmission.

For the accurate study of the causes of the damping in the receiver a receiving station placed at a distance of three hundred and sixty meters was used. At first a single air wire of phosphor-bronze, two millimeters diameter, with its upper end sixteen meters above the earth and its total length 18 meters was earthed through the tuning coil and barretter circuit. Later the vertical wire was connected to a horizontal wire of eighteen meters, which could be placed in positions pointing towards or away from the sending station. Finally, the movable horizontal wire alone was connected through the tuning coil and the barretter to earth. A series of measurements of the damping showed that here again the earthed antenna had decidedly greater damping than the antenna connected to an electrical counterpoise. Further, the damping was larger when the horizontal wire pointed away from the sender. Thus it seems advantageous at both sending and receiving ends to use artificial earths extending horizontally towards one another. On the other hand, if the ratios of transmission be measured with these various dispositions of the receiving antenna, then the following results are obtained:

Vertical receiving wire, earthed...ratio = 2.84
 Vertical wire, with horizontal extension
 pointing towards sender.....ratio = 2.3
 Vertical wire, with horizontal extension
 pointing away from the sender...ratio = 0.8
 Horizontal wire, earthed and pointing
 towards the sender.....ratio = 0.79
 Horizontal wire, earthed and pointing
 away from the sender.....ratio = 0.24

Thus, in spite of its considerably higher damping, the earthed systems show a large superiority as regards receiving.

It may be mentioned that the "earths" used in these experiments each consisted of two copper gauze cylinders forty centimeters high and one meter in diameter, sunk separately one meter

* Abstracted from the "Physikalische Zeitschrift," by an English contemporary.

in the earth and surrounded by a coke packing. But another series of experiments were carried out with an "earth" consisting of iron netting of five centimeters mesh and of about five square meters area, laid directly on the earth. Now the strength of the signals received depends very greatly on the position of this earth relative to the antenna.

It is clear that when the horizontal lead to the netting is behind the vertical part of the antenna the received effect is much smaller than when it is in front. The author explains this phenomenon at length. It is sufficient to say that when the horizontal extension is against the direction of the advancing waves—that is, when it points towards the sender—then the current in the horizontal part is in practically the same phase as the current produced by the wave in the vertical part, and thus the effects conspire; while when the netting is behind the antennae there must be a large phase difference between the currents in the two parts. To corroborate this the author made a few experiments and drew the resonance curves of both parts, the vertical and the horizontal, taken separately, and thus shows that when taken together the difference of the effects may be made zero.

Army Enrollment of Military Telegraphers.

Colonel William R. Plum, of Lombard, Ill., the historian of the United States Military Telegraph Corps, in a letter of recent date addressed to *Telegraph Age*, contributes the following important and interesting letter regarding that portion of the corps who were enrolled members of the army and who were detailed for telegraph service, and gives their names. The injustice of Congress in persistently refusing to recognize and legalize the army standing of the remaining portion of the military telegraphers, equally with that of a few, because of a technicality of enlistment, which it was originally the purpose of the government to remedy, is rendered all the more glaring when it is considered that all who served in this branch of the army, of which they were an integral part, did so from patriotic motives, governed by intelligent and important purpose and devotion, sharing hardships, sufferings and dangers in common with the soldiers.

"From data collected for my history of the Military Telegraph Corps," writes Mr. Plum, "I have arranged the following list of telegraphers who were detailed from the army to serve as military telegraphers. Out of about one thousand two hundred members of the corps it will be noted that one hundred and fifty-eight were furloughed because they could render greater service at the key than by carrying a musket. I am inclined to believe that fully two hundred were detailed from the ranks besides one lieutenant and one captain. That is to say, one-sixth of our number was mustered into the army and then taken from original service to fill more important positions. Some of

them were detailed so quickly that they never were even drilled, yet all of the two hundred, besides receiving the higher pay as telegraphers, were always carried on the regimental rolls and always enjoyed, as they should, every privilege and benefit accorded to other soldiers in the army."

Here is the list of soldiers detailed:

W. J. Armes, 76th Pa. Volunteers; M. S. Andrews, Co. I, 3d Regiment N. Y. Volunteers; William Anderson, 90th N. Y. Volunteers; W. K. Applebaugh, sergeant-major, 16th Pa. cavalry; Hudson H. Allen; Michael Askins, sergeant, Co. I, 13th Ill. infantry; James Allen, corporal, 4th Maine Battery.

Clinton S. Barrett, Co. H, 69th Pa. Volunteers; Milton H. Bassett, 13th Conn. Volunteers; F. H. Bassett, 13th Conn. Volunteers; — Beckwith; — Blish; J. W. Boyd, Battery G, Independent Pa. Artillery; Edgar H. Brown, 18th Missouri Volunteers; James N. Bentley, Co. C, 2d N. J. Cavalry; Chester A. Buck, Co. G, 2d Ohio Heavy Artillery; John Burton, Co. C, 10th Minn. Volunteers; Alonzo M. Bush, Co. F, 56th N. Y. Volunteers; O. B. Bromley, Artificer Co. H, 1st N. Y. Engineers; J. B. Berry, Co. H, 1st N. Y. Engineers; Henry H. Bishop, Co. K, 141st N. Y. Volunteers; Marsden K. Booth, Co. F, 93d Illinois Volunteers; William J. Bodle, Co. G, 10th Pa. Reserves; John H. Black, Co. D, 65th Ohio Volunteers; R. H. Brigham, Co. H, 6th N. Y. Cavalry; Thomas R. Berryhill, Co. G, 8th Mo. Volunteers; W. F. Bottoms, Co. F, 60th Ill. Volunteers; Clark Brannan, Co. A, 15th Conn. Volunteers.

Henry Cutter, 7th Independent Reg. Co. C. Cavalry; Samuel P. Camp, Co. H, 11th Ill. Cavalry; Alfred W. Carroll, 5th Md. Volunteers; Samuel Carey, Co. B., 4th Ohio Cavalry; John W. Carver, Co. G, 147th Pa. Volunteers; William H. Chaddock, 1st Ky. Battery, Light Artillery; John H. Chittenden, Co. A, 22d Wisconsin Infantry; Albert F. Childs, Co. D, 93d Ill. Volunteers; John R. Cornelison, Co. D, 52d Pa. Volunteers; James L. Crowl, sergeant, Co. C, 160th N. Y. Volunteers; Joseph W. Collins, Co. I, 93d Pa. Volunteers; Oscar F. Cheeney, 2d Co. Minn. Sharpshooters; Leverett E. Curtiss, Co. F, 3d Ill. Cavalry; John Harvey Cutter, 3d United States Infantry; A. R. Chamberlain, Co. A, 100 N. Y. Volunteers; Frank W. Davis, Co. B, 207th Pa. Volunteers; James C. Denny; Samuel Davis, Co. G, 1st Mich. Sharpshooters; William H. Dougherty, Co. H, 13th Kansas Volunteers; I. N. Drew, sergeant, Signal Corps, U. S. A.; J. H. Dwight, Co. C, Berdan's Sharpshooters; John F. Duell, Co. F, 150th N. Y. Volunteers.

William H. Eaton, Co. C, 29th Iowa Volunteers; Charles G. Eddy, Sergeant Co. A, 24th Wis. Volunteers; Richard H. Elliott, Co. B, 83d Ill. Volunteers; David Elfick, 90th N. Y. Volunteers.

Charles I. Fancher, 13th Conn. Volunteers.

William H. Franks, 14th N. Y. Heavy Artil-

lery; Henry D. Franks, Co. F, 7th Maine Volunteers; G. S. Frazey, 55th Ohio Veteran Volunteers; William F. French, Sergeant Co. H, 159th N. Y. Volunteers.

Franklin G. Galbraith, Co. H, 195th Pa. Volunteers; A. A. Q. Gardner, Co. H, 11th Ill. Cavalry; William N. Graham, Co. K, 15th Minn. Volunteers; John Geiger, Musician Co. G, 153d N. Y. Volunteers; James R. Gilmore, Co. A, 126th Pa. Volunteers; Martin E. Griswold, Co. F, 105th Ill. Volunteers; Julius M. Glasier, Co. C, 16th N. Y. Heavy Artillery; William Grasby, Co. K, 2d U. S. Infantry; J. K. Gullihuer, Co. F, 7th Ia. Infantry.

J. F. Halen, Co. A, 3d Maryland Volunteers; Charles A. Hammann, 18th Mo. Volunteers; C. D. Hammond, 136th N. Y. Volunteers; L. M. Harris, Co. A, 69th Pa. Volunteers; W. D. Hawkins, Co. A, 36th Ill. Cavalry; L. J. Hebard, 4th Wis. Cavalry; William N. Hicks, Co. C, 2d Kan. Cavalry; Paul C. Havens, Co. A, 112th N. Y. Volunteers; James S. Harrison, 44th Ill. Veteran Volunteers; O. E. Hoge, Co. E, 15th Ohio Infantry; H. T. Holden, Co. M, 2d Ohio Heavy Artillery; Spencer C. Holbrook, 8th N. Y. Heavy Artillery; James A. Howard, Co. A, 105th Ill. Volunteers.

William G. Kirkman, Co. G, 39th Ill. Volunteers; Joseph Knittle, Co. A, 47th N. Y. Volunteers.

Robert C. Laverty, Co. C, 195th Pa. Volunteers; Henry F. Lines, Co. B, 1st Ill. Battery; Ernest Lessel, Co. H, 15th Mo. Volunteers; William McClure, Co. B, 15th Pa. Cavalry; Alexander K. McMurray, Co. H, 52d Pa. Volunteers; William S. Maynard, Co. D, 20th Mich. Volunteers; Philip Martin, Co. B, 17th Mo. Volunteers; Dowling Mitchell, Co. C, 8th Mo. Volunteers; R. M. Matlocks, Co. A, 7th N. J. Volunteers; Wm. Moak, Co. D, 5th Ohio Cavalry; — Montalvo, Co. E, 47th N. Y. Volunteers; Stephen Morcella, Co. G, 41st N. Y. Volunteers; A. M. Morris, Co. E, 13th Cavalry, M. S. M.; John Moltz, Co. D, 201st Pa. Volunteers; James J. Mulligan, Co. D, 69th N. Y. Volunteers; Wm. W. Murray, Co. C, 8th Mo. Volunteers; Robert I. Murphy, Co. I, 3d Pa. Artillery; John Q. Mason, Chicago Mercantile Battery; James McMillen, corporal, Co. G, 33d Mo. Volunteers; James D. Maguire, 18th Mo. Volunteers; J. A. L. McKenna, Co. I, 102d Pa. Volunteers; James F. McIlvaine, Co. I, 48th N. Y. Volunteers.

Alfred T. Norman, Co. C, 127th N. Y. Volunteers.

J. Q. Olmstead; Michael W. O'Ryan, 7th Wis. Veteran Volunteers.

James Powers, Co. G, 15th Conn. Volunteers; George R. Penn, Co. H, 3d R. I. Cavalry; Henry P. Pyle, Union Light Guards, Ohio Cavalry.

Thos. Rawlins, Co. B, 129th Ill. Volunteers; D. E. Rand, Co. I, 1st R. I. Cavalry; M. E. Roberts, sergeant, Co. H, 1st N. Y. engineers; D. P. Royce, sergeant, Co. A, 38th Ia. Infantry; John A.

Raymond, Co. G, 9th N. J. Volunteers; Geo. Rice, 134th Ill. Volunteers; S. K. Rupley, Co. F, 150th N. Y. Volunteers; Chauncey A. Runyan, Veteran Reserve Corps, D. C.

John A. Sheridan, corporal, Co. G, 95th N. Y. Volunteers; George Sturgeon, Co. A, 56th N. Y. Volunteers; Thomas H. Sherman, Co. A, 15th Me. Volunteers; Robert M. Stopp, Co. A, 69th Pa. Volunteers; David Strow; Neal Steward, Co. H, 1st Mo. Volunteers; James A. Shrigley, Co. G, 3d Minn. Volunteers; Albert C. Snyder, Co. M, 19th Pa. Cavalry; Ed. Schermerhorn, Co. D, 5th N. Y. Heavy Artillery; Wm. K. Smith, 47th Ohio Volunteers; Dexter Smith, Co. A, 3d N. Y. Artillery; F. A. H. Sanborn, 12th Maine Volunteers; George Sturgeon, Co. A, 56th N. Y. Volunteers; Geo. H. Snyder, Co. E, 98th Pa. Volunteers.

A. C. Towne, musician, Co. I, 5th Mich. Volunteers; Henry C. Templer, Co. B, 13th Ind. Cavalry; James D. Truax, Co. C, 3d N. Y. Volunteers; Henry R. Trowbridge, sergeant, Co. I, 5th Ia. Cavalry; E. C. Tingle, Co. H, 32d Ohio Volunteers; John G. Toby, Co. B, 57th Mass. Volunteers; James D. Thurston, 41st Ohio Volunteers.

B. H. Upham, 8th Vt. Volunteers; S. S. Ulmer, 15th Maine Volunteers.

O. B. Vincent, Co. F, 148th Nat. Guards Volunteers; Robert B. Van Derholf, Co. B, 9th N. J. Volunteers; Jacob H. Van Gilder, corporal, Co. F, 156th N. Y. Volunteers.

H. M. Walls, 130th Ill. Volunteers; A. D. Williams, corporal, Co. H, 11th Ill. Cavalry; Leonard Whitney, captain, detailed May 10, 1864; W. H. Woodring, Co. D, 13th Ill. Volunteers; T. D. Waterhouse, 7th Maine Battery; W. B. Wood, Co. A, 124th N. Y. Volunteers; Stephen T. Wilcox, Light Guard, N. Y. Artillery; R. D. Williams, musician, 69th N. Y. Volunteers; W. H. Wilson, Co. K, 148th Ohio National Guard Volunteers; Wm. M. Worden, Co. E, 157th N. Y. Volunteers.

Charles Young, sergeant, Co. G, 38th Mass. Volunteers.

Strenuous Times, These!

We are passing rapidly from strenuous to more strenuous times. A hundred years ago our forefathers did not violate the queen's English when they chanced to miss a sailing vessel across the Atlantic and had to wait six months for the next. Fifty years ago our fathers swore but little when, perhaps, they missed a stage coach crossing the western prairies, and had to wait even in Chicago for thirty days.

Now a man swears viciously if he misses a train—even when going to work—and has a brain storm if he misses a street car.

But the limit was reached last week when a man in a Broadway office building had a nervous fit and broke a good pair of suspenders because he missed a compartment in a revolving door.—Judge.

James Albert Partridge.

BY S. B. GIFFORD.

From a relative residing in Rockford, Ill., some facts have been learned in regard to the first telegraph operator in Syracuse, N. Y., who established the first office in that city May 1, 1846, the third to be opened on the line of the New York, Albany and Buffalo Telegraph Company, then in process of east and west construction, from Utica to New York, and Utica to Buffalo. His full name has not heretofore been correctly given.

James Albert Partridge was born at Onondaga Hill, a suburb of Syracuse, on April 17, 1814, and died July 16, 1868, in Washington, D. C., where he was in the government service for some time, occupying a position in the Treasury Department. He lies buried in the family plot in the old cemetery at Onondaga Hill. Prior to 1846 he studied law in Syracuse, and had commenced to practice there. When the telegraph was being introduced he went to Utica and qualified as an operator, opening the first office in Syracuse as stated; subsequently going to Buffalo, and later to Stockbridge, Mass., and was in the service in various places in New England, Hartford, Conn., being one.

From letters written to his family by Mr. Partridge while in charge of the office at Buffalo, some interesting items are taken relative to early telegraph operations and his experience.

On Monday, October 19, 1846, he wrote: "Broke down as usual. Every other day almost we are flat down, as far as being able to write by Telegraph. I am two hundred and fifty miles from the battery, a long stretch of wire, and broken very often. Saturday it snowed here all day and loaded the wire so heavily in the woods between here and Rochester that it broke in several places, and is not yet, 4 P. M., repaired, and no knowing how soon we shall start. . . . We are having a new office finished off expressly for the telegraph, and hope to get settled thereby the 15th of next month. . . . 6 P. M.—Have been down to the cars to carry wire, etc., to send to my men on the line. The man that started yesterday morning down the line was at Attica this noon—several breaks lower down, and he was on his way to Batavia."

Under date of December 24, 1846, he says: "We are now fairly moved into our new office, in the second story of a brick building fronting on Exchange street, at the corner of Washington, and it is comfortable and pleasant. We are entirely alone. The operators' room has windows on Washington street, is separated from the bookkeeper's room and the public office. There is also a battery room and a bedroom. . . . The Toronto and Hamilton (Canada) line is in operation, fifty miles, between those places, and will be in operation and connected with the Lockport and Buffalo line about the first of January. All the operators who are on the line I have the honor of having instructed. Two

more leave this office to-day to go on that line. . . . I have seen to-day a specimen of printing with common type by a telegraph instrument in black characters by a chemical preparation—not ink—on telegraph paper, an invention which I think must supersede the present system of raising the letters by a puncture. I have not seen the instrument, but if it works well must be the telegraph. Patentee's name, and invention even, not published yet. The papers have had a little of it, and call it Professor Morse's invention, but is not. . . ."

Pointers for a Successful Subscription Agent.

A subscription or advertising solicitor to be successful in his occupation should first study himself, ascertain his good and bad qualities, then try and overcome the latter and improve on the former, adapting himself with intelligent address to his business. Be natural; be enthusiastic; believe thoroughly in your work. As a well-informed agent speaking on the subject well said recently in a public address:

"Carry optimism with you wherever you go. Cheerfulness puts those around you in better humor and makes them more receptive to your appeals.

"Study politeness, not servility. Show the person you approach how you can help him. He is looking out for his own interests, not yours.

"Avoid dissipation, immorality or gambling. You must have clean morals if you would have good health, and good health is an absolute necessity to the solicitor.

"You cannot get business by knocking the other fellow. If you cannot put up arguments showing the superior advantages of the publication you represent it is usually your own fault.

"Never exaggerate the good points of your publication. Soliciting is not easy; in fact nothing worth having comes without hard work. Your disappointments will far exceed your orders, but don't worry. Getting subscriptions as well as advertisements is a slow process as you must patiently await results that are sure to follow persistent and intelligent effort."

A financial firm of London, pleased with the service afforded by the Commercial Cable Company, writes to that company in effect: "We should like to inform you of a test which, unknown to your office, we made as to the speed of a message between London and Havana. We despatched it from our office at 1 P. M. on January 17. There is a difference of 5 hours and 29 minutes in the time between the two cities, and the message was therefore despatched at 7.31 A. M., Havana time. Our correspondent writes that this message was received at the cable office in Havana at 7.34 A. M., and at his own office at 7.40 A. M., so that the transmission of the message from our office to his took only nine minutes."

Meeting of the Western Old Time Telegraphers' Association.

The Western Old Time Telegraphers' Association held its banquet at Portland, Oregon, on February 22, meeting at the Lenox Hotel, that city. Around the banquet board were men who began sending "stuff" over the wires when a single line was strung around the world, and alongside of them sat younger men whose services began when the present-day telegraph wires began to web the earth.

In the East the Old Time Telegraphers' and Historical Association have held annual reunions, but the light of time bore heavily on the pioneer operators who settled on the Pacific Coast, so T. P. McKinney, now of Spokane, Wash., conceived the idea of a Western association of old time telegraphers. It is to him that the organization that met owes its birth and he has promoted something of which the fraternity of the Pacific Coast may well be proud. W. A. Robb, of Portland, president of the association, officiated as toastmaster and called first on Dr. O. P. S. Plummer, who started his work at the key in 1851. Then came John Henderson, whose career began in 1853, a man who handled the news of the Crimean War, the Civil War, and who received, while working at the key in San Francisco, the news of the assassination of President Lincoln. Mr. Henderson also told of the time when the telegraph company made the attempt to string its wire through to St. Petersburg by way of Victoria and across Behring Sea and Siberia.

J. S. Urquhart, who began in 1854, told of the time he met and knew Professor Morse, the inventor of the telegraph, and he, like others present, told of sending a message at one time to Professor Morse on the occasion of the latter's birthday. From Portland a message was sent to the great inventor by Dr. Plummer, which read: "Space is annihilated. The great Northwest greets you."

Among the other speakers were George H. Thomas, now a lawyer and Democratic leader, and W. R. McGarry, also a lawyer and the Republican candidate for Circuit Judge. Jeff W. Hayes gave an interesting talk of the olden times and told many amusing stories. Alexander Craib, secretary of the association, struck a happy note during his brief talk, when he suggested that the birthday of Professor Morse be honored by telegraphers throughout the country. Mr. Craib suggested that it would be a splendid thing on Professor Morse's birthday, at a given signal, to have all telegraph keys throughout the country remain silent for a moment as a token of respect to the great inventor.

Professor Morse was born at Charlestown, Mass., on April 29, 1791, and died in New York April 2, 1872. His remains lie in Greenwood Cemetery, Brooklyn, N. Y. During the repast a silent toast was drunk to the operators who have received "30." President Robb and Secretary Craib read a number of messages and letters

from members who could not attend, and all of them closed with "73."

Those who attended the banquet and the date when they began their telegraph career, follow:

O. P. S. Plummer, 1851; John Henderson, 1853; B. F. Carl, 1871; B. F. Jones, 1876; Jeff W. Hays, 1871; T. P. McKinney, 1876; Alex. Craib, 1872; I. J. Keffer, 1892; W. H. Guild, 1896; William Adams, 1889; W. F. O'Brien, 1890; L. R. Cowles, 1896; J. V. Reid, 1892; William Burt, 1889; H. W. Peterson, 1890; A. G. McClane, 1881; G. H. Thomas, 1878; J. S. Urquhart, 1851; W. A. Robb, 1884; B. S. Durkee, 1884; C. W. Lamar, 1886; William Ingold, 1883; W. A. Humphrey, 1880; A. E. Beamer, 1882; W. R. McGarry, 1880.

The English Telegraph.

The English postmaster-general's accounts for the year ended March 31, 1907, made public on February 22, of this year, show that on the telegraph and telephone services the expenditure exceeded the receipts by £643,698 (\$3,218,470). The total income was £4,369,227 (\$21,846,135). Telegrams, telephone rentals, private wire rentals, and special wire rentals brought in £4,592,525, but this figure is reduced by £536,050 paid to cable companies, and £4,350 telegram money refunded. The Post Office received £243,665 in respect to royalties from the National Telephone Company and other licenses, and the value of telegraph services performed for various public departments without remuneration is estimated at £73,437.

The gross expenditure was £5,011,926. Of this figure £4,027,665 is absorbed by salaries, superannuation and maintenance of the telegraph and telephone systems. The purchase of sites accounted for £11,665, extensions £306,376, repayment of capital £351,246, and interest £118,642. The Office of Works spent £79,693 in respect of erection, and £116,639 is put down to the expenses of other departments for various services rendered. The deficiency is the smallest since 1903. Capital expenditure on telegraphs and telephones had, on March 31, 1907, amounted to a total of £23,892,000 (\$119,460,000).

Business Notice.

Mathias Klein and Sons are one of the best known makers of linemen's and of construction tools in this country. Just now this house is pushing their latest production in wire grips, that which is known as "Klein's Chicago grip," and this is advertised on another page, a cut of the same being shown in illustration. This grip possesses features that specially recommend it, and the firm are desirous of corresponding with intending buyers regarding the same. The Klein firm, whose address is 87-89 W. Van Buren street, Chicago, issue a 64-page catalogue, in which the merits of their well-known products are carefully set forth. It is full of valuable information, and those who are interested may obtain a copy for the asking.

The Morse Electric Club Dinner.

The initial dinner of the Morse Electric Club was held on the evening of Saturday, February 29, at the Hotel Breslin, New York City. Covers were laid for nearly two hundred, the diners being seated at numerous round tables, the long table of the president occupying a position at one end of the room. Mr. J. B. Van Every, president of the club, was the toastmaster. At his right sat the guest of honor, Colonel Robert C. Clowry, president and general manager of the Western Union Telegraph Company, while at his left was placed Mr. E. T. Jeffery. Others at the president's table were. W. J. Dealy, A. C. Bedford, Charles C. D. Gott, I. N. Stevens and A. R. Brewer.

An excellent menu was served and at its close Mr. Van Every made a few introductory remarks, reciting among other things how it happened that he had been selected the first president of the club. He then introduced Colonel Clowry, who heartily thanked the members for the kindly expression of good will manifested toward him. He congratulated the club upon the success of its inaugural dinner and expressed the hope that many more such enjoyable occasions would mark its future course. He thought that a pleasant social feature attending the club's membership would be an annual summer outing, and said that he would be glad to put the telegraph company's cable boat, Western Union, at the disposal of the club as an aid in carrying out the idea.

President Van Every then read letters of regret from Melville E. Stone, general manager of The Associated Press, and Thomas F. Clark and George W. E. Atkins, vice-presidents of the Western Union company, all of whom were absent because of illness. A cable message was also read from T. W. Goulding, of London, European general manager of the Western Union, wishing for the club an enjoyable evening on the occasion of its first banquet.

William J. Dealy, who was then introduced, delivered a carefully prepared and interesting address, largely of an historical character.

E. T. Jeffery, of New York, president of the Denver and Rio Grande Railroad Company, was the next speaker. He made an eloquent address in which he had considerable to say relative to young men earning their way and enabling them to climb from the lower ranks to the higher positions within the gift of all corporate companies. Competent men, he declared, were never in such demand in all occupations of life as at the present time. He referred to his own business life which, like that of Colonel Clowry, he said, began at a very early age and at the lowest round. By his very environment he had been in intimate contact with men in all grades of employment, and the knowledge thus gained by association with workingmen enabled him to better fight the battle of life and fit him for promotion. He dwelt upon the dignity of labor and on the necessity of employer and employee working to-

gether in harmony at all times. This could and should be done and unless a proper esprit de corps was securely established in corporative bodies such organizations could not hope to prosper. Mr. Jeffery declared for the spirit of individual character, also impressively remarking that the sympathies of a vast majority of those holding high official positions were always with the workmen.

Mr. I. N. Stevens, of Denver, Colo., a guest of the club, also made an admirable address. He was followed by A. R. Brewer, who related a few telegraph stories of an entertaining and interesting character. A. C. Bedford, of the Self-Winding Clock Company, followed Mr. Brewer and gave a five-minute interesting talk. A few remarks by C. W. Price, Editor of the Electrical Review, brought the speech making to an end.

Mr. Van Every proved himself to be a most acceptable presiding officer, being particularly happy in his introductions, which usually carried with them some appropriate and interesting story or historical reminiscence relating to the telegraph profession.

The musical entertainment was of a high order and was interspersed with monologue recitations and story telling.

The committee of arrangements included Gardner Irving, M. J. O'Leary, P. J. Casey, J. A. Hill, M. H. Kerner, Gerald Brooks, F. J. Scherrer and R. J. Murphy.

Among those present were:

Albany, N. Y.—T. J. Meade.

Boston, Mass.—C. F. Ames.

Buffalo, N. Y.—W. A. Sawyer.

Cincinnati, O.—C. R. Tilghman.

Denver, Colo.—I. N. Stevens.

Hartford, Conn.—Elisha Ryder.

Jersey City, N. J.—J. B. Bertholf.

Newark, N. J.—W. H. Spry.

New Haven, Conn.—C. F. Annett, F. E. Clary.

Newport, R. I.—H. J. Lockrow.

New York—W. J. Austin, W. J. Ackerly, Harry Ayres.

T. M. Brennan, B. Brooks, J. A. Berry, G. J. Bascom, E. E. Brannin, E. T. Burrill, J. R. Beard, Gerald Brooks, G. R. Benjamin, Orton Brewer, E. C. Brower, C. J. Bresnan, A. R. Brewer, C. A. Bauer, J. W. Behre, A. T. Benedict, F. E. Brouwer-Ancher, G. E. Baker, A. C. Bedford, R. D. Brixey.

Col. R. C. Clowry, P. J. Casey, A. R. Carmichael, J. T. Carberry, J. W. Connolly, F. E. Coyle, E. G. Carley, F. R. Carney.

W. J. Dealy, Martin Durivan, Lewis Dresdner, J. T. Delaney, J. P. Doyle, Harry Durland.

H. D. Estabrook, J. W. English.

W. N. Fashbaugh, E. H. Falls, Wm. Finn, Wm. Finn, Jr., David Fuchs, Louis Fiedeldej, Irving Fish, S. H. Flagler, L. B. Foley.

F. D. Giles, E. P. Griffith, D. J. Gallagher, J. J. Ghegan, C. H. Gaffney, Chas. C. D. Gott.

J. A. Hill, M. W. Hamblin, M. J. Hayden, H. M. Heffner, G. A. Holle, J. F. E. Hopkins.

E. F. Howell, F. C. Halstead, Wm. Holmes, F. X. Hickey, Wm. H. Hurst, Thomas Hull, M. O. Hoffman.

Gardner Irving.

W. H. Jackson, Chas. Jacobson, C. H. F. Johnson, M. W. Jones, E. T. Jeffery.

Frank Kitton, M. H. Kerner, James Kempster, A. F. Kelly, C. A. Kilfoyle, Alex. Kline, Oscar Kuehn, M. J. Kenna.

J. T. Laidlaw, A. M. Lewis.

W. T. Mapes, R. J. Murphy, E. M. Mulford, C. A. Meyer, Major Mitchell, R. F. Murphy, Edward Mesler, William Marshal, Mr. Murray, F. A. Mombert, G. H. Messner, C. H. Murphy, T. A. McCammon, D. W. McAneeny, W. A. McAllister, J. F. McGuire, Joseph McCusker, A. A. McNeill, T. F. McAvoy.

J. F. Nathan, Benjamin Nachmann, H. J. Northrop.

M. J. O'Leary.

Frederick Pearce, R. F. Parkinson, J. M. Phelan, C. W. Price, W. W. Price, M. E. Pierce, W. E. Paine.

W. E. Rath, H. E. Roberts, C. E. Rice, A. J. Roberts, B. H. Reynolds, T. E. Russell, George Roehm, J. J. Riley, C. D. Reed, James A. Rice, D. Roth.

F. J. Scherrer, G. F. Stainton, T. G. Singleton, A. G. Saylor, Daniel Skelton, John Simmonds, J. W. Schmults, Herbert Smith, H. A. Smith, H. L. Shippy, W. D. Schram, F. G. Sherman, H. V. Shelley, W. A. Schudt, George Schreiner, J. A. Sweeney, D. C. Sullivan.

P. J. Tierney, J. C. Turner, J. B. Taltavall, F. A. Taylor.

J. B. Van Every, H. E. Van Every, E. B. Van Every, J. Veitch.

M. T. Wilbur, J. Wiseman, H. C. Worthen, A. O. Wallis.

- Philadelphia—J. P. Altberger.
- Pittsburg, Pa.—E. B. Saylor.
- Portsmouth, Va.—W. F. Williams.
- Rochester, N. Y.—G. D. Butler.
- Saratoga, N. Y.—H. L. Waterbury.
- Schenectady, N. Y.—A. E. Reynolds.
- St. Johns, N. B.—D. C. Dawson.
- Syracuse, N. Y.—J. E. Bierhardt.
- Troy, N. Y.—I. W. Copeland.
- Utica, N. Y.—F. E. Howell.

Why Wooden Poles Break Above Ground.

BY CLINTON B. SMITH.

It is a matter of observation that most tall wooden poles of, say, forty feet and over in length, when blown over by storm, will break a considerable distance above ground.

This fact would lead one to think that the weakest section is not at the ground level, but at some higher point on the pole. The following investigation shows that a pole of uniform taper and free from knots and other local weaknesses is weakest at a definite distance from the top,

this distance being independent of the pole length.

This distance is $x = d \div 2t$ in which all distances are in inches, and in which $d =$ diameter of the pole top; $t =$ taper of pole, or increase in diameter in inches per inch of length; $F =$ horizontal stress due to wires on crossarm.

The pole is weakest where the fiber stress is greatest. Therefore, in order to find the weakest point, it is necessary merely to locate maximum fiber stress for any value of F .

At any section along the pole at a distance x from the top,

$$Fx = \frac{If}{e} = .098 dx^2f \text{ (for round section)}$$

where $I =$ mom. of inertia of section.

$f =$ stress in outer fiber.

$dx =$ diam. of pole at distance x from top.

but $dx = d + tx$.

Therefore

$$f = \frac{F}{.098} \frac{x}{(d + tx)^2}$$

It will be observed upon differentiating that f reaches its maximum value when $x = d \div 2t$. This is the critical value of x corresponding to the maximum value of f , the fiber stress; the pole, if free from local weaknesses, will break at this distance from the top.

Taking the case of an Idaho cedar pole having a top diameter of eight inches and an average taper of .01 inch per inch.

$$d = 8$$

$$t = .01;$$

whence,

$$x = d \div 2t = 400 \text{ inches.}$$

Hence the pole will break thirty-three feet four inches from the top, no matter how long the pole may be, provided the pole has at least this length above ground. A pole shorter than this length above ground will break at the ground.—Electrical World.

The new officers of the Self-Winding Clock Company of New York, elected at a meeting of the company, held on March 2, were A. C. Bedford, president; C. M. Pratt, vice-president; Charles C. D. Gott, vice-president and general manager; Harold I. Pratt, secretary and treasurer; George A. Vaughn, assistant treasurer.

Small things are not to be overlooked in considering the problems of the future timber supply. The matchmaker is having as much trouble in getting the grade of wood necessary for his business as are the telegraph companies in obtaining their pole supplies.

The testimony of progressive operators is that TELEGRAPH AGE is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

George W. Balch and the Telephone.

The late George W. Balch, of Detroit, Mich., whose death is referred to in another column, was president of the Telephone and Telegraph Construction Company of that city in 1878, the first telephone exchange established anywhere in the world and made the first practical demonstration of the use of the telephone.

William A. Jackson, of Detroit, chairman of the executive committee of the Michigan Telephone Company, and who, like Mr. Balch, was an old-time telegrapher, in referring to the death of Mr. Balch, said:

"I recall very distinctly when, in 1877, Mr. Balch, with orders, took up the development of the telephone as a commercial enterprise. The year before it had been exhibited at the Centennial exposition at Philadelphia, but it had never been used, except as one might inspect a curiosity.

"In 1877, with Mr. Balch as president, eight of us organized the Telephone and Telegraph Construction Company, there being associated with Mr. Balch, James McMillan, Hugh McMillan, John S. Newberry, W. K. Muir, M. D. Woodford and Charles Reed, with myself as general manager.

"We had heard wonderful stories of the invention of Mr. Bell, and Mr. Balch, I believe, at the Centennial had seen the instrument, which was then a mighty crude affair: Previous to the organization of the company, we had sent to Mr. Bell for a couple of the machines, as they were called, and we tried them out with an experimental line from the old office of the Detroit Free Press, which was then located at Woodbridge and Griswold streets, to the American District Telegraph Company's office. Hundreds of persons inspected the machines and the invention was pronounced marvelous.

"Mr. Balch, however, had little confidence in the thing as a practical business enterprise, nor did any of us, but it was decided to try it out, anyway, and a few telephones were installed. The first one put in and the first contract ever made for a telephone anywhere in the world was made by our company, while Mr. Balch was president, and Frederick K. Stearns was our first customer. Mr. Balch thus signed the first contract ever made for telephone service. We didn't have an exchange for some time, and I can recall the names of nearly all of the first subscribers.

"Mr. Stearns had a line from his store, at Larned street and Woodward avenue, to his laboratory, at Woodbridge and Fourth streets. The Michigan Car Company took the next one, and our fourth subscriber was the Detroit Water Works.

"In 1878 an exchange was established. This was the first exchange in the world. There were then about forty subscribers and the system was as much different from the arrangement of the present time as can be imagined. There were only four or five lines with eight and ten subscribers on each line. The phones had no trans-

mitters and it was a case of yell into the receiver and then put it up to your ear to listen to what the party on the other end had to say.

"At that time no one had thought of using the telephone as a means of communication between towns, but in 1879 we decided to try it for this purpose, and the first outside line was from Detroit to Port Huron."

The Telautoprint.

The United States Wireless Printing Telegraph Company, of San Francisco, in a general circular states that "the principle on which the Telautoprint operates is this: Beneath the Telautoprint machine, occupying a floor space eighteen inches square, is a small dynamo which operates a revolving type wheel on the machine above. When one presses a letter on the keyboard, the touch of the key whirls the type wheel; on this is cut the characters of the typewriter, the right letter stops at a point electricised by opening the circuit; it is printed on paper, and the electric impulse passes over a telegraph wire or through the air as far as messages can be sent. The type wheels on both the sending and receiving machines move with absolute uniformity. This is the achievement of A. H. F. Schaar, the inventor. By gauging the speed of any revolving type cylinders, a message can be sent which no one can intercept."

Changes in the New York and New Jersey Telephone Company.

At the annual election of officers of the New York and New Jersey Telephone Company, held in Brooklyn, N. Y., on February 27, Theodore N. Vail was elected chairman of the board of directors. Union N. Bethell was re-elected president; W. D. Sargent was re-elected vice-president; H. F. Thurber, formerly general manager, was elected second vice-president; Waldron Hopkins was re-elected secretary, and Ford Huntington, treasurer of the New York Telephone Company, was elected treasurer in place of H. S. Snow. Walter Brown was elected auditor in place of J. L. Hamar, who will serve the company in another capacity. John C. Reilly, who has been with the company for twenty-five years as general superintendent, general manager and vice-president, resigned as vice-president and will assume important duties assigned by the president.

It has recently been decided to arrange for an international congress of the applications of electricity, in connection with the Marseilles Exposition, which will take place at Marseilles from September 14 to September 21. A committee of organization is being formed and its personnel will be published later. This congress will have general meetings, section meetings, lectures, and visits to various industrial establishments. Manuscripts may be sent to the general secretary of the exposition, 63 Boulevard Haussmann, Paris, France, before July 15, 1908.

Radio-Telegraphy.

All the self-governing British colonies, except Newfoundland and Orange River Colony, have decided to adhere to the Radio-telegraphic Convention.

It is reported that the German naval authorities are about to witness a demonstration of a boat which is dirigible by electricity without the aid of wires, the invention of three German engineers.

In the course of experiments with the wireless telegraph apparatus at the Eiffel Tower, Paris, on February 18, an explosion occurred which destroyed the greater part of the installation, and a fire broke out which completed the havoc and caused damage estimated at \$16,000.

A mathematical paper, entitled Directed Wireless Telegraphy, by A. Montel, shows that an antenna composed of two vertical wires of equal length placed at a certain distance from each other and supplied with currents of opposite sign at any instant has the property of sending out waves in certain directions.

A patent, No. 879,532, for space telegraphy, has been taken out by Lee De Forest, of New York, assignor to the De Forest Radio Telephone Company. An oscillation detector comprising an evacuated vessel has two electrodes enclosed within the vessel; also shaped member of conducting material inclosed within the vessel and interposed between the electrodes. This is the De Forest "Audion" receiver.

A patent, No. 879,409, for wireless telegraphy, has been granted to George W. Pierce, of Cambridge, Mass. In a receiving system for wireless telegraphy are comprised an inductive connection having a variable primary and variable secondary, a detector and a condenser connected with the secondary, and connections for sending the currents set up in the primary of the inductive connection through the detector.

It is announced that the English Admiralty have had under consideration for some time the question of the general supervision of wireless telegraphy in the British fleet, and have decided that in every fleet and squadron there shall be an officer appointed who has received special training in wireless telegraphy. The duties of this officer will be to supervise personally wireless telegraph exercises and instruction of operators, as well as to go from ship to ship and tune the various instruments.

The Marconi Wireless Telegraph Company of America, which will hold its annual meeting in the third week in March, was incorporated in 1899 with a capital stock of \$6,650,000, par value \$100, of which \$6,100,000 was issued. The experimental transatlantic station at Glace Bay, Nova Scotia, was thrown open February 1 of this year for service limited to Montreal. The station has an operating capacity, it is said, of about

10,000 words a day. The annual report will, it is stated, show a gross monthly business of about \$5,000 for 1907 over a monthly business of \$1,100 for 1905.

Charles Bright, of England, publishes in an English journal an interesting comparison between submarine telegraphy and radio-telegraphy, pointing out the certainty and speed of the former, and the possibilities of the latter, notwithstanding its present limitations. The future of wireless telegraphy depends to a large extent upon (1) the working capacity of a pair of stations, (2) how near stations can be placed without interference, (3) whether the electric power required will militate against the use of other stations and ships in the neighborhood or passing within range, and (4) the amount of traffic secured.

Post Office Engineers' Dinner.

The fifth annual dinner of the engineering department of the English post office was held at London, on February 1, Major O'Meara, C. M. G., R. E., engineer-in-chief, presiding. The guests of the evening included the Right Hon. Sydney Buxton, M. P., postmaster-general; Babington Smith, C. B., C. S. I., secretary; A. F. King, H. S. Carey, A. M. J. Ogilvie, Sir John Gavey, C. B., Sir John Cameron Lamb, C. B., C. M. G., Hon. R. D. Danman, Lieut-Col. Price, C. M. G., Dr. Glazebrook, Dr. Walmsley, G. Morgan, A. E. Eames, J. Kingsbury, H. Hirst, J. W. Willmot and others.

After the royal toasts had been duly honored, Mr. Sydney Buxton, in proposing the toast of the "engineering department," referred to the loss of Lord Kelvin and Mr. Blaine, and to the retirement of Sir John Gavey, who, however, was retained to keep a watching-brief over various matters which might occur in the future, perhaps the most serious of which would be the tussle with the National Telephone Company in 1911. In the engineering department they had two difficulties in the way of carrying out their duties; one was the question of wayleaves, and the other the question of money. On the question of wayleaves, he was endeavoring to pass a bill through the House of Commons, which would give them greater powers of dealing with the obstruction of individuals. There was another body also with which they had to deal—the treasury, which was far and away above the postmaster-general. However, in spite of this they had been able to make considerable strides in the direction of the extension of the telegraph and telephone lines and wires. In the last twelve months no less than 123,000 miles of telegraph or telephone wires were laid.

The practical side of the telegraph is discussed in every issue of Telegraph Age in a manner of interest and aid every individual operator in the service. Why not secure the benefits of such information by subscribing for the paper—\$1.50 a year.

A Reminiscence of Forty Years Ago and its Modern Termination.

BY E. C. GREENE, OF SEATTLE, WASH.

An incident having its beginning forty years ago with a denouement of recent date, will be of interest to old-timers, particularly those familiar with Pacific Coast telegraphy in the early days. It also holds up vividly to view by way of contrast, the hard physical and savage conditions of the country then confronting the pioneer in the Far West, with those of the present day when under the softening influences of civilization much of the land veritably blossoms as the rose, inviting in its allurements as a place of residence.

In 1868 the Union Pacific Railroad was under construction, the first iron roadway to link the distant West with the East. The recent conclusion of the Civil War had made clear the desirability, nay, the necessity, almost, of such a road. It was needed not alone for traffic, although a vast amount awaited its completion, but it was required also to operate as a strengthening bond of unity between two widely separated sections of the country divided by a wilderness and so-called "desert" tracts. The days of the "prairie schooner," which had served the overland traveler so long, yet which had made the wearisome journey across the plains, one subject to constantly impending danger, not alone from savage beast, but, more to be dreaded, from savage men, white as well as red, were happily drawing to a close. The trip from the Mississippi to the Golden Gate would soon be a question of days only, instead of weeks. The work of railroad building, stimulated by government aid, was being pushed westward with unusual energy and speed. From the Coast the Central Pacific Railroad was under construction with equal expedition eastward, aiming to meet and unite with the advancing Union Pacific, and so complete a great transcontinental railway system.

At this time there were four telegraph operators, by name, "Dick" Wood, "Al" Haight, D. B. McCoy and George Gilbert, in the employ of the Union Pacific Railroad, who were accompanying the advance party of construction. Their common avocation served naturally under the circumstances to bind them close to each other and they became companionable and fast friends. As the two great railroad undertakings gradually neared the point of junction, the four friends moved by a spirit of restlessness, an unexplainable desire to change, such as will sometimes seize upon men, particularly when brought under undefined frontier influences, perhaps because of the very roughness of environment—but at any rate, whatever the impelling cause, the telegraphers determined to throw up their present job, tramp over the intervening distance then separating the respective roads in the race of construction, estimated to be about one hundred miles, and seek employment with the confronting company.

While the trail which they expected to follow between the two distant points was known in a general way to be a rough one, it was believed that but a few days at most would be sufficient to cover the interval, although there were those who counseled against the undertaking, particularly in the inclement winter season. But the telegraphers were young and stout-hearted and fond of adventure. Besides, they argued, so far as the questions of nightly shelter and rest and largely that of food affected their well-being, settlers along the route would afford all that might be necessary in these respects. It was estimated that a settler's cabin, or "farmhouse," as "Dick" Wood ventured to dignify probable stopping places, would be met with on an average of every ten miles or so, and if such was the case no trouble need be apprehended so far as the safety and comfort of the journey was concerned. In fact, the prospect was viewed more in the nature of a picnic, or a holiday excursion, rather than as a serious undertaking likely to be beset with difficulties and possible disaster. So it was that with light hearts, fortified by that happy-go-lucky spirit observed in some members of the telegraphic fraternity, but more frequently noted in the early frontier days than now, inclining one to take big chances, the four friends started out on their long tramp.

A spurt on the first day, prompted by exuberance of spirit, hopefulness and confidence in physical strength, carried them well forward into the wilderness. The further they proceeded the wilder, more rugged and more forbidding became the pathway. They looked in vain for a sign of a human habitation that was presumed to exist, but evidently the settler was to follow not lead the advent of the railway. The latter might bring him forward, but he was not waiting to welcome the arrival of the iron horse, even though the telegraph had previously stretched its line across the plains and over the mountains. So sure were the migratory operators that they would meet with friendly assistance on the way that they had foolishly neglected to provide themselves with blankets even as a protection against the chill of night—in fact, they were but comparatively thinly clad. As for provisions, they had only scanty store, relying almost wholly on the expected generosity of the dwellers by the way. When, therefore, night closed down cold and cheerless, and the four gathered closely around a camp fire and partook of but a slight repast from the little stock of provisions which it now became evident they must carefully husband, it must be confessed that the absence of the warm fireside under some hospitable roof, and the hot supper, even though a plain one, so confidently counted upon, was a keen disappointment, and the courage of the shivering group sank in corresponding measure. The outlook was a dubious one and the boys began to question the wisdom of their move. To abandon the undertaking and go back was, they declared, not to be thought

of. Only ridicule would meet them on their return. With the morning sun, however, hopes arose in corresponding measure, as that luminary's glow dispelled darkness and brought light and some degree of additional warmth. After a hurried breakfast, which was not much more than a mouthful all around, a pittance to hungry men tired and stiff from lack of sleep, the little party once again resumed their march with renewed confidence, the buoyancy of youthful assurance coming to their rescue.

The second day was practically a repetition of the first, and the third of the second. It was plain they were not to meet with "farmhouses" along that "right of way." No clearing or twinkling lights appeared to gladden their sight and hold out a welcome as the twilight deepened night after night. The picnic idea which filled their minds at the outset, had long since disappeared. They were facing a stern, adverse reality of hunger and utter weariness of body that seriously threatened their very existence. The country over which they were now but slowly making their way, for each day's progress became less and less marked, became more rough and difficult of passage. It had originally been formed when nature was in a disgruntled mood.

Of game there appeared to be but little, and from this source their wants were but narrowly supplied. Besides, it was necessary to exercise close economy in the use of powder and shot, of which they had but limited store, for it might become necessary to meet an attack by wild beasts or by Indians, although of the latter little dread was felt. Indeed, they might have welcomed falling in with a roving band of redskins, for that might be the means of obtaining food. It need hardly be said that the telegraphers now bitterly repented of ever having started out so blindly and so ill prepared for the journey they were making. The sound of the key would have been as music in their ears, and the rough surroundings which they had abandoned so thoughtlessly would now have been welcomed as a haven of rest. To add to their distress, on the seventh day out a storm set in which developed into a raging blizzard, during which the men became separated and their sufferings grew intense. They frequently remarked afterward that in their weakened condition they wondered how it was they ever survived the ordeal through which they passed in that storm. It was a struggle for life, yet realizing that if they gave way at all they would be lost, indeed, they still wandered on, each man in despair almost at his isolated, lonely and utterly forlorn condition. But, luckily, they were nearer their journey's end than they imagined, and when at length the men became united and the camp of the Central Pacific Railroad builders was almost stumbled upon, they had about reached the limit of physical endurance. A few days' rest, however, restored the weary trampers, and their services as telegraph operators were called into requisition.

The hardships of frontier life and its generally unsatisfactory conditions, holding out but few op-

portunities for profitable, or at least satisfactory, employment, caused Haight, McCoy and Gilbert after an interval of a year or so, to return East. "Dick" Wood, the master spirit of the "original four," went to California, where all definite trace of him was lost, and where he was supposed to have died.

Now comes the sequel to the story. A few days ago a gentleman, well along in years, called on the writer, in his capacity of hotel broker at Seattle, Wash., explaining that he thought of engaging in the hotel business, and inquired respecting the outlook of such an undertaking. In response to questioning he said he had been engaged in the hotel business years ago at Saginaw, Mich., not, however, as manager, as I queried, but as a "bell boy." It was sufficient that he was familiar with Saginaw, and the question was put:

"Did you ever know Alexander Ferguson, manager of the Western Union Telegraph Company in Saginaw?"

"Well, well," said he, "I have not heard that name in forty years. Ferguson was a father to me; he taught me telegraphing."

The further question of whether he ever knew "Al" Haight, who was from Jackson, Mich., brought the exclamation:

"Did I know him? Well, I don't think I will ever forget him. He, I, and two others took a foolhardy trip forty years ago that came near killing us."

Then he told the story as related herewith. It was "Dick" Wood who was talking. He said he had separated from the boys, drifted into Southern California, had married, owned two private banks in Arizona; when the panic of 1893 struck him he lost his fortune. He then went to Seattle, where he has since resided. He explained that he had a son, a part owner in the largest banking institution at Fairbanks, Alaska.

Verily, this is a small and strange world! Think of running into a friend forty years after he is supposed to be dead, and find him with a hotel fever coursing through his veins that has coursed forty-five years unchecked!

When the Union Pacific and Central Pacific (the latter now a part of the Southern Pacific system) effected a connection in March, 1869, the writer was an operator on the summit of the Sierra Nevada mountains. The last time I saw D. B. McCoy, he was a night chief in the Western Union office, New York (where he now is); "Al" Haight was in the Western Union employ in Chicago, in which city, also, George Gilbert was working the wire in a broker's office. At the time I was on the mountain summit John Ginty was a fellow operator there, and Henry D. Underwood, an operator, was filling the position of clerk in the Summit Hotel. Five years ago we three had a reunion at Los Angeles, Cal., after a separation of thirty-five years. Mr. Ginty is now cashier of the French-American Bank, at San Francisco, and Mr. Underwood after a successful experience of thirty years in the real estate and insurance business at Tucson, Ariz., has lately

moved to Los Angeles, where he is engaged in the same line of business.

In recalling the names of these former friends and associates, permit me to add that while I was on the "summit," James K. Parsons was stationed as an operator at Colfax, Cal. For the last thirty years he has worked in the Western Union office at Rochester, N. Y. I had lost track of him, but located him through a communication of his in Telegraph Age. At Cisco, Cal., there was John Clark, who came originally, I think, from Buffalo, N. Y., and who is now dead.

LETTERS FROM OUR AGENTS.

PHILADELPHIA, WESTERN UNION.

Mr. C. M. Pennypacker, formerly of New York, has been placed in charge of the Barclay department in this city.

Patrick H. Nunan, after a long and painful illness, died in this city on March 9, aged sixty-six years. He entered the service about 1862 and has been in its continuous employ ever since. He was a member of the United States Military Telegraph Corps and had just received his pension from the Carnegie fund. He has been very feeble of late years owing to nervous prostration.

Miss Margaret Waddell, who went to Atlanta, Ga., during the strike, and who remained South, locating at Mobile, Ala., is shortly to be married to the chief operator, Mr. F. H. Austin, of that city.

NEW YORK, WESTERN UNION.

Mr. R. J. Welch, formerly of this department, died at Seaton Hospital, in The Bronx; the interment was in St. Joseph's Cemetery, Boston, Mass.

Mr. T. A. Brooks, timekeeper of this department for over a quarter of a century, and who a month ago went to Florida for the benefit of his health, is reported to be much improved, and his early return is now expected.

OTHER NEW YORK NEWS.

Mr. G. W. Hickey, a well-known old-time telegrapher of New York, was married recently and is now absent on an extended wedding trip, which will include visits to Florida, Nassau and Cuba.

The Magnetic Club of Philadelphia.

At the annual meeting of the Magnetic Club the following officers were elected: F. H. Lincoln, president; J. W. Reed, vice-president; C. B. Wood, secretary; H. W. Hetzel, treasurer; John W. Meyer, chairman of governing committee, and C. C. Ingalls, W. S. Burleigh, E. C. Boileau, F. E. Maize, A. S. Weir, to serve for two years on that committee.

The next club dinner will be a planked shad one at Washington Park, on the Delaware, on May 23.

Book Review.

Telegraph Age is in frequent receipt of enquiries for a low priced yet a reliable and practical work on submarine telegraphy. Such a book has recently made its appearance bearing the title of "Submarine Telegraphy," compiled by competent authority, and brought out by S. Rentell and Company, the London publishers. It is a volume so clear and complete in its discussion of the subject treated as to render it a valuable possession to all who may be interested. The price is seventy-five cents and it will be sent to any point on receipt of the price, carrying charges prepaid. All orders should be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York. There is a growing demand for books of this class and this journal is prepared to promptly fill all orders for same as well as for telegraph and electrical books in general.

W. H. Magehan, Former Military Telegrapher.

William Henry Magehan, of Webster Grove, Mo., a Pullman car conductor, is an old-time and United States military telegrapher. He was born at St. Louis, Mo., July 14, 1839, and entered the telegraph service in that city about 1853, in an office which had for its manager A. Peting, and in which Col. R. C. Clowry, now president and general manager of the Western Union Telegraph Company, was the only operator. In this same office a Mr. Tupper was the agent for The Associated Press, and who was relieved later by C. J. Osborn. Subsequently Mr. Magehan became an operator and while at Sulphur Springs, Mo., in 1862, became a military telegrapher, being stationed first at the St. Louis arsenal and afterwards under different commanders, serving in the army in the field in Missouri until 1865. Following the Civil War he entered other avocations, but returned to the key in the railroad service, where he remained about eighteen years. Deafness compelled his withdrawal from telegraph employ nearly thirty years ago, since which time he has followed his present occupation.

The drastic postage law affecting rates of postage between this country and Canada, which went into operation some months ago and which caused rates to be advanced to an almost prohibitory figure, has been abrogated so far as the daily papers are concerned. It is a matter of regret and disappointment that high rates are still demanded on all other classes of periodicals, including, of course, Telegraph Age.

Mr. Harrison Osborne, attorney for the United States Electric Company, who is well known in railroad telegraph circles, has been appointed attorney for the United States Custom House in New York.

Representative Andrew J. Peters, of Massachusetts, introduced in the House of Representatives on March 10, a bill providing punishment by a fine not to exceed \$2,000, or imprisonment not to exceed one year or both, of any person found guilty of originating or transmitting a false wireless message purporting to be official.

The Western Union Telegraph Company has instituted suit against the state of Wisconsin to recover \$12,886, which it alleged was paid as excessive taxes in October, 1907. The complaint says that under the ad valorem law the company's property within the state was assessed at \$1,800,000, whereas the true value was but \$653,544.

The Hearst leaguers who propose the establishment of a new political party to be known as the "National party," suggest as its slogan a declaration favoring public ownership of all public utilities whenever municipal, state and national governments are in a position to undertake such enterprises, and the immediate purchase of the telegraph lines by the United States government is advocated.

In Boston on March 4, 5 and 6, a sale occurred at auction of the valuable private library of the late Joseph Barker Stearns, the inventor of the duplex system of telegraphy. The sale brings to mind the death of Mr. Stearns, which occurred July 4, 1895, at his home at Camden, Me., where he lived in retirement, enabled so to do from the

ample income derived from royalties on his invention received from telegraph and cable companies.

R. L. Dean, of Kansas City, Mo., president of the Dean Rapid Telegraph Company, in renewing his subscription lately, took occasion to write as follows:

"In renewing our subscription to Telegraph Age, please allow me to say that no man who expects to keep posted on electrical science, and especially the art of telegraphy, can afford to be without your paper. And the fact that Telegraph Age treats every article from an unbiased standpoint, makes it more valuable to its readers. I wish your paper success and trust it will continue to maintain its present high standard of excellency."

You can save something from your income, and if you do, you can acquire a home in your own right under the most attractive of auspices. The Serial Building Loan and Savings Institution, 195 Broadway, New York, strong, conservative and true, can render you substantial service. Why not inquire into its methods? Its record of many years is without a blemish.

Advertising will be accepted to appear in this column at the rate of three cents a word, estimating eight words to the line.

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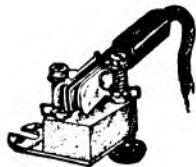
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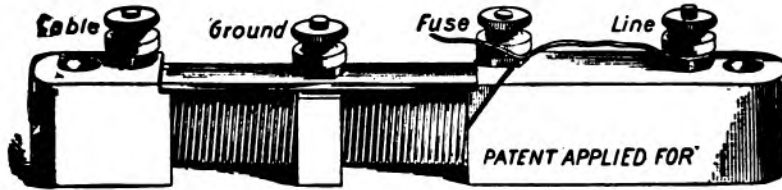
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