

# DIRECTORY OF TELEGRAPHS AND CABLES

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# TELEGRAPH AGE

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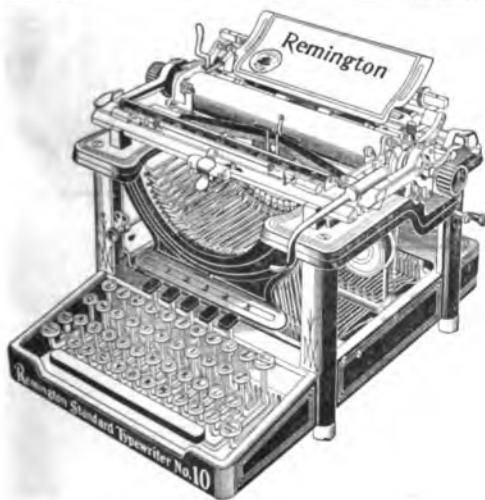
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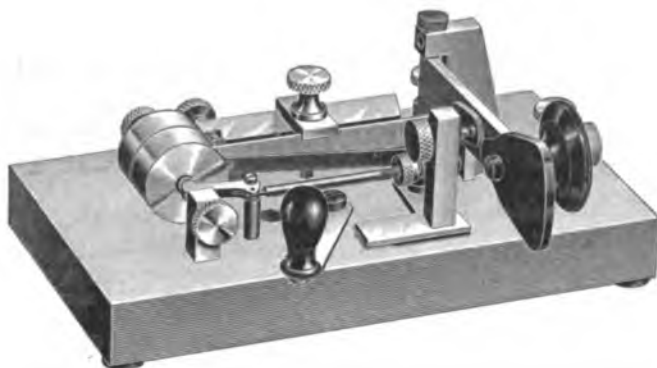
This great work, by the late James D. Reid, the "father of the telegraph," furnishes an authentic and complete history of the telegraph, tracing out its early start, its development, the organization of the various telegraph and cable companies, etc. The book is bound in morocco, has 846 pages and is abundantly illustrated; a magnificent gift to any telegrapher. There are now but a few copies left of this great work and when these are gone it will be out of print. The original price was \$7, but as the covers are a little shop-worn the price has been reduced to \$5. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

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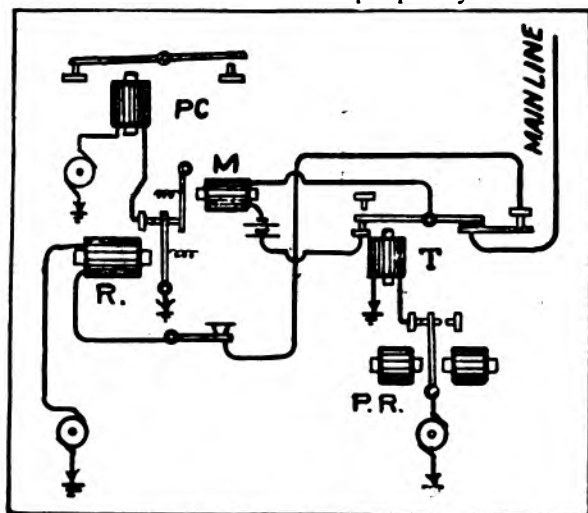
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plex set must conform in construction and manner of operation with the regular type of instruments used in connection therewith. As the apparatus in each half are thus dissimilar, such repeaters are called "half repeaters," for the further reason that but one half of a full single line set of repeaters is required to take care of the one single wire.

If the pattern selected is a Milliken set, the repeater is called a "Half-Milliken," a Toye becomes a "Half-Toye," a Weiney a "Half-Weiney," and so on through the list. As the Milliken pattern was probably the first repeater altered in this manner, all types of half-repeaters to-day are very generally designated half-Millikens through force of habit.

Figure 1 shows the manner in which the two circuits are connected together. The resistance lamps necessary to regulate the volume of current in the local circuits are purposely omitted in



order to simplify the diagram. The repeater proper consists merely of the Hicks relay, as the one shown with the extra local magnet is called, and a double contact-point transmitter T. In other words, the usual apparatus is one half of a full main line set. The pole-changer, P C, of the multiplex set and the polarized relay, do not, of course, belong to the half-Milliken re-

FIGURE 1.

peater, but are shown in the diagram at convenient points in order that the connections therewith may easily be traced.

The operation of the relay and transmitter is the same here as when used in connection with a full set. The single circuit line wire after traversing the coils of the relay is then run through the front contact points of the transmitter, T, which are kept closed when the single line operator is sending, by the current, which passes through the magnet coils of T via the contact points of the multiplex polar relay. It is obvious, therefore, that the operator at the

## SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

Elementary Lessons Concerning the Connections and Operation of Repeaters.

(PART V.)

Single line repeaters, as has already been shown, consist of two parts or separate sets of apparatus, consisting of identical pattern instruments and wire arrangement in each.

When a repeater is required to connect a multiplex with a single line circuit, it is obvious that the apparatus which is connected with the multi-

distant end of the multiplex circuit must keep his key closed while receiving in order to close the relay points of PR at the repeating station, otherwise he would open the single wire. On the other hand, when the distant operator wishes to send into the single line circuit, the latter must be kept closed. As the polar relay points control the magnet of transmitter, T, of course all signals arriving will be duplicated in the single line circuit by means of the transmitter contact points, which act in the capacity of a key. The contact points of the main line repeating relay are kept closed when necessary by the extra magnet and spring combination, as already explained in the preceding chapters on full-set repeaters. If such were not the case the distant operator would hear his own signals coming back on his home relay. It will be seen that the local battery circuit containing the multiplex pole-changer is merely run through the contact points of the Hicks relay and the lever of the latter grounded. In this way the signals in the single wire are forwarded to the multiplex set by means of the polechanger by the opening and closing of the relay points, which only occur when the lever is permitted to act in the capacity of a key. The student should note the simplicity of the

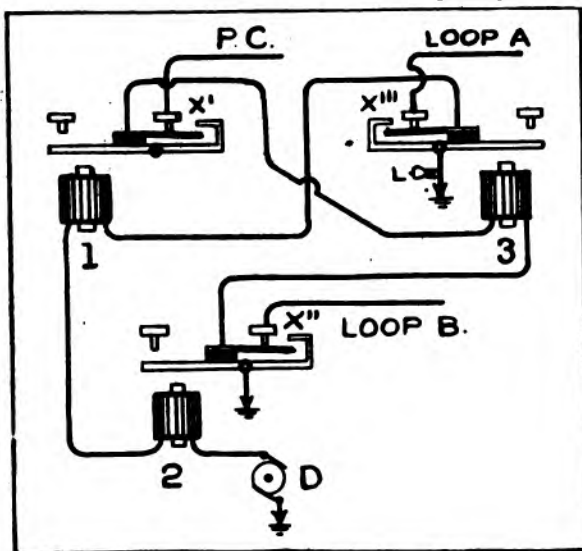


FIGURE 2.

connections with the multiplex set. For the receiving side simply run a local battery through the lever and contact points of the polar relay to the magnet coils of the repeater transmitter and ground the extension there, as shown. For the sending side extend the local connection containing the pole-changer through the contact points of the repeater relay and ground the lever of the latter.

#### DOUBLE LOOP REPEATER.

In this device the connections are so made that two grounded duplex loops, or rather, two separate single conductors to different branch offices, may each not only control the polechanger of a multiplex set in the main office, but operate each other's loop also. Figure 2 shows how this may be done. The three transmitters shown are of

the ordinary four or six ohm pattern used on multiplex circuits, while the diagram itself shows the connections for the sending side only. The operation of the repeater is as follows:

Suppose we connect branch office loop A to the upper contact point of transmitter 3, and loop B in like manner to transmitter 2. Loop A gets current from battery D, while loop B is supplied from the multiplex set with the same current that operates the polechanger, the latter loop being merely an extension of the polechanger's local circuit. If the operator at A wishes to send the operators at B and the one in the main office by the polechanger, both keep their keys closed. This closes all the transmitters belonging to the double-loop repeaters. When A opens his key he demagnetizes and thus operates transmitters 1 and 2. By so doing he controls the polechanger by means of the contact points at X' and loop B at points X." In order that he may not open his own loop at contact points X''' and thus disconnect his battery, D, transmitter 3 is kept closed at such times by means of the ground wire on the transmitter lever, which shifts the current from loop A to the earth connections. Transmitter 3 is thus not demagnetized. The same arrangement is made to hold transmitters 1 and 2 closed at the proper time. The reader will note that the "holding" method is practically the same as that used in the Toye repeater: viz., the shifting of the current to a dead circuit via the ground connected to the lever bar of the transmitters.

The receiving side connections are not shown in the diagram, as they are very simple.

No. 1 loop is operated by the contact points of the multiplex relay direct. A repeating sounder is then connected in series with this loop, and No. 2 loop is run through its repeating points. As there are no keys on the receiving side and the branch office operators do not operate that side, "holding" magnets are not required.

#### Business Notice.

The electrical show to be held at Chicago from January 16th to the 30th promises to be a fine affair. Included among the exhibits will be one made by Mathias Klein and Sons, 87-89 West Van Buren street, that city, that will be of particular interest to the telegraph. The display, which will occupy one of the large booths, will embrace an extensive collection of lineman's and construction tools, the same to be assembled both in showcase and wall exhibits. There will be a complete grouping of the numerous different types of instruments manufactured by this old, reliable and well-known firm, including pliers, climbers, splicing clamps, leather goods, tamping bars, digging bars, shovels, pulley blocks, etc., in short, every tool that is used by linemen, the whole affording an opportunity to inspect and compare in an attractive way and at pleasurable convenience the best of the kind that the market affords. No doubt the linemen of Chicago and vicinity will make the most of this opportunity.

**Postal Telegraphic Apparatus.**

BY JOHN F. SKIRROW.

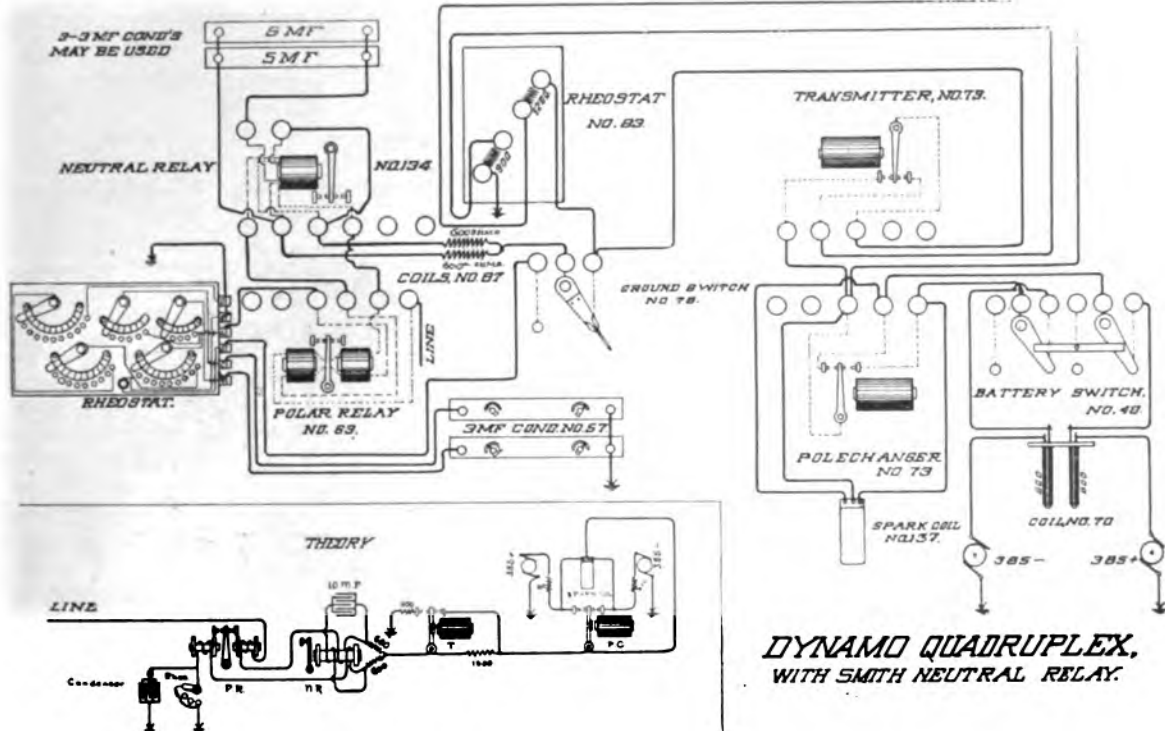
Associate Electrical Engineer of the Postal Telegraph-Cable Company.

**QUADRUPLEX WITH SMITH NEUTRAL RELAY.**

The Gerritt Smith neutral relay arrangement is used upon a number of quadruplexes in the Postal Telegraph-Cable Company's service with very satisfactory results. The wiring of a dynamo

A patent, No. 906,787, for an insulator pin, has been awarded to C. G. Etee, of St. Louis, Mo. Avoids the use of a nut to lock pin in place. A metallic insulator pin is provided at its lower end with a tongue that can be bent into engagement with the support in which the pin is mounted.

The following patent has expired: Patent No. 464,897, for a telegraph key, held by L. F. Robare, of Au Sable Forks, N. Y.



quadruplex set with a Smith relay is shown in the accompanying diagram, a theoretical sketch being given in the lower left hand corner. The line coils of the relays are wound to 150 ohms and the extra coil to 400 ohms. The Postal standard (Diehl) bug-trap is used in connection with the relays.

**Recent Telegraph Patents.**

A patent, No. 905,126, for a printing-telegraph receiver, has been issued to John Burry, now deceased, of Ridgefield Park, N. J. Improvements in printing telegraphs for army and navy use, particularly for range finders. Made to stand rough usage. Comprises a type plate carried by a lever, a plurality of fulcrums for the lever and electrical means for moving the lever on any of the fulcrums.

A patent, No. 906,618, for a perforator for preparing telegraphic transmitting tapes, has been granted to Patrick B. Delany, of South Orange, N. J., assignor to The Telepost Company of Maine, Augusta. An electromagnetic perforator consists of a key, a pole-changer magnet controlled thereby, a differentially-wound polarized relay and punch magnets controlled by the relay and pole changer.

**Against the Use of Code Words in Messages.**

Code messages received a set-back in the Third Court of Appeals at Austin, Tex., on December 9, when a damage suit for failure to promptly transmit and deliver such a message was decided in favor of the telegraph company on the general grounds that the wording of the message did not indicate its importance to the telegraph company. It was in the case of Lewis-Cole Commission Company vs. Western Union, damages having been claimed because of the failure to deliver promptly a message in code directing the shipment at once of some wheat bran from Kansas City. The higher court said:

"Neither the telegraph message upon which this suit is based nor the facts in evidence informed the telegraph company of the nature and purpose and object of the message. Plaintiff's action, as disclosed by its petition, is one for special damages resulting from the failure to deliver the message. There being nothing to put the telegraph company upon notice as to any fact from which such damages might result, the trial court properly instructed a verdict in favor of the defendant."

### The Barclay Printing Telegraph System.

BY WILLIAM FINN.  
(Part xiv.)

#### THE RECEIVING APPARATUS—CONTINUED. THE SUNFLOWER.

The combination of rotary mechanism and electro-magnetic appliances to which the name of "sunflower" is given, is represented in Fig. 44, which shows a plan of the apparatus, certain portions being broken away for the sake of clearness. The motor and driving mechanism for the revolving parts are depicted in Fig. 45. Referring to the latter figure, it will be seen that the escape wheel and the unison wheel are mounted on the same shaft *Sh.*, which also carries the gearing and spring barrel device that enables both wheels to be driven frictionally by a constantly running motor. This frictional effect is brought about through the medium of a watch mainspring, *s* (Fig. 44) one end of which is hooked on a continuously revolving disc *D* having teeth on its periphery. On the other end of the spring is rivetted a small piece of leather, *l*, known as a shoe, that presses, or rubs against the inside of a containing box commonly called the spring barrel (see Fig. 45) which is fastened rigidly to the shaft carrying the escape and unison wheels. As the toothed disc *D* with its coiled spring attachment revolves under the influence of the driving shaft, *DS*, friction is developed between the leather shoe and the spring barrel, and a rotary tendency is thus imparted to the escape and unison wheels. The amount of friction applied should not be too great, as too much power would then be required to release the escapement pallets. It should, however, be sufficient at all times to ensure enough power on the wheels to make them quickly responsive to the starting and stopping movements produced by the operation of the escapement pallets.

The escape wheel is fixed rigidly upon its shaft *Sh.*, while the unison wheel is fastened thereto by three screws which, when loosened, allow this wheel to be rotated slightly in either direction, for the purpose of bringing it into suitable relation with the escape wheel *EW* and synchronizer arm *SA* (Fig. 44). This relation can be properly established by holding the escapement arm *E* to the left, (looking at it from the front of the sunflower) closing the sixth pulse contact points as shown, and then—while power is on the shaft—so adjusting the synchronizer arm *SA*, that when the hook of the latter is released from a tooth and permitted to fall forward under the tension of its spring *x*, the hook will come to rest upon the point, instead of in front of a tooth, thus allowing the escape wheel to move forward one tooth of the unison wheel, and three teeth of the escape wheel. The movements of the latter are controlled by the escapement arm *E*, whose pallets play upon the wheel and release it a tooth at a time in unison with the incoming pulses that

operate the escapement magnet. The adjustment of these pallets should be quite close, only enough motion being necessary to give the wheel a little clearance. When the escapement pallets are properly adjusted, and the escape wheel is allowed to run under the control of the transmit-

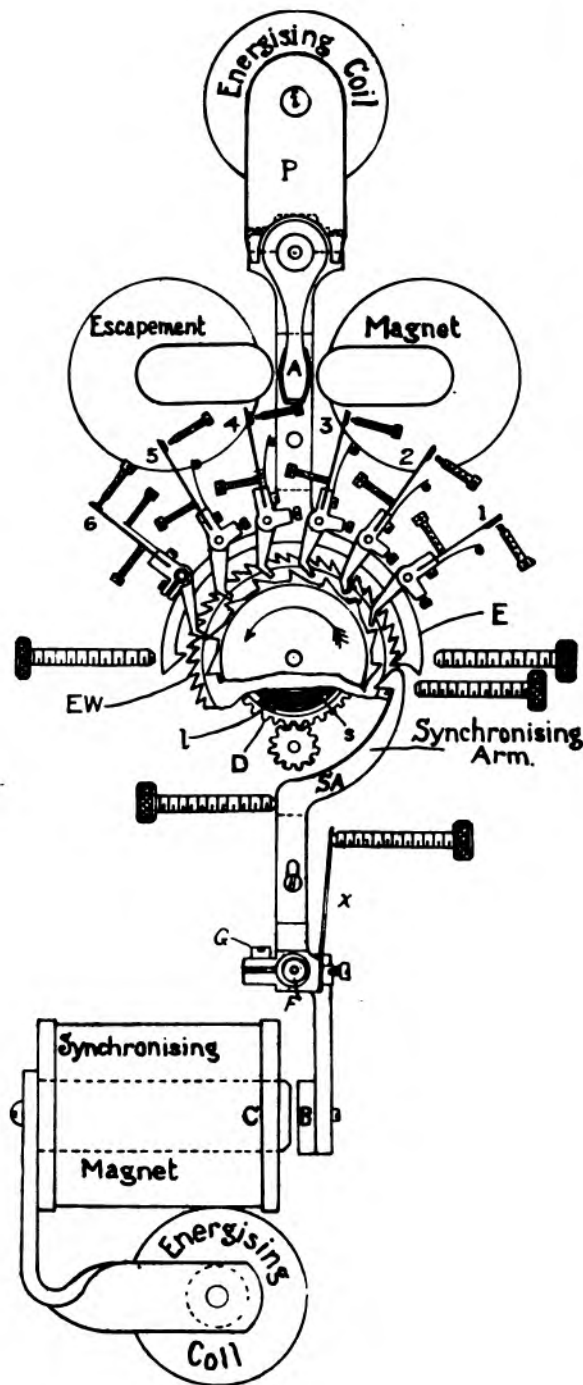


FIG. 44.—THE SUNFLOWER: TOP VIEW.

ter reversals (the synchronizer arm *SA* being held out of engagement with the unison wheel) there will appear to be an extra, or "false" tooth in each of the spaces between the teeth of the escape wheel; or, in other words, the latter will



under such conditions present the appearance of having ninety, instead of forty-five teeth. This is the result of an optical illusion produced by the rapid vibration of the escapement arm, and the corresponding play of its pallets between the teeth of the revolving wheel, which latter, it may be remarked, makes one complete revolution for every ninety movements of the escapement arm.

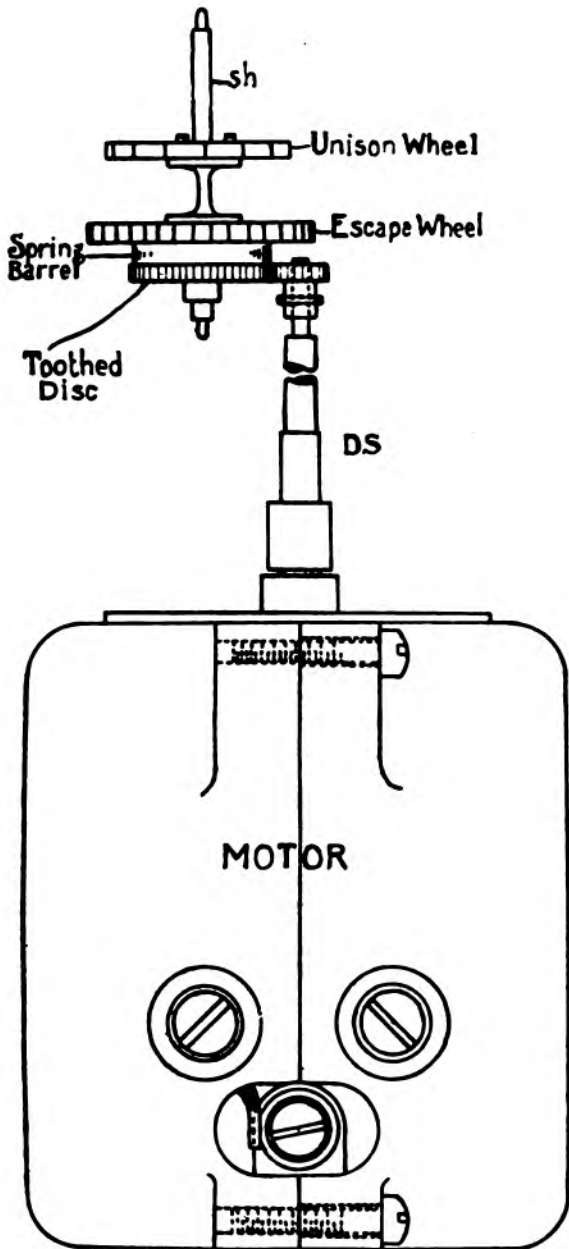


FIG. 45.—THE SUNFLOWER DRIVING MECHANISM.

It is highly important to note in this connection that when the so-called "false" teeth are made to occupy positions exactly midway between the real teeth, one of the most difficult and delicate adjustments of the sunflower mechanism will have been accomplished, a fact that cannot be too strongly emphasized. All spacing pulses should throw

the escapement arm E to the left and all marking pulses should deflect it to the right. The spools of the escapement magnet ought to be spaced equally distant from the upper and lower armatures so as to obviate bias. These armatures (only one of which A is shown in the figure) are magnetized by induction from pole pieces P forming extensions of the soft iron core i of an energizing or inducing coil, through the latter of which a current of about one hundred milliamperes is maintained in such a direction as to develop magnetism of north polarity at the top, and south polarity at the bottom of its iron core.

The synchronizing magnet is also provided with an energizing coil, but, as seen in Fig. 44, the magnetism derived therefrom is directly imparted to the magnet core C, the winding of which is so arranged that the "marking" currents tend to nullify the effects of the permanent magnetism, while "spacing" currents act in a contrary direction. The armature of this magnet has a backwardly extending arm SA terminating in a hook which normally engages the unison or fifteen-tooth wheel, but should be thrown to the right by all long spacing impulses.

An important point to be noted in connection with the synchronizing arm SA is the fact, that it is placed upon an eccentric collar F, the latter being soldered to the shaft H, which carries the synchronizing armature B, as illustrated in Fig. 46. The object of this collar is to provide a means for allowing the synchronizer to be moved either backward or forward, thereby altering the position of its hook with respect to the teeth of the unison wheel when such a course becomes necessary as a result of wear or change in the regulation of other portions of the sunflower. This adjustment of the arm is effected by turning the shaft upon which the collar is placed, in one or other direction according to whether the hook is to be moved nearer to, or further from, the point of the tooth. By imparting motion to the shaft in a clockwise direction, the thick part of the collar will force the arm forward; while an anti-clockwise movement will bring the thinner portion of the collar into a position suitable for a backward adjustment—G (Fig. 44) is a clamping screw for fastening the arm to the shaft.

When the distant transmitter is running without slip, (thus sending to line a succession of short current reversals) the hook of the synchronizer should remain in engagement with a tooth of the unison wheel, thereby preventing the escape-wheel from moving in response to the incoming pulses; but when a punched slip is inserted in the transmitter, the long space at the beginning of the slip should close the armature of the synchronizer and release the escape-wheel. From this it will be apparent, that the purpose of the synchronizing magnet is to first start the sunflower in synchronism with the received signals directly a punched slip is placed in the transmitter and afterwards restore the synchronism in the event of its being destroyed by the loss of pulses in transmission or otherwise.

## SUNFLOWER POINTS.

These points are six in number, of which those marked from 1 to 5 in Fig. 44 are respectively connected with the correspondingly numbered distributing relays shown in Fig. 37 of the December 1 issue; the sixth point being utilized to

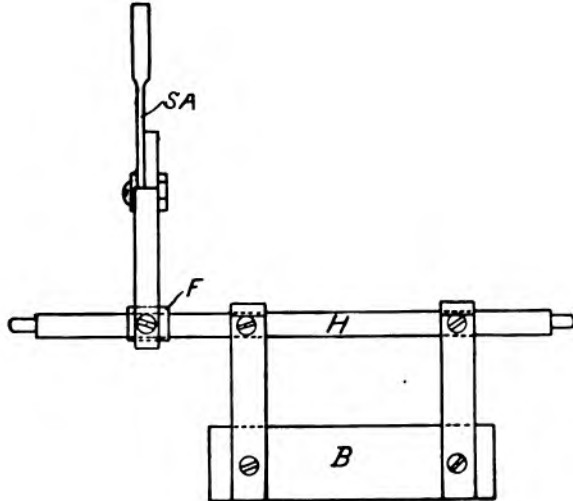


FIG. 46.—SIDE VIEW OF SYNCHRONIZER.

operate the sixth pulse relay and other apparatus of which more anon.

These contact points should close in consecutive order, and care should be taken that only one contact is closed at a time, a slight "back lash" or movement of the unison wheel being possible when an accurate adjustment has been secured. Both points of the sixth pulse contact are insulated from the frame of the sunflower, the contact screws only of the other five points being insulated therefrom. The correct adjustment of this portion of the sunflower is illustrated in Fig. 47, where the toe T of the circuit closing

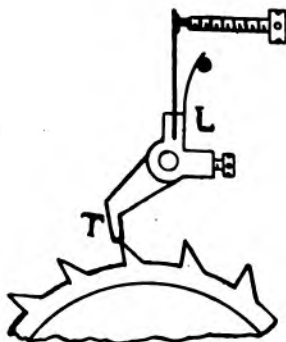


FIG. 47.—"TOE" ADJUSTMENT OF SUNFLOWER POINTS.

device L is represented as resting on top of a tooth of the unison wheel with its left edge extending beyond the upper end of the tooth in the manner shown; an arrangement that also provides more or less margin for the wearing of its various parts.

(To be continued.)

## Personal.

Rev. Ozira S. Davis, D.D., a well-known Congregational clergyman, who started life as a telegraph operator, has accepted the presidency of the Union Theological Seminary at Chicago, the leading institution of that kind in the West connected with the Congregational denomination.

Mr. W. C. Brown, senior vice-president of the New York Central lines, who will probably succeed to the presidency of that system, to take effect February 1, was a former telegrapher, and one of the brainiest railroad men in the country. He is a native of New York state, and is fifty-eight years of age.

The Ohio Society dinner at the Waldorf-Astoria, on the evening of December 16, was one of the most brilliant affairs of the kind ever given in New York. Over nine hundred guests were present, and Ohioans resident in New York had reason to be proud of such a magnificent outpouring in recognition of and in honor of their state. Among the guests were numerous telegraphers, those recognized being Colonel Robert C. Clowry, George G. Ward, David Homer Bates, Andrew Carnegie, Charles A. Tinker, Edward J. Nally, Edward B. Pillsbury, Charles P. Bruch and H. D. Estabrook. Of course so distinguished a son of Ohio as William H. Taft, the President-elect, who was present, lent great eclat to the occasion.

Mr. Harvey P. Dwight, of Toronto, Ont., president of the Great North Western Telegraph Company, reached his eightieth birthday on December 23. The occasion was marked by the gift to him by his associate officials of a handsome diamond scarf pin, the presentation being made by J. McMichael, the vice-president and general manager of the company. Mr. Dwight is a man who in the wide circle of acquaintances both in Canada and the United States, is held in high esteem, and the event of his birthday was very generally referred to in the Toronto papers in terms of affectionate regard and endearment. A man of high character, of extended and practical knowledge of the telegraph, in the further building up and direction of the great system of which he is at the head, and which he received as a legacy from the now venerable Orrin S. Wood, Mr. Dwight has always been in close sympathy with all that makes for the betterment of municipality and country, and the advancement of humanity. His four-score years are crowned with the verdict of Well done!

## Postal Telegraph-Cable Company.

## EXECUTIVE OFFICES.

Mr. Edward J. Nally, vice-president and general manager, who has a large personal acquaintance throughout the great system of which he is the executive head, in taking occasion during the holidays to tender the felicities of the season to many, but expressed the genial side of a large and sympathetic nature.

Mr. John A. Forehand, superintendent of the company at Seattle, Wash., was married on De-

ember 23, to Miss Grace Nellie La Cornu, of Walla Walla, that state.

Mr. F. N. Cook, manager of the office at Worcester, Mass., some years past a member of the city council, has been elected to the Board of Aldermen of that city.

Motor generators have recently been installed at Muskegon and Marquette, Mich., Dodge City, Kan., Great Falls, Mont., and St. Joseph, Mo.

The following is a memorandum of district changes, effective January 1, 1909:

Eastern Division—L. Lemon, superintendent, Philadelphia, promoted to be division superintendent, eastern division, with headquarters in New York; C. E. Bagley, superintendent, Pittsburg, promoted to be superintendent at Philadelphia, vice Mr. Lemon; Henry Scrivens appointed superintendent at Pittsburg, vice Mr. Bagley.

Districts that have been rearranged and renumbered, are as follows: First district, C. F. Leonard, superintendent, New York, territory to include Greater New York; second district, E. Kimmey, superintendent, New York, territory same as present second district; third district, C. E. Bagley, superintendent, Philadelphia, territory same as present third district; fourth district, A. L. Edgecomb, superintendent, Boston, territory to include district now numbered first; fifth district, H. D. Reynolds, superintendent, Buffalo, territory to include district now numbered fourth; sixth district, Henry Scrivens, superintendent, Pittsburg, territory to include district now numbered fifth.

Western Division—C. F. Fox, superintendent, eighth district, headquarters Des Moines, Iowa, resigned to live on his farm, and district merged with fifth district, under the supervision of A. B. Richards, headquarters Kansas City.

Districts rearranged and renumbered are as follows: First district, F. W. Conger, superintendent, Chicago, territory to include the city of Chicago; second district, E. W. Collins, superintendent, Cleveland, territory same as present second district; third district, S. H. Mudge, superintendent, St. Louis, territory same as present third district; fourth district, H. J. Kinnucan, superintendent, Detroit, territory same as present fourth district; fifth district, A. B. Richards, superintendent, Kansas City, territory to include present fifth district and eighth district; sixth district, H. G. McGill, superintendent, Chicago, territory to include present first district; seventh district, W. C. Black, superintendent, Denver, territory to include present seventh district; eighth district, W. P. S. Hawk, superintendent, Salt Lake City, territory to include present sixth district.

#### RESIGNATIONS AND APPOINTMENTS.

Mr. G. L. Pierce, manager at Hannibal, Mo., has been appointed manager at Evansville, Ind.

Mr. F. B. Moss, of Syracuse, has been appointed manager of the Ogdensburg, N. Y., office, relieving E. D. Coates, who has filled the position for twenty years and who, on account of sickness, has been granted an indefinite leave of absence.

#### Western Union Telegraph Company.

##### EXECUTIVE OFFICES.

The one time of the year in which the telegraph develops special prominence in the transmission of social messages, was signally realized during the holiday season just passed, when telegrams betokening the kindly Christmas spirit and well wishes for the new year, were much in evidence. Of these pleasant expressions Colonel Robert C. Clowry, president and general manager of the company, was the recipient of many, which reached him from all parts of the country, and from abroad.

Mr. Thomas F. Clark, vice-president of the company, is absent from his office on account of illness due to typhoid fever.

At a meeting of the executive committee, held on Wednesday, December 30, A. R. Brewer, long the secretary of the company, was elected treasurer in place of M. T. Wilbur, deceased, and Lewis Dresdner assistant treasurer; J. C. Will-ever was elected secretary of the company, to succeed Mr. Brewer, and chief clerk of the general manager's office, and F. J. Scherrer was elected assistant secretary, although still retaining his position of private secretary to President Clowry.

Mr. C. H. Bristol, general superintendent of construction, is in San Francisco, whither he has gone on company business.

Mr. John Fitzpatrick, assistant superintendent at Chicago, has been appointed superintendent at Cleveland, Ohio, vice Mr. C. Corbett, resigned.

##### RESIGNATIONS AND APPOINTMENTS.

Mr. Wm. J. Schreiner has been appointed manager at Dunkirk, N. Y., vice E. W. Wade, resigned.

Mr. Shirley G. Smith has been appointed manager at Williamsport, Pa., vice A. J. Fowler, resigned.

#### Mr. Carnegie's Christmas Greeting.

So distinguished a former telegrapher as Andrew Carnegie extended public Christmas greetings, congratulating the country, as follows:

Upon having a man of such character as Mr. Taft for its next president.

Upon the return of the unduly exacted indemnity from China, a noble act, worthy of the best traditions of the past.

Upon the removal of supposed antagonism between the Republic and Japan, which is proved now never should have existed.

Especially does he congratulate the Republic upon the renewal of the old-time friendship with Venezuela; and,

Upon the general improvement in business and outlook for the future.

We have many reasons for gratitude as well as for congratulation. All is well with our highly favored land.

Telegraph Age is the leading journal of its class in the world, and should be in the hands of every progressive operator; \$2 a year.

### George G. Ward on The Cable Situation.

The following letter, written under date of December 23, by George Gray Ward, vice-president and general manager of the Commercial Cable Company, New York, addressed to the Committee on Foreign and Insular Trade, New York Board of Trade and Transportation, New York, affords an intelligent and comprehensive statement regarding the cable situation, about which there has been more or less discussion of late. It is a timely contribution to the subject, and will serve to clear the air of much that has been uttered in ill-informed and loose statements:

"My attention has been called to the fact that on December 9 your committee was directed by your organization to consider international submarine cable matters, including, as I understand it, the reasonableness of the present submarine cable rates. I am very glad this has been done by such a representative commercial body as the New York Board of Trade and Transportation, because it enables me to lay before you and your board certain facts which are not commonly known to the commercial public, and which, in my opinion, answer completely the arguments of those who for some time past have been carrying on an agitation against the cable companies.

"This agitation has been based largely on the unwarranted statement that there is a combination of the Atlantic cable companies, and that this combination maintains very high cable rates to the injury of international trade. So far as The Commercial Cable Company is concerned, the statement is false. The Commercial Cable Company is entirely free and independent. It was The Commercial Cable Company that caused rates to be reduced from fifty cents per word to twenty-five cents per word.

"The statement that twenty-five cents per word is a high rate and that it discourages trade is not in accord with the facts as ascertained by experience. A number of years ago the Atlantic cable rate was reduced to twelve cents per word, and that low rate continued for two years and four months. This thorough and costly test proved that the reduction of the rate to such a very low figure produced only a ten per cent. increase in the volume of traffic, while the receipts were diminished by nearly one-half in cash. The cable business was done at a loss. The restoration of the rates to twenty-five cents per word was a necessity.

"Moreover, less than one per cent. of the public use the cables, and a reduction of cable rates would merely mean increased profits to that one per cent. to the ruin of the cable companies. In 1902 there was a similar agitation for a reduction of cable rates and the question was brought before the British Government, which appointed a committee to examine the rates and to report how far they were fair and reasonable, and that committee, after going into the question most exhaustively, said:

The Atlantic companies provide, under the influence of competition, an efficient service at a low rate, which

they have attempted unsuccessfully to reduce still further.

"It is a well-known fact that since the above report was made operating expenses in all large enterprises have greatly increased. Therefore, the report is more forceful now than it was six years ago.

"The disposition of the cable companies to meet public requirements is conspicuously shown in their attitude towards code language employed to condense despatches and so reduce the charges for cable transmissions. Those who use the cable day by day are highly expert in devising cipher codes, which enable them to express many words by one word. Originally these code words had to be selected from dictionaries and were therefore confined to genuine words. Owing to the complaints that the restriction to genuine words did not give merchants a sufficient range of words to make up efficient codes, the cable companies have gradually relaxed their rules and have admitted artificial or manufactured words, which are supposed to have some semblance to real words. The extent to which advantage has been taken of this liberality may be judged from the following example of artificial codewords, taken from actual cablegrams, alleged to be pronounceable:

Nofebawuma phidvuztaf itaeomelis kiuvwuvyaw ex-sexaicgu ecsawofyid zylemuzzop gabaqabaka pawym-gicob wowylhybow jorthpezut vrterverd guasyabjcy, eqkeyefogi uqbijegotu uhkycokhzy.

"Each of these so-called words really represents ten figures; the ten figures are two groups of five figures; and each group of five figures represents a separate code word and each code word easily represents, on the average, at least ten plain words. The net result is that each of the above so-called code words, representing at least twenty words in plain language, is transmitted at a total cost of twenty-five cents.

"The cable companies are transmitting these, notwithstanding that they are an imposition. The Postmaster-General of Great Britain in a letter to the London Chamber of Commerce characterized them as an abuse. It will be noticed that the so-called words contain only ten letters each. This is only because the International Regulations fix that limit; were it not for that limit it is probable that the above entire cablegram would have been run together and presented for a transmission as a single word of one hundred and sixty letters to be transmitted at a cost of twenty-five cents. It is almost impossible to transmit by cable the above words rapidly and correctly, and yet any change or omission of even one letter would make an entirely different meaning. To transmit artificial code words by cable is most difficult. To transmit them with speed is impossible. There is nothing in those words to guide the receiving operator, and the ever varying electric and magnetic forces of the earth produce in the cables electrical disturbances which interfere seriously with the cable signals, modifying and even eliminating them.



"The result is that the carrying capacity of a cable is reduced over twenty-five per cent. In addition to that, many of the above so-called words have to be repeated. This places upon the cables a large amount of unremunerated work, as repetitions are not charged for. It also delays a great deal of paid work. By reason of all this the earning power of a cable is very greatly reduced, while the expense for operating is increased.

"The point is made by the agitators that codes are a luxury of the rich. That is not true. The cable companies have standard codes at their offices which the public are at liberty to use without charge, or, if the customer prefers, he may purchase an ordinary code at a small price. There is an excellent code which may be purchased for fifty cents. Travelers' codes are distributed free by bankers and merchants as advertisements. By the aid of these codes a message may be cabled from Europe to America or America to Europe for seventy-five cents.

"When it is borne in mind that ninety-eight per cent. of the cable messages are in cipher code and each code word, as explained above, represents at least twenty plain words, it will be seen that cablegrams in code bring the rate down to less than two cents a word for the translated message.

"There is another very important thing to be considered: Because of the difference in time between Europe and America the business hours common to both countries are only three or four. It is imperative that the cable companies shall have ample facilities to transmit with reasonable despatch all the business offered on both sides of the Atlantic during those hours. The consequence is that a great volume of cable business is crowded into those three or four hours, and if the cables were unable to transmit it within those three or four hours a large portion of it would not be presented for transmission at all. If it were not for this public need, one half the cables in the Atlantic would be sufficient to carry all the traffic that would be offered. This providing of the facilities, necessary to take care of the business at its highest pressure point during those hours, is what increased the original outlay, and makes the expenses of operating and maintenance high. The estimates of inexperienced persons take no note of the fact that in order to transmit a given quantity of matter in a given time many cables are needed, because of the physical inability of a cable to do more than a limited amount of work per hour.

"The suggestion that the British Government purchase the cables is impracticable because the American Government would not allow another government to land a cable on its shores, just as the British Government would not allow the American Government to land a cable on the shores of Great Britain. This is because a Government may control and regulate a private corporation, but cannot control a foreign govern-

ment, and the consequence of a difference of opinion might be war. The scheme of having the Canadian government lay an Atlantic cable to England is not open to this particular objection, but that project is nothing more nor less than using the taxpayers' money to carry on a business at a loss, to the ruin of cable property, which is already in the Atlantic, aggregating over one hundred million dollars in value. A similar suggestion was made in 1902 and the British Government Committee, above referred to, reported as follows:

We are not in favor either of the working of cables by the State at a loss or of the subsidizing of private cables on commercial grounds, both of which courses appear to us to burden the general taxpayer unfairly for the benefit of a special class.

The laying, working, and maintenance of a cable requires the expenditure of a definite and substantial amount of capital; and the carrying capacity secured in return is limited. It must not always be assumed that an increase of traffic is necessarily a benefit to the company concerned. So long as the cable is not worked to its full capacity increase of traffic, unless accompanied by a heavy increase in working expenses, implies an increase in net revenue. But when the increase is so great as to necessitate the laying of a new cable, the case is different; and it will be obvious that, at a certain point, a limit is reached beyond which reductions in rates cannot possibly be made. Even when the cables of a company are fully occupied, messages cannot be carried below a rate which will provide for interest on capital, expenses of working, maintenance, and so on.

"The Canadian proposal to confine Canadian cables to Canadian business is impracticable, as has been demonstrated frequently in Europe in the past. If the Canadian rate to Great Britain were cheaper than the United States rate to Great Britain, this would create, in the United States, agencies, known as "packers," with Canadian connections, the Canadian connections to receive from and send to the agencies, in the United States, messages transmitted by the Canadian cables at the cheaper rate. The result of a Canadian British governmental cable would be that it would be used chiefly by the Americans, at a reduced rate, at the expense of the Canadian and English taxpayers, the same as is actually now the case with the Canadian-Australian-Pacific cable, which cost some ten million dollars, and, I am informed, is used chiefly by Americans.

"The twenty-five cent rate is a fair rate. It is no more than is necessary to pay operating expenses and to keep the plant in thorough repair and readiness to furnish the best possible service in point of regularity, accuracy and speed and to pay a very reasonable return on the money invested. The service rendered is worth the money and cannot be rendered for less. The only comparison to be made with it is the State-owned British Pacific cable, which in its best year compelled the taxpayers to increase their taxes to the amount of £62,362 per annum. After thirty-nine years' experience in meeting the demands of the public for a first-class cable service, I am confident that merchants who depend upon the rapid and accurate transmission of their messages to

carry into effect important and valuable business transactions, would not receive the efficient service from a government cable that they are at present receiving from Atlantic cable companies, stimulated as they are by keen competition.

"Referring to certain proposals recently made in England, we pass over the proposals of the extremists for two-cent rates, and confine ourselves to the proposal to force reductions by means of government owned cables. If the proposed cables be laid and the proposed reductions be forced, the earnings will not equal operating and maintenance expenses. The consequence must be financial bankruptcy to private enterprise, which cannot, like the Government, collect its deficits from the people in the form of taxes.

"The Atlantic cable rate is the lowest cable rate in the world, except where a government pays the deficit by taxes.

"As you are aware, the railroad companies have recently found it necessary to increase their freight rates throughout the country, and in view of the constantly increasing cost of operating expenses, labor, supplies and general maintenance, it seems to me somewhat extraordinary, to say the least, to have a proposition advanced that submarine cable rates be reduced while all other quasi public rates are being advanced, so far as I am informed, excepting where the Government pays the bills, as in the case of international postage. Even the English Government in India is about to raise the telegraph rates, an increase of fifty per cent. being contemplated.

"The Commercial Cable Company has kept its promise and given the public the benefit of a real and vigorously active competing service at a fair and reasonable rate. Its competition is an honest competition."

#### The Cable.

The question of the reduction of cable rates between Great Britain and Canada will, it is said in recent dispatches, be taken up in earnest early next spring in London, when representatives of the governments of the two countries will discuss the subject. Mr. Lemieux, the Canadian post-master-general, is credited with stating that a rate of ten cents a word is feasible, but with the difficulties confronting the English Treasury there is not much likelihood, it is further reported, that Great Britain will care to face any large expense in connection with the reduction.

The entire question respecting the cable which has recently found certain expression in London, including the demand that the government acquire ownership of the cables, an acquisition to be followed by the reduction of tolls to the absurdly low rate of a penny, or two cents a word, within the compass of the British empire, has apparently failed to impress government officials in Great Britain. The incipient echo of the idea heard in this country calling for lower rates has fallen flat, for its adoption is not recognized as a practical measure among business men, whose patronage

support the cables, and whose necessities require a speedy and first-class service.

L. L. Hartvigson, aged sixty, superintendent of the Great Northern Telegraph Company, stationed at Newcastle, England, died on November 27. He was one of the best known of cable experts in the submarine service.

Cable communication is interrupted December 30 with:

Venezuela ..... Jan. 12, 1906  
Madura Island (Dutch East Indies) .. Feb. 3, 1908  
Macao ..... Aug. 29, 1908

Messages can be mailed from Hongkong.

#### Radio Telegraphy.

The German Government has decided to construct two new stations for wireless telegraphy at Cologne and at Königsberg, either of which will be able to communicate with Göttingen, which will very shortly be finished.

Plans for giving the United States Government the most complete central wireless station in the world have been completed, and bids for providing the 600-foot tower will be opened on January 5. A new wireless system will be tried and the expectation is that communication can be kept up with ships within a radius of 3,000 miles; also that a message can be sent to the other side of the world by relaying on the Pacific Coast, in the Hawaiian Islands and again at Guam. As an adjunct the contract will call for a wireless telephone having a radius of 100 miles.

The first wireless telegraph station to be owned and controlled by the British post office, says the London Electrical Review, has now been completed by the Marconi Company at Bolt Head, near Kingsbridge, South Devon. The station will have a range of about one hundred miles. The work was begun about six months ago, and it is estimated to cost about \$50,000. The instruments are a combination of the Marconi and patents owned by the General Post Office. It is stated that the station will be opened for public messages in the first week in January.

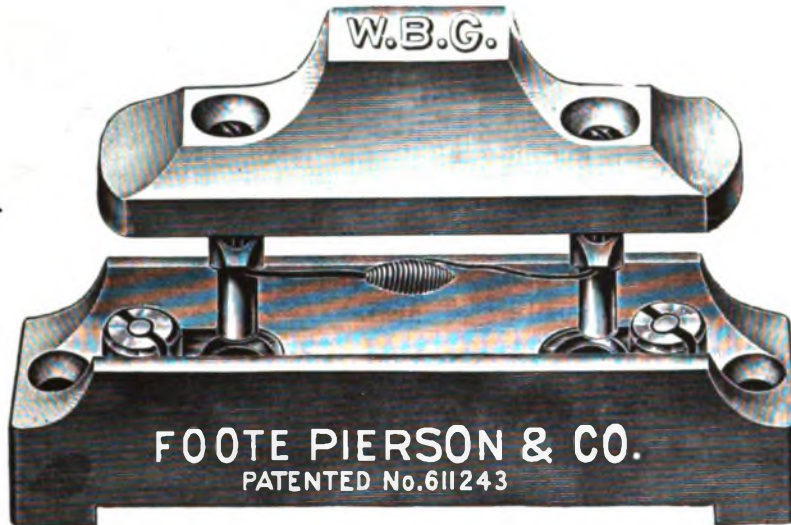
A bill for putting in force the decisions of the Berlin Wireless Telegraphy Conference of November, 1906, as embodied in an international convention, has been laid before the French Chamber. The conference has fixed wave-lengths, one of 300 meters, the other of 600 meters, for the transmission of public messages by the wireless current. All stations must be able to produce and to receive one, at all events, of these two wave-lengths. All public correspondence must be restricted to one of these wave-lengths. A coast station, however, can use other wave-lengths for long-distance communications, or for messages other than those transmitted by the public, provided that these wave-lengths are not under 600 meters and are not more than 1,600 meters. Stations on board ship must use the 300-meter wave-length. They are permitted, however, to use other wave-lengths as well, provided that these are under 600 meters.

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OF DANGER IS  
REACHED.  
THAT'S  
BETTER.



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CANNOT  
EXIST IN  
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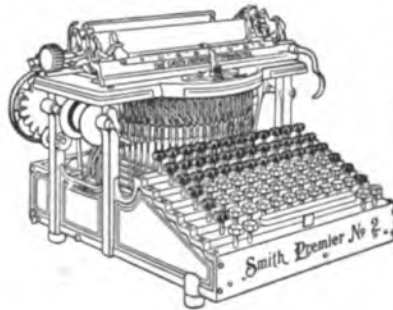
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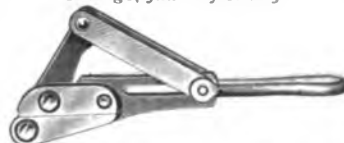
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# Telegraph Age.

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JANUARY 1, 1909.

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.

## To Our Readers—Greeting.

A year ago Telegraph Age entered upon its twenty-fifth year. The quarter century mark passed, this journal is now well started on its second period of like duration. Its hope is to reach that goal. Its present conductors will not likely write the record of its golden jubilee, but now, with no lack of ardor on that account, in the flush of a healthy optimistic spirit, with courage, and hope, and faith inspired because of devotion to duty, as we view it in the life work before us, we greet our readers this first day of the new year! We extend to them the hand of comradeship and of brotherhood. Changes there have been and many, during the year past. Cherished hopes, a few, have been realized by some, while shadows of sorrow and disappointment have crossed the pathway of others. But whatever the experience, it is fitting that all should realize, and thank God that after all so

much has been accomplished; that so much points to the good; that we are still spared to continue the fight of life's battle. It is well to profit by the past in striving for the future.

With the passing of the old year and the duration of commercial depression, a new light is dawning, awakening into greater activity business enterprise, sustained by opportunity and renewed confidence. The outlook is full of encouragement. Its horizon is wider, and with an aroused public conscience hope should "spring eternal."

As we look abroad upon the telegraphic field as it exists to-day, there is much in the situation to invite study and reflection. To the observing and meditative mind, whatever present conditions may be, whatever may be the indications for the future, the changes that have occurred in the past are sure to raise a train of reminiscent thought. We are not in sympathy with those who see no advance in telegraph methods and practices. Facts prove to the contrary. The time never was when criticism, based too often on ignorance, frequently dense; on the spirit of opposition, of fault finding, of inquisitorial interrogation, did not exist. Nothing probably will ever place a check on tongue or action of busy bodies. Yet the telegraph that the comprehensive mind of Morse gave to the world continues to perform its part, and most grandly so, on land and under the sea, in contributing to the peace, the civilization and the moral and business welfare of the world. Inventive genius has ever found welcome and ready recognition within telegraph circles, but impracticable schemes, the product of but partly educated minds—alas, how numerous they are!—have not yet worked a "revolution."

In 1883, when this paper was established, typewriters were not in use in the telegraph service. In 1909 they are to be seen everywhere employed for the transaction of telegraphic communication. Twenty-six years ago hand sending of telegraphic signals was general. Now automatic transmission is used exclusively on cables and to some extent on land lines. A large volume of traffic is exchanged between important points by means of printing telegraph systems—the Barclay by the Western Union Telegraph Company, and the Rowland by the Postal Telegraph-Cable Company.

The development of wireless telegraphy is one of the wonders of the age. The free ether, the invisible electrical waves of the air, convey its messages. What its powers or limitations are, no one can venture to accurately speak. It doubtless will unfold and reveal its power in marvelous measure. Already it keeps ships at sea in communication with both home and foreign ports, with each other, and at no time need a vessel equipped with wireless remain without the zone of speaking distance with either ship or shore. The time cannot be remote when, regarded as a measure of safety, public opinion will compel all sea-going craft to carry wireless telegraph apparatus.

This is emphatically the age of electricity. In its applied forms in the years to come it must take on countless manifestations, appealing strongly to the imagination, phenomena exciting astonishment and admiration.

In its own particular field of electrical working—exemplified in the telegraph—Telegraph Age will endeavor in the future as in the past, to keep well abreast of the times as expressed in modern thought, modern purpose and modern accomplishment. In recognition of this aim this paper is constantly gaining a wider reading both at home and abroad. Its news columns and the educatory influences it exerts, beginning with the student and the operator at the key, are becoming more generally recognized, understood and appreciated. All this makes for stability and power. The paper has readers in every part of the world. Its foreign subscriptions are growing in number; included among these are the telegraph departments of every government abroad maintaining such administrative offices, without a single exception. This is a record of which we are pardonably proud.

In extending congratulations and well wishes to our readers at this time, it is no idle compliment that we would make. We are addressing friends, many of whom we know personally and esteem highly. And especially do we not forget those, and they are still a numerous body, whose names have been on our books during the whole span of the life of this paper. There is a "sustaining grace" in such relationships, and Telegraph Age is not unmindful of its sweetness and beauty and inherent power. The debt of this paper to all such is gratefully acknowledged.

#### **The House Committee on Military Affairs and the Military Telegraphers.**

The House committee on military affairs, before whom in future will come up for consideration all questions affecting the status of the United States Military Telegraphers—their rights so long demanded to army membership recognition and consequent eligibility to come under the provisions of the pension law—embrace the following named, to whom communications favoring Congressional legislation in behalf of the old telegraphers may be addressed:

John A. T. Hull, of Iowa—Des Moines; Richard Wayne Parker, of New Jersey—Newark; Adin B. Capron, of Rhode Island—Providence; George W. Prince, of Illinois—Galesburg; Elias S. Holliday, of Indiana—Brazil; H. Olin Young, of Michigan—Ishpeming; Julius Kahn, of California—San Francisco; Beman G. Dawes, of Ohio—Marietta; James F. Burke, of Pennsylvania—Pittsburg; Thomas W. Bradley, of New York—Walden; Frederick C. Stevens, of Minnesota—St. Paul; Daniel R. Anthony, of Kansas—Leavenworth; William Sulzer, of New York—New York City; James Hay, of Virginia—Madison, Clay Co.; James L. Slayden, of Texas—San Antonio; Robert F. Broussard, of Louisiana—

New Iberia; Ariosto A. Wiley, of Alabama—Montgomery; Isaac R. Sherwood, of Ohio—Toledo; George W. Gordon, of Tennessee—Memphis, and Thomas Gale, of Alaska—Fairbanks.

#### **New York State Eight-Hour Law Upheld.**

The validity of the law passed by the New York State Legislature of 1907 prohibiting railroad companies from employing railroad telegraphers more than eight hours a day is upheld in a decision rendered by Supreme Court Justice Keogh at New Rochelle, N. Y., on December 16, 1908.

The constitutionality of the act was questioned in an action brought by Attorney General Jackson, December 16, 1908, against the Erie Railroad Company to recover the penalty of \$100 provided in the statute for each violation. The test case submitted involved a violation by the Erie, in the employment of David Henion as towerman, at Sterlington, Rockland County, on November 1, 1907, for a period of twelve hours' time. It was contended by counsel for the railroad company that the law was not only in contravention of the constitution of the State of New York, but that it was in conflict with the federal statute passed by Congress in 1907 and taking effect March 1, 1908, which provided a limitation of nine hours for a day's work for such telegraphers employed by railroads engaged in interstate commerce.

It is believed that the case will ultimately be carried to the United States Supreme Court. All the railroads are observing the eight-hour law pending the outcome of the litigation.

#### **Trolley Induction Litigation.**

Three injunction cases were begun in Porter County Circuit Court at Valparaiso, Ind., December 14, 1908, in which the Western Union Telegraph Company, the Postal Telegraph-Cable Company, and the Lake Shore and Michigan Southern Railroad Company, all of whose telegraph lines parallel the Chicago, Lake Shore and South Bend Interurban trolley system, ask for a perpetual restraining order against the continued operation of its high-tension single phase trolley system.

It is charged that the alternating current which is used to operate their cars is so powerful and far-reaching in its effects, that by induction it seriously interferes with the working of the telegraph company's wires, rendering them useless at times between Chicago and New York.

The petition of the railroad company also alleges that the carrying of the United States mails and carrying of Government messages is interfered with.

This is one of the most important suits involving as it does telegraph and trolley interests, that has ever been brought in this country, and its outcome will be watched with profound interest.

## DIRECTORY OF THE TELEGRAPH

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THE FOLLOWING PAGES EMBODY A DIRECTORY OF THE LAND LINE TELEGRAPHS, THE SUBMARINE CABLES, WIRELESS TELEGRAPH COMPANIES, THE SIGNAL SERVICE OF THE UNITED STATES ARMY, AND OTHER INFORMATION OF COMPANY AND ASSOCIATION INTERESTS ALLIED TO THE TELEGRAPH. THE DETAIL OF THIS WORK, WHICH HAS BEEN CAREFULLY COMPILED UNDER OFFICIAL AUTHORITY, AND WHICH IS FURNISHED IN RESPONSE TO A GENERAL DEMAND, IS THE ONLY GROUPING OF TELEGRAPH INTERESTS OF NORTH AMERICA EVER ATTEMPTED. THESE PAGES POSSESS A REFERENCE VALUE OF DISTINCT WORTH, USEFUL ALIKE TO THE INTERESTS CONCERNED AND TO THE BUSINESS WORLD.



COL. ROBERT C. CLOWRY,  
President and General Manager of the Western Union Telegraph Company,  
New York.



**WESTERN UNION TELEGRAPH COMPANY.**

Executive offices, 195 Broadway, New York; incorporated 1856; capital \$100,000,000; London offices, Broad Street, House, New Broad St., E. C.

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This system embraces a total length of cable of 7,351 nautical miles, as follows: Sennen Cove, near Penzance, England, to Dover Bay, near Canso, Nova Scotia, northern cable, 2,531 miles, laid in 1881; Sennen Cove to Dover Bay, southern cable, 2,576 miles, laid in 1882; Dover Bay to New York, 888 miles, laid in 1889.

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Capital \$3,000,000.

(Leased to the Western Union Telegraph Company.)

Agent at Havana, Cuba, Eugenio Fortun y Varona.

The total length of cable is 468 miles, as follows: Punta-Rassa, Florida, and Miami to Havana, Cuba, comprising the sections: Punta-Rassa to Key West, 120 miles, laid in 1890; Miami to Key West (twin core), 136 miles, laid in 1899; Key West to Havana, 108 miles, laid in 1886; Key West to Havana, 104 miles, laid in 1899.

### THE GOLD AND STOCK TELEGRAPH COMPANY.

Executive offices, 195 Broadway, New York; incorporated in 1867 under the New York State laws; capital \$5,000,000.

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George B. Scott, superintendent, 68 Broad street, New York.

The company is engaged in a general ticker service and a market quotation business, etc., the Western Union Telegraph Company's lines being utilized for the purpose.

### THE AMERICAN DISTRICT TELEGRAPH COMPANY OF NEW JERSEY.

Executive offices, 15 Exchange place, Jersey City, N. J.; incorporated November 1, 1901; capital \$10,000,000.

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Robert C. Clowry, president; G. H. Fearons, vice-president; C. F. Patterson, general manager; I. B. Ferguson, secretary and auditor; Lewis Dresdner, acting treasurer.

#### SUPERINTENDENTS.

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### THE AMERICAN DISTRICT TELEGRAPH COMPANY OF NEW YORK.

Executive offices, 195 Broadway, New York; capital, \$4,000,000.

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B. Brooks, general manager; D. Skelton, superintendent.

### THE STOCK QUOTATION TELEGRAPH COMPANY.

Executive offices, 59 Broad street, New York;

incorporated November 13, 1882; capital \$500,000.

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William H. Hurst, president; Belvidere Brooks, vice-president; David O'Brien, treasurer; Lyttleton Fox, secretary; E. J. Murphy, superintendent.

#### DIRECTORS.

Thomas F. Clark, J. B. Van Every, Belvidere Brooks, George H. Fearons, William H. Hurst, David O'Brien, J. P. O'Brien, John J. Walsh.

### ANGLO-AMERICAN TELEGRAPH COMPANY, LIMITED.

Executive offices, 26 Old Broad street, E. C., London, England; organized 1866; capital £7,000,000.

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R. C. Smith, general superintendent, St. Johns, N. F.; Charles Trippe, superintendent, 8 Broad street, New York; Fred. H. Waycott, manager, Montreal.

The property of the company consists of fourteen cables, and the total length of cable embraced in this system is 9,502 miles, with divisions as follows:

First Transatlantic System—Valentia, Ireland, to Bay Bulls, Newfoundland, laid in 1858; Valentia to Heart's Content, Newfoundland, laid in 1865; Valentia to Heart's Content, laid in 1866; Brest, France, to St. Pierre, laid in 1869; (these four cables have since been abandoned). Valentia, Ireland, to Heart's Content, 1,846 miles, laid in 1874; Valentia to Heart's Content, 1,890 miles, laid in 1880; Valentia to Heart's Content, 1,845 miles, laid in 1894.

Second European Communication—Cuckmere, Sussex, England, to Havre, France, 81 miles, laid in 1900.

Third Communication on American Coasts—Heart's Content to Placentia, Newfoundland, 61 miles, laid in 1873; Heart's Content to Placentia, 61 miles, laid in 1880; New Brunswick to Prince Edward's Isle, 12 miles, laid in 1856; Placentia to St. Pierre, 111 miles, laid in 1880; St. Pierre to Sydney, Cape Breton, 187 miles, laid in 1880; Placentia to Sydney, 320 miles, laid in 1873; Placentia to Sydney, 283 miles, laid in 1873; St. Pierre to Duxbury, Mass., 808 miles, laid in 1869; Sydney, Cape Breton, to Canso, N. S., 116 miles, laid in 1891.

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The object of this association is the improvement of the telegraph service, and the promotion and advancement in general of the interests of the telegraph department of railroads.

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### THE UNITED DISTRICT MESSENGER COMPANY.

Executive offices, 206 Broadway, New York; incorporated 1903; capital \$200,000.

M. W. Rayens, president and general manager.

### DIRECTORY OF ASSOCIATIONS.

American Institute of Electrical Engineers. Secretary, Ralph W. Pope, United Engineering Societies Building, 29 West 39th street, New York. Meetings, second Friday of each month, excepting June, July, August and September.

Canadian Electrical Association. Secretary, T. S. Young, 104 Confederation Life Building, Toronto, Ont.

Gold and Stock Life Insurance Association meets the third Monday in January, at New York.

International Association of Municipal Electricians. Secretary, Frank P. Foster, Corning, N. Y. Next meeting, Atlantic City, N. J., 1909, at a date yet to be determined.

New York Electrical Society. Secretary, G. H. Guy, 33 West 39th street, New York.

Old Time Telegraphers' and Historical Association. Secretary, F. J. Scherrer, 195 Broadway, New York. Next meeting, Pittsburg, Pa., 1909, at a date yet to be determined.

Society of the United States Military Telegraph Corps. Secretary, D. H. Bates, 658 Broad-

way, New York. Next meeting, Pittsburg, Pa., 1909, at a date yet to be determined.

Society of Wireless Telegraph Engineers. Secretary, C. E. Russell, Boston, Mass. Monthly meetings, fourth Monday each month. Next annual meeting, fourth Monday in February, 1909.

Telegraphers' Mutual Benefit Association, M. J. O'Leary, secretary, meets the third Wednesday in November, at New York.

Train Despatchers Association meets in 1909 at Columbus, O., at a date yet to be determined.

American Railway Association, office, 24 Park place, New York. The next session will be held May 19, 1909, in New York. F. A. Delano, president; Daniel Willard, first vice-president; W. A. Gardner, second vice-president; W. F. Allen, secretary and treasurer.

The Railway Signal Association. C. C. Rosenberg, secretary, Bethlehem, Pa. Three meetings a year. The next annual meeting will be held at Louisville, Ky., on the second Tuesday in October, 1909, and there will be one meeting in Chicago on the Monday before the third Tuesday of March, 1909, and one in New York on the second Tuesday of May.

### Cape to Cairo Telegraphs.

Very little progress has been made for several years in the construction of this line of telegraphic communication across Africa, remarks an English contemporary. Construction work halted at Ujiji (German East Africa), it being found that the country from the adjoining Lake Tanganyika to Uganda and the Soudan is very marshy and unsuited for land telegraph operations. A suggestion has been made that a wireless service would surmount the difficulty, and it is now reported that this proposal may probably be adopted. It is suggested that the trustees of the late Alfred Beit should be asked to devote a portion of the funds which were left at their disposition to be employed in the development of internal communication between South and North Africa to this purpose. It is pointed out, however, that the project for extending the land line as originally designed has not been abandoned; its execution is expected to be deferred for some years.

### THE STANDARD OIL COMPANY.

The telegraph system of this company, denominated the "National Transit Company," comprises many thousand miles of telegraph lines, with hundreds of offices scattered throughout the country. The telegraph follow the pipe lines reaching from Kansas, Texas, Ohio, Indiana, Pennsylvania and other states to the seaboard. F. G. Boyer is superintendent of the system, with headquarters at Oil City, Pa. Sid H. Flagler is the manager of the New York office.

The articles under the standing head of "Some Points on Electricity," published regularly in TELEGRAPH AGE, are filled with practical information for the up-to-date operator. Send for a sample copy.



**JAMES KENT,**  
Manager Canadian Pacific Railway Company's Telegraph,  
Montreal, Que.



## THE CANADIAN PACIFIC RAILWAY COMPANY'S TELEGRAPH.

Executive offices, Hospital and St. Francois Xavier streets, Montreal, Que.; incorporated in 1881.

The property of this department consists of 11,500 miles of poles and cables, and 65,000 miles of wire.

### OFFICERS.

James Kent, Montreal, manager of telegraphs; W. J. Camp, Montreal, electrical engineer; P. W. Snider, St. John, N. B., superintendent; J. F. Richardson, Montreal, Que., superintendent; A. W. Barber, Toronto, Ont., superintendent; F. T. Jennings, North Bay, Ont., superintendent; B. S. Jenkins, Winnipeg, Man., general superintendent, western lines; John Tait, Winnipeg, Man., superintendent; J. McMillan, Calgary, Alb., superintendent; James Wilson, Vancouver, B. C., superintendent.

### CONSTRUCTION AND INSPECTION STAFF.

D. Mersereau, St. John, N. B., general foreman; Joseph Townsley, superintendent of construction, and J. A. Grant, assistant superintendent of construction, Montreal; F. J. Mahon, Montreal, inspector; S. Elliott, Montreal, inspector of telephones; W. Marshall, superintendent of construction, and E. A. Spear, assistant superintendent of construction, Toronto; A. Allen, Sudbury, Ont., superintendent of construction; R. N. Young, Winnipeg, Man., assistant superintendent; D. C. Coons, Winnipeg, inspector; E. M. Payne, Regina, inspector; C. H. Powell, Calgary, inspector; H. McIntyre, Kamloops, B. C., inspector; A. C. Fraser, Nelson, B. C., inspector; F. E. J. Camp, telephone inspector, Revelstoke, B. C.

### MANAGERS OF PRINCIPAL OFFICES.

Sydney, N. S.—A. P. Anderson.  
Halifax, N. S.—W. M. Godsoe.  
St. John, N. B.—J. M. Barnes.  
Quebec, Que.—J. Manning.  
Montreal, Que.—A. Walsh.  
Ottawa, Ont.—W. T. Robinson.  
Toronto, Ont.—D. G. Sturrock.  
Hamilton, Ont.—C. J. Jones.  
London, Ont.—D. H. Bowen.  
North Bay, Ont.—W. S. Metzler.  
Sudbury, Ont.—C. W. McMillan, circuit manager.  
Sault Ste. Marie, Ont.—M. A. Sheridan.  
Sault Ste. Marie, Mich.—W. J. Atchison.  
Fort William, Ont.—W. Graham, circuit manager.  
Port Arthur, Ont.—E. E. Jessop.  
Winnipeg, Man.—W. Rutherford.  
Brandon, Man.—W. M. Thompson.  
Regina, Sask.—W. M. Kennedy.  
Moosejaw, Sask.—B. W. Gibson.  
Saskatoon, Sask.—S. Skattebol.

Swift Current, Sask.—S. M. Thurston, circuit manager.

Calgary, Alta.—T. J. Fitzgerald.  
J. J. Schetgen, chief operator.  
Edmonton, Alta.—D. H. Barclay.  
Revelstoke, B. C.—J. L. Smith, circuit manager.  
Nelson, B. C.—W. B. Shaw.  
New Westminster, B. C.—H. A. Wilson.  
Vancouver, B. C.—M. T. Quigley; J. Fletcher, chief operator.  
Victoria, B. C.—W. Christie.  
Nanaimo, B. C.—W. F. Archibald.

### Telegraphers' Memorial Tablet, Allegheny County, Pa.

David Homer Bates, secretary of the Society of the United States Military Telegraph Corps, is engaged in connection with Joseph W. Boyd and George T. Fleming, of Pittsburg, in the endeavor to secure the names of all Allegheny County men, which will include that of Andrew Carnegie, who entered the military telegraph service from that point during the Civil War, with a view of having those names inscribed on a suitable bronze tablet to be placed in the new Memorial Hall building, now in course of construction.

The following list comprises all the names so far as known entitled to this representation:

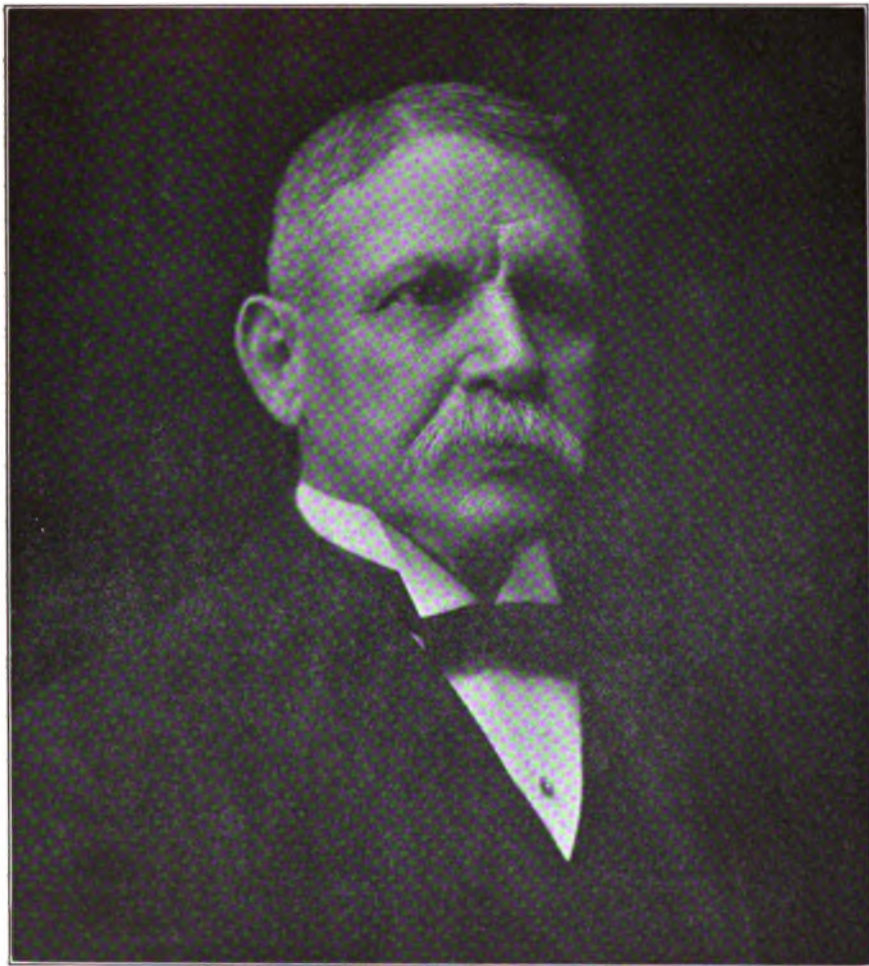
Thomas Armor, Army of Potomac; J. Torrence Abernethy, David Homer Bates, War Department; Joseph W. Boyd, Peninsula E. S. of Va.; Samuel Brown, (D\*), Andrew Carnegie, Albert Brown Chandler, War Department; Harp A. Caldwell (D.), Daniel Colestock, Thomas B. A. David, Thomas Thompson Eckert, George N. Eitemiller, Benjamin W. Flack (D.), Joseph Orton Kerbey, John Spencer Kerbey (D.), Army of Potomac; George Albree Low, War Department; Theodore E. Moreland, J. Andrew Munson (D.), L. D. McCandless (D.), Paul McConaghy, John A. L. McKenna (D.), Edward W. McKenna, Army of Potomac; James P. McIlvain, Army of Cumberland; J. Hervey Nichols, Richard O'Brien, John E. O'Brien, John L. O'Neil, George E. Perkins, S. Theodore Paisley (D.), William H. Pope, Charles O. Rowe, Army of Potomac; Jesse H. Robinson, Army of Cumberland; Samuel B. Rumsey, Thomas D. Williams, Western Army; Dohert F. Weitbrec, Army of Potomac; Benjamin F. Woodward (D.), War Department.

\* D—Deceased.

Mr. Bates and Mr. Boyd will be glad to have their comrades advise them of errors, if any, in the list published herewith, or of the omission of any names which properly should be included therein.

There is much for telegraph operators to learn respecting their calling which can be readily obtained by reading *Telegraph Age*—\$2 a year.

The new classified catalogue of books on the telegraph, telephone, wireless telegraphy, electricity, etc., published by *TELEGRAPH AGE*, may be had for the asking!



**ISAAC McMICHAEL,**  
Vice-President and General Manager of the Great North Western Telegraph Company,  
Toronto, Ont.

## THE GREAT NORTH WESTERN TELEGRAPH COMPANY.

Executive offices, Toronto, Ont.; organized in 1881; capital \$500,000.

The property of this company consists of 13,410 miles of poles—406 miles of wire in cables, 49,686 miles of wire. The company maintains a total of 1,360 offices of which 1,183 are located in Canada and 177 in the United States. Of the 1,360 offices 894 are reached exclusively by the lines of this company. The following is a list of a portion of the more important circuits operated between large cities:

Montreal to Quebec, Que.; St. John, N. B.; Halifax, N. S.; North Sydney, N. S.; New York, N. Y.; Albany, N. Y.; Ottawa, Ont.; Toronto, Ont.; Chicago, Ill.; Boston, Mass.; Ogdensburg, N. Y.

Toronto to New York, N. Y.; Buffalo, N. Y.; Montreal, Que.; Ottawa, Ont.; North Bay, Ont.; Hamilton, Ont.; London, Ont.; Detroit, Mich.; Chicago, Ill.; Winnipeg, Man.

### OFFICERS.

H. P. Dwight, president; I. McMichael, vice-president and general manager; George D. Perry, secretary-treasurer and superintendent of supplies; A. C. McConnell, auditor; S. B. McMichael, general assistant; W. J. Duckworth, superintendent of construction; James Ianson, general foreman, and D. E. Henry, chief clerk, general manager's office; Edwin Pope, superintendent, Quebec; A. R. Porte, superintendent, Ogdensburg, N. Y.; inspectors—C. W. Dawzy and C. E. Lillie, Toronto, Ont.; J. Beauchamp, Quebec.

### MANAGERS OF PRINCIPAL OFFICES.

Belleville, Ont.—P. F. Canniff.  
 Brandon, Man.—Miss M. G. Quigg.  
 Brantford, Ont.—E. Cameron.  
 Hamilton, Ont.—J. Jamieson.  
 Kingston, Ont.—T. A. Hanley.  
 London, Ont.—W. C. Furness.  
 Montreal, Que.—L. S. Humes.  
 Niagara Falls, Ont.—George Phemister.  
 North Bay, Ont.—J. Frezell.  
 Ogdensburg, N. Y.—A. R. Porte.  
 Ottawa, Ont.—J. G. Davies.  
 Plattsburg, N. Y.—W. C. Crooks.  
 Quebec, Que.—Edwin Pope.  
 St. Catharines, Ont.—T. E. Dudley.  
 St. Thomas, Ont.—George Rowley.  
 Sault Ste. Marie, Ont.—Thomas Taylor.  
 Toronto, Ont.—G. Hogarth.  
 Watertown, N. Y.—C. E. Comstock.  
 Windson, Ont.—H. H. Hodgkinson.  
 Winnipeg, Man.—J. Padington.

## THE GRAND TRUNK PACIFIC TELEGRAPH COMPANY.

Executive offices, Montreal, Que.; incorporated July, 1906; capital \$5,000,000.

### OFFICERS.

Charles. M. Hays, president; Frank W. Morse, vice-president; A. Bruce Smith, general manager.

The property of this company consists of lines now in operation in the Provinces of Manitoba, Saskatchewan and Alberta, and lines under construction in the Provinces of New Brunswick, Quebec, Ontario and British Columbia.

### PRINCIPAL OFFICES.

Allan, Sask.,  
 Atwater, Sask.,  
 Biggar, Sask.,  
 Cabot, Man.,  
 Clavet, Sask.,  
 Dexter, Ont.,  
 Dunn, Alta.,  
 Earl, Sask.,  
 Fenwood, Sask.,  
 Firdale, Man.,  
 Grandora, Sask.,  
 Ingelow, Man.,  
 Ituna, Sask.,  
 Iwana, Sask.,  
 Juniata, Sask.,  
 Kelliher, Sask.,  
 Landis, Sask.,



A. B. SMITH,  
 General Manager, Grand Trunk Pacific Telegraph Company,  
 Montreal, Que.

Lazare, Man.,  
 Leney, Sask.,  
 Melville, Sask.,  
 Nokomis, Sask.,  
 Oscar, Ont.,  
 Pope, Man.,  
 Portage la Prairie Man.,  
 Punnichy, Sask.,  
 Rivers, Man.,  
 Scott, Sask.,  
 Semas, Sask.,  
 Spy Hill, Sask.,  
 Unity, Sask.,  
 Uno, Man.,  
 Wainwright, Alta.,  
 Watrous, Sask.,  
 Winnipeg, Man.,  
 Wako, Ont.,  
 West Fort William, Ont.,  
 Young, Sask.,  
 Yonker, Sask.



GEORGE GRAY WARD,  
Vice-President and General Manager, Commercial Cable Company,  
New York.



**THE MACKAY COMPANIES.**

Boston office, 112 State street; New York office, 253 Broadway. Stock: Par \$100. Authorized: common, \$50,000,000; preferred, \$50,000,000. Issued: \$41,380,400; \$50,000,000.

**TRUSTEES.**

Clarence H. Mackay, president; William W. Cook, general counsel; George G. Ward, vice-president; Edward C. Platt, treasurer; Dumont Clarke, of New York; R. A. Smith, of Toronto; H. V. Meredith, of Montreal.

A voluntary association formed under the laws of Massachusetts, the agreement and declaration of trust in connection with the organization being dated December 19, 1903.

The company owns the whole or part of the capital stock of 102 cable, telegraph and telephone companies, including the entire capital stock of the Commercial Cable Company, \$23,000,000, and the various companies contributing to the Postal telegraph system. It is also the largest holder of the stock of the American Telephone and Telegraph Company.

**COMMERCIAL CABLE COMPANY.**

Executive offices, 253 Broadway, New York; London office, Bishopsgate House, E. C.; organized 1883.

(See Mackay Companies.)

**DIRECTORS.**

Clarence H. Mackay, Col. William Jay, George G. Ward, Dumont Clarke, A. B. Chandler, E. C. Platt, Albert Beck, R. A. Smith, James Gordon Bennett, Rt. Hon. Lord Strathcona and Mount Royal, Thomas Skinner, C. R. Hosmer, George Clapperton, C. E. Merritt, S. S. Dickenson.

**OFFICERS.**

Clarence H. Mackay, president; George Gray Ward, vice-president and general manager; Albert B. Chandler, vice-president; Charles R. Hosmer, of Montreal, vice-president; George Clapperton, vice-president and traffic manager; S. S. Dickenson, vice-president and general superintendent; E. C. Platt, treasurer; C. E. Merritt, assistant treasurer; Albert Beck, secretary; J. O. Stevens, assistant secretary.

Manager in England, Frederick Ward.

**SUPERINTENDENTS.**

S. F. Austin, New York, Robert Herne, Rockport, Mass.; F. H. Putt, Boston; F. B. Gerrard, Canso, N. S.; F. Chevalier, Horta, Fayal, Azores Islands; R. J. Hughes, Waterville, Ireland; E. G. Phillips, London; J. Furze, Liverpool; Robert W. Budden, Manchester, England; H. J. Tracey, Glasgow, Scotland; Emile Ronot, Havre; Leon Crozat, superintendent of agencies, Paris, France.

Charles Priest, electrician, New York; John Gott, consulting engineer, London; F. H. Dennis, superintendent Clearing House, New York.

Frederick H. Larnder, commander, and F. H. Hamilton, electrician, cable steamer "Mackay-Bennett," stationed at Halifax, N. S.

The total length of cable embraced in this sys-

tem is 15,446 nautical miles, with divisions as follows:

Waterville, Ireland, to Canso, Nova Scotia, 2,384 miles, laid in 1884; Waterville to Canso, 2,348 miles, laid in 1884; Waterville to Canso, 2,161 miles, laid in 1894; Canso, Nova Scotia, to Horta, Fayal, Azores Islands, 1,698 miles, laid in 1900; Waterville, Ireland, to Canso, Nova Scotia, 2,238 miles, laid in 1905; Canso, Nova Scotia, to New York, 840 miles, laid in 1884; Canso to New York, 895 miles, laid in 1900; Canso to Rockport, Mass., 512 miles (twin core), laid in 1884; Havre, France, to Waterville, Ireland, 510 miles, laid in 1885; Waterville to Weston-super-Mare, near Bristol, England, 328 miles, laid in 1885; Waterville to Weston-super-Mare, 327 miles, laid in 1901; Waterville to Horta, Fayal, Azores Islands, 1,205 miles, laid in 1901.

**COMMERCIAL PACIFIC CABLE COMPANY**

Executive offices, 253 Broadway, New York; incorporated 1901.

(See Mackay Companies.)

**OFFICERS.**

Clarence H. Mackay, president; George G. Ward, vice-president and general manager; Albert Beck, secretary; E. C. Platt, treasurer.

**SUPERINTENDENTS.**

John D. Gaines, Honolulu; Benjamin W. Colley, Midway; H. F. Harrington, Guam; E. Desnouce, Manila; Daniel Coath, Shanghai.

Basil Combe, commander cable steamer "Restorer," stationed at Esquimaux, B. C.

This system connects the United States with the Philippine Islands and China, the total length of cable being 10,010 nautical miles, with divisions as follows: San Francisco to Honolulu, Hawaiian Islands, 2,276 miles, laid in 1902; Honolulu, Hawaiian Islands, to Midway Island, 1,332 miles, laid in 1903; Midway Island to Guam, 2,606 miles, laid in 1903; Guam to Manila, Philippine Islands, 1,631 miles, laid in 1903; Manila to Shanghai, China, 1,264 miles, laid in 1906; Guam to Bonin (connecting at this point with the Japanese Government cable to Tokio, Japan), 899 miles, laid in 1906.

**COMMERCIAL CABLE COMPANY OF CUBA.**

Executive offices, 253 Broadway, New York; incorporated 1906.

(See Mackay Companies.)

**OFFICERS.**

Clarence H. Mackay, president; George G. Ward, vice-president and general manager; S. S. Dickenson, vice-president; Albert Beck, secretary; E. C. Platt, treasurer; C. E. Merritt, assistant treasurer.

John W. Lawson, superintendent, Havana, Cuba.

This system connects New York with Havana, Cuba, the total length of cable being 1,285 nautical miles, laid in 1907.



### CENTRAL AND SOUTH AMERICAN TELEGRAPH COMPANY.

Executive offices, 66 Broadway, New York; organized 1881; capital \$12,000,000.

#### OFFICERS.

James A. Scrymser, president; W. Emlen Roosevelt, vice-president; Jose C. Bernales, honorary vice-president, Lima, Peru; Sebastian Camacho, resident vice-president, City of Mexico, Mex.; Robert L. McCann, general manager; Clarence Rapkin, treasurer; James R. Beard, secretary; John L. Merrill, auditor; J. Langdon Erving, purchasing agent.

#### DIRECTORS.

Edward D. Adams, Robert W. de Forest, J. Montgomery Hare, William Pierson Hamilton, Francis L. Higginson, Charles Lanier, W. Emlen Roosevelt, William D. Sloane, James A. Scrymser. Jose C. Bernales, honorary vice-president, Lima, Peru.

B. H. Reynolds, superintendent, 64 Broad street, New York city; Herbert Kingsford, superintendent, A. Davidson, electrician, and George F. Pescod, traffic manager, at Barranco, Peru; Charles Turner, superintendent Argentine and Chile land lines, Valparaiso, Chile; James Tiddy, manager, Buenos Aires, Argentina.

This company owns the cable steamer "Guardian" stationed at Callao, Peru.

This system embraces 11,403 nautical miles, with divisions as follows: First Atlantic system—Vera Cruz, Mexico, to Coatzacoalcos, Mexico, 129 miles, laid in 1881. Second Atlantic system—Salina Cruz, Mexico to San Jose, Guatemala, 359 miles, laid in 1893 and 1882; San Jose to La Libertad, Salvador, 146 miles, laid in 1893 and 1883; Libertad to San Juan del Sur, Nicaragua, 269 miles, laid in 1882; San Juan del Sur to Panama, United States of Colombia, 721 miles, laid in 1882; Panama to Buenaventura, Colombia, 394 miles, laid in 1882; Buenaventura to St. Elena, Ecuador, 514 miles, laid in 1882; St. Elena to Payta, Peru, 246 miles, laid in 1882; Payta to Chorillos, Peru, 553 miles, laid in 1882; Chorillos, Peru to Callao, Peru, 20 miles, laid in 1891; Chorillos to Iquique, Chili, 747 miles, laid in 1891; Iquique to Valparaiso, Chili, 876 miles, laid in 1891; Salina Cruz, Mexico to San Juan del Sur, Nicaragua, 690 miles, laid in 1893; San Juan del Sur to St. Elena, Ecuador, 1,034 miles, laid in 1893; St. Elena to Chorillos, Peru, 800 miles, laid in 1893; Iquique, Chili, to Chorillos, Peru (duplicate cable), 757 miles, laid in 1906; Iquique to Valparaiso, Chili, 902 nautical miles, laid in 1906; New York to Guantanamo, Cuba, 1,464 miles, laid in 1907; Guantanamo to Colon, Panama, 782 miles, laid in 1907.

### MEXICAN TELEGRAPH COMPANY.

Executive offices, 66 Broadway, New York; organized 1883; capital \$3,000,000.

#### OFFICERS.

James A. Scrymser, president; Edmund L. Baylies, vice-president; Sebastian Camacho, resident vice-president, City of Mexico; Robert L. McCann, general manager; Clarence Rapkin, treasurer; James R. Beard, secretary; J. L. Mer-

rill, auditor; J. Langdon Erving, purchasing agent; Otto Strubel, electrician.

#### DIRECTORS.

John E. Alexandre, John W. Auchincloss, Edmund L. Baylies, J. Pierpont Morgan, Cornelius Vanderbilt, Sebastian Camacho, Percy R. Pyne, John J. Pierrepont, W. Emlen Roosevelt, James A. Scrymser.

Charles E. Cummings, superintendent, City of Mexico; A. T. Webster, manager, Galveston, Texas.

The company owns the cable steamer "Relay," captain, Edgar Oldham, and the cable steamer "Mexican," both stationed at New York.

This system embraces 2,322 nautical miles, with divisions as follows: Galveston, Texas, to Tampico, Mexico, 484 miles, laid in 1882; Tampico to Vera Cruz, Mexico, 220 miles, laid in 1880; Galveston to Coatzacoalcos, Mexico, 825 miles, laid in 1889; Galveston to Coatzacoalcos, 793 miles, laid in 1905. Also owns 738/2200 New York-Colon cable.

### COMPAGNIE FRANÇAISE DES CÂBLÉS TÉLÉGRAPHIQUES.

Executive offices, 38 Avenue de l'Opera, Paris; organized 1894; capital 63,000,000 francs. (\$12,600,000). M. E. Jeramec, president; London office, 24 Royal Exchange. W. W. Howell, representative; New York office, 25 Broad street. Louis A. Lurienne, representative, United States and Canada, E. C. Sweeney, superintendent.

Other offices: London—2 Mincing Lane. New Bridge street, E. C., Baltic Mercantile and Shipping Exchange, E. C., 24 Southwarth street, S. E.; Havre—40 Rue de Chilou; Brest—30-32 Rue de Chateau; Antwerp—Agency, 14 Rue Venus; St. Pierre, Miquelon; New York—Pulitzer Building, Park Row, 3 Mercer street, 1 Worth street, 581 Broadway, 65 Fifth avenue, 281 Fifth avenue, Orleans, Mass., Hugh Osborne, superintendent.

This system embraces 12,089 nautical miles of cable, with divisions as follows:

Franco-American system—Deolen, near Brest, France, to St. Pierre, Miquelon, 2,361 miles, laid in 1879; St. Pierre to Cape Cod, Mass., 829 miles, laid in 1879; St. Pierre to Canso, Nova Scotia, 258 miles, laid in 1879-89; Brignogan, France, to Penzance, Cornwall, England, 108 miles, laid in 1880-98; Deolin, near Brest, France, to Cape Cod, Mass., 3,173 miles, laid in 1898; Cape Cod to New York, 324 miles, laid in 1899.

South American System—Castillo de Aguadores, near Santiago, Cuba, to Guantanamo, Cuba, 50 miles, laid in 1888; Guantanamo, Cuba, to Mole St. Nicholas, Hayti, 126 miles, laid in 1888; Mole St. Nicholas, to Port-au-Prince, Hayti, 112 miles, laid in 1890; Mole St. Nicholas, to Cape Haitien, Hayti, 96 miles, laid in 1888-91; to Puerto-Plata, San Domingo, 116 miles, laid in 1888-91; Puerto-Plata to Charlotte-Amelie, St. Thomas, 403 miles, laid in 1891-97; Charlotte-Amelie to Fort de France, Martinique, 361 miles, laid in 1891-97; Fort de France, to Paramaribo, Dutch Guiana, 703 miles, laid in 1890; Paramari-

bo, to Cayenne, French Guiana, 270 miles, laid in 1891; Cayenne, to Pinheiro, near Para, Brazil, 550 miles, laid in 1891-95; Fort de France, to St. Pierre, Martinique, 19 miles, laid in 1891; St. Pierre, Anse a Belleville, Martinique, to Pointe-a-Pitre, Guadeloupe, 103 miles, laid in 1889-90; Pointe-a-Pitrie, au Gozier, Guadeloupe, to St. Louis, Marie Galante, 19 miles, laid in 1889-90; Pointe-a-Pitre, Guadeloupe, to la Terre d'en Haut, Saintes, 23 miles, laid in 1897; La Terre d'en Haut, Saintes, to Basse Terre, Guadeloupe, 13 miles, laid in 1897; San Domingo to Curacao, 452 miles, laid in 1888; Curacao to La Guaira, Venezuela, 161 miles, laid in 1888; La Guaira to Puerto-Cabello, Venezuela, 76 miles, laid 1897; La Guaira to Carenero, Venezuela, 73 miles, laid in 1898; Carenero to Guanta, Venezuela, 101 miles, laid in 1900; Guanta to Cumana, Venezuela, 30 miles, laid in 1900; Cumana to Port-la-Mar, Marguerite, 60 miles, laid in 1900; Port-la-Mar, Marguerite Island, Venezuela to Carnpano, Venezuela, 40 miles, laid in 1900; Curacao to la Vela de Coro, Venezuela, 54 miles, laid in 1897; La Vela de Coro, Venezuela to Maracaibo, Venezuela, 226 miles, laid in 1899.

Australian cable—Gomen, New Caledonia to Bundaberg, Queensland, Australia, 793 miles, laid in 1893.

#### UNITED STATES AND HAYTI TELEGRAPH AND CABLE COMPANY.

Executive offices 25 Broad street, New York.

##### OFFICERS.

George G. Ward, president; Ernest Thalman, vice-president; A. Beck, secretary; C. A. Ronne, treasurer; Louis A. Lurienne, general manager.

##### DIRECTORS.

George G. Ward, Ernest Thalman, A. Beck, George Clapperton, Louis A. Lurienne, E. C. Sweeney.

This system embraces 1,391 nautical miles of cable, laid in 1896, and extends from Coney Island, New York, to Cape Haytien, Hayti.

#### CUBA SUBMARINE TELEGRAPH COMPANY, LIMITED.

Executive offices, 58 Old Broad street, E. C., England; incorporated in 1870; capital £160,000.

##### DIRECTORS.

C. W. Parish, chairman; G. Keith, R. Kaye Grav, A. G. Low; James Scott, secretary.

This system embraces a length of 1,162 nautical miles, with divisions as follows: Batabano, Cuba, to Cienfuegos, Cuba, 147 miles, laid in 1891; Batabano to Cienfuegos, Cuba, 144 miles, laid in 1894; Cienfuegos to Santiago, Cuba, 420 miles, laid in 1875; Cienfuegos to Casilda, 47 miles, laid in 1895; Casilda to Tunas, 28 miles, laid in 1895; Tunas to Jucaro, 46 miles, laid in 1895; Jucaro to Sta. Cruz, 81 miles, laid in 1895; Sta. Cruz to Manzanillo, 59 miles, laid in 1895; Manzanillo to Cape Cruz, 51 miles, laid in 1897; Cape Cruz to Santiago, 139 miles, laid in 1897.

#### WEST INDIA AND PANAMA TELEGRAPH COMPANY, LIMITED.

Executive offices, Dashwood House, New Broad Street, London, E. C., England; incorporated in 1877; capital £883,210.

##### DIRECTORS.

Walter B. Kingsford, chairman; Sir J. Cameron Lamb, G. von Chauvin, H. Holmes, T. W. Goulding; R. T. Brown, manager and secretary.

This system embraces a total length of 4,355 miles, with divisions as follows: Santiago, Cuba, to Holland Bay, Jamaica (No. 1), 160 miles, laid in 1870; Santiago, Cuba, to Holland Bay, Jamaica (No. 2), 146 miles, laid in 1878; Kingston, Jamaica, to Colon, Panama, 630 miles, laid in 1870; Holland Bay to St. Juan, Porto Rico, 683 miles, laid in 1870; St. Juan to St. Thomas, 72 miles, laid in 1871; Holland Bay to Ponce, Porto Rico, 647 miles, laid in 1874; Ponce to St. Croix, 135 miles, laid in 1875; St. Croix to St. Thomas, 48 miles, laid in 1875; St. Croix to St. Lucia, 344 miles, laid in 1898; St. Thomas to St. Kitts, 161 miles, laid in 1871; St. Kitts to Antigua, 49 miles, laid in 1871; Antigua to Basse-Terre, Guadeloupe, 73 miles, laid in 1871; Basse-Terre to Dominica, 51 miles, laid in 1871; Dominica to St. Lucia, 109 miles, laid in 1871 and 1907; St. Lucia to St. Vincent, 58 miles, laid in 1871; St. Lucia to Granada, 154 miles, laid in 1898; St. Vincent to Barbados (No. 1), 99 miles, laid in 1871; St. Vincent to Barbados (No. 2), 94 miles, laid in 1899; St. Vincent to Granada, 84 miles, laid in 1871; Granada to Trinidad (No. 1), 89 miles, laid in 1871; Granada to Trinidad (No. 2), 125 miles, laid in 1898; Trinidad to Demerara (No. 3), 344 miles, laid in 1891.

#### DEUTSCH-ATLANTISCHE TELEGRAPHEN GESELLSCHAFT.

Executive offices, 3-11 Stolk-gasse, Cologne, Germany; incorporated 1899; capital 24,000,000 marks (about \$6,000,000).

Oscar Moll, managing director and C. W. Guillaume.

This system embraces a total length of 9,653 nautical miles of cable, with divisions as follows: Borkum, Germany, to Horta, Azores, 1,888 miles, laid in 1900; Horta, to Coney Island, New York, 2,302 miles, laid in 1900; Borkum, to Horta, 1,960 miles, laid in 1903; Horta, to Coney Island, 2,357 miles, laid in 1904; Borkum, to Vigo, Spain, (purchased by this company in 1905), 1,146 miles, laid in 1896.

#### THE DIRECT UNITED STATES CABLE COMPANY, LIMITED.

Executive offices, Winchester House, 50 Old Broad street, London, E. C.; organized July 17, 1877; capital £1,300,000.

##### DIRECTORS.

E. M. Underdown, chairman; Hon. Thos. H. A. E. Cochrane, C. E. Gunther, Sir James Pender, John Varley, H. C. B. Underdown; T. Finnis, general manager and secretary.

The property of the company consists of land-lines connecting England and Ireland at Ballinskelligs, Ballinskelligs to Halifax, N. S., long section; and short section from Halifax, N. S., to Rye Beach, N. H.; landlines, Rye Beach to New York and Boston.

#### SUPERINTENDENTS.

A. C. Forshaw, London, England; J. H. Beswick, Liverpool, England; F. W. Topping, Ballinskelligs cable station, Ireland; J. W. Graves, Glasgow, Scotland; S. Fenn and T. H. Chapman, assistant, Halifax, N. S.; W. J. Fraser and J. Fraser, assistant, Boston, Mass., and Rye Beach, N. H.; Clement Lee and J. N. Weisiger, assistant, New York.

#### PRINCIPAL OFFICES.

New York, 61 New street; 444 Broome street; 20 Spruce street.

Boston, 27 Devonshire street.

Halifax, N. S., 48 Bedford Row.

Glasgow, 4 Waterloo street.

Bristol, Black Hall Chambers, Baldwin street.

London, 39 Mark Lane, E. C.; 34 Throgmorton street; 4 Bishopsgate street (within); East India avenue, Leadenhall street; Baltic Chambers, St. Mary Ave.; 50 Old Broad street.

Liverpool, D 6, Exchange Buildings.

### **DIRECT WEST INDIA CABLE COMPANY, LIMITED.**

Executive offices, 33 Old Broad street, London, E. C.; organized 1897; capital, £120,000, (\$600,000).

#### TRUSTEES FOR DEBENTURE HOLDERS.

Right Hon. Lord Strathcona and Mount Royal and Thomas Skinner.

#### DIRECTORS.

Thomas Skinner, chairman; Lieutenant-Colonel T. G. H. Glynn, Charles R. Hosmer, George G. Ward and Frederick Ward; general manager, Joseph Rippon; secretary, O. Rochs.

The total length of cable is 1,273 nautical miles, with divisions as follows: Bermuda to Turk's Island, 824 miles, laid in 1897; Turk's Island to Kingston, Jamaica, 449 miles, laid in 1897.

### **HALIFAX AND BERMUDAS CABLE COMPANY.**

Executive office, 33 Old Broad street, London, E. C.; organized 1889; capital £170,000 (\$850,000).

#### TRUSTEES FOR DEBENTURE HOLDERS.

Marquis of Ailesbury and C. S. Grenfell.

#### DIRECTORS.

T. Skinner, chairman; Lieutenant-Colonel T. G. H. Glynn, Charles R. Hosmer, George G. Ward and Frederick Ward; general manager, Joseph Rippon; secretary, O. Rochs.

This cable, laid in 1890, connects Halifax, N. S., with Bermuda, the total length of cable being 851 nautical miles.

### **PACIFIC CABLE.**

British Pacific Cable Board; executive offices,

Queen Anne's Chambers, Tothill street, Westminster, London, S. W., England.

H. S. Baxendale, general manager; F. J. Adye, secretary and accountant; J. Milward, chief electrician.

#### BOARD OF CONTROL.

Sir Henry W. Primrose, J. W. Cawston, treasurer; W. H. Mercer, crown agent for the colonies, representing the Imperial Government; Lord Strathcona and Mount Royal, High Commissioner for Canada, and Alexander Lang, representing the Government of the Dominion of Canada; Hon. T. A. Coghlan, Sir Horace Tozer, agent-general for Queensland, representing the Commonwealth of Australia; Hon. W. P. Reeves, agent-general for New Zealand, representing New Zealand.

#### SUPERINTENDENTS.

W. Bent, Suva, Fiji; D. Cuthbert, Norfolk Island; C. L. Hertslet, Doubtless Bay; T. C. Judd, Southport; R. G. McLachlan, Bamfield, B. C.; A. Smith, Fanning Island; W. E. Reichenheim, Sydney, N. S. W.

The "all-British" Pacific Cable extends from Vancouver, B. C., Dominion of Canada, to Fanning Island, 3,458 miles; to Fiji, 2,043.10 miles; to Norfolk Island, 981.48 miles; to Moreton Bay, Queensland, Australia, 836.69 miles, and Norfolk Island to New Zealand, 518.74 miles, a total of 7,838.01 miles.

The life of Lord Kelvin is full of inspiration to the telegrapher, whether of land or cable. The latest volume giving an account of his scientific life, recently off the press, written by Andrew Gray, professor of natural history in the University of Glasgow, Scotland, a former pupil of and assistant to Lord Kelvin, and therefore well equipped for his task, affords a most attractive gift for a Christmas remembrance. For it presents a point of view of that noted scientist, concentrated within the limits stated, of a nature such as to render it valuable to the many who were accustomed to look up to Lord Kelvin as a great leader in the world of science. The activities of Lord Kelvin, even up to the time immediately prior to his death, which occurred on December 16, 1907, were prodigious, and the unfolding and development of his life and character along the lines of scientific thought, study and experiment, leading to discovery unceasingly pursued; the reaching of profound attainments in electrical and other research, including the telegraph, more especially in its application expressed in submarine working, in which connection he invented the mirror galvanometer and the siphon recorder—all may be traced in this delightful volume with pleasure and profit. This book, which is well printed on good paper, contains 316 pages, several illustrations, a number of explanatory drawings, and is fully indexed. It will be sent to any address, carrying charges prepaid, on receipt of price, \$1.25, by J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

# TELEGRAPH CHARACTERS

MORSE		CONTINENTAL		MORSE		CONTINENTAL	
A	.-	..	..	T	..	..	..
B	-...-	..	..	U	..	..	..
C	-.-.	..	..	V	..	..	..
D	-..-	..	..	W	..	..	..
E	..	..	..	X	..	..	..
F	..-.	..	..	Y	..	..	..
G	-.-	..	..	Z	..	..	..
H	..-.-	..	..	&	..	..	..
I	..-	..	..	1	..	..	..
J	..-.	..	..	2	..	..	..
K	-.-.	..	..	3	..	..	..
L	..-..	..	..	4	..	..	..
M	-.-	..	..	5	..	..	..
N	..-	..	..	6	..	..	..
O	---	..	..	7	..	..	..
P	..-.-	..	..	8	..	..	..
Q	-.-.-	..	..	9	..	..	..
R	..-.-	..	..	0	..	..	..
S	...-	..	..				

### Short Numerals Generally Used By Continental Operators.

1	..	3	..	5	..	7	..	9	..
2	..	4	..	6	..	8	..	0	..

	MORSE	CONTINENTAL	PHILLIPS
. Period	..	..	..
: Colon	..	..	..
- Colon Dash	..	..	..
; Semi-Colon	..	..	..
, Comma	..	..	..
? Interrogation	..	..	..
! Exclamation	..	..	..
- Fraction Line	..	..	..
- Dash	..	..	..
: Hyphen	..	..	..
' Apostrophe	..	..	..
£ Pound Sterling	..	..	..
/ Shillings	..	..	..
d Pence	..	..	..
\$ Dollars	..	..	..
c Cents	..	..	..
: "Colon Followed by Quotation	..	..	..
. Decimal Point	..	..	..
¶ Paragraph	..	..	..
( ) Parenthesis	..	..	..
[ ] Brackets	..	..	..
" Quotation	..	..	..
Quotation within a Quotation	..	..	..
End of Quotation	..	..	..
End of Quotation with Quotation	..	..	..
% Percent	..	..	..
Capitalized Letter	..	..	..
Italics or Underline	..	..	..

In the Phillips' Code, punctuation signals for fractions used generally in the United States are sent by inserting the letter e between the numerator and the denominator, thus: Three-sixteenths—3 e 16.

Owing to the fact that three ciphers when quickly transmitted bear striking resemblance to a figure 5, it will always be better to use tnd for thousand and myn for million when thousands or millions are expressed after the first, second or third figures by ciphers exclusively, thus: 10,000—10 tnd; 248,000,000—248 myns.

Hnd may also be used to advantage sometimes to express hundreds, thus: 400—4 hnd; 500,000—5 hnd tnd; 300,000,000—3 hnd myn.

Decimals should be sent by inserting the word "dot," thus: 0.34—0 dot 34; 89.92—89 dot 92.

When an omission occurs in the copy, and the fact is shown by the presence of asterisks, the letter x several times repeated will indicate that asterisks are to be inserted in the copy to be sent out, thus: And this has been one of the results x x x x x Who shall account for such corruption—And this has been one of the results x x x x x Who shall, etc.

In sending poetry or one or more lines of verse, a paragraph mark (—) should be used at the end of each line. The United Wireless operators use the Morse code, while the Marconi wireless telegraphers use the Continental code.



**SHIRLEY M. ENGLISH,**  
General Manager Postal Telegraph-Cable Company of Texas, Dallas, Tex.



**POSTAL TELEGRAPH-CABLE COMPANY OF TEXAS.**

Executive offices, Dallas, Tex.; incorporated 1896; capital \$120,000.

The system of this company embraces 12,624 miles of wire; 3,738 miles of poles.

S. M. ENGLISH, GENERAL MANAGER.

MANAGERS AT PRINCIPAL PLACES.

Alexandria, La.....J. M. Delmar  
 Ardmore, Okla.....W. T. Salisbury  
 Arkansas City, Kans.....H. E. Leasure  
 Austin, Tex.....D. C. Page  
 Bartlett, Tex.....M. C. Morris  
 Bauxite, Ark.....V. McLaughlin  
 Beaumont, Tex.....T. A. Darling  
 Belton, Tex.....Claude Cox  
 Bonham, Tex.....Z. H. Hartman  
 Corsicana, Tex.....R. L. Garrison  
 Chickasha, Okla.....E. Curtis  
 Crowley, La.....Miss E. V. Tillery  
 Dallas, Tex.....W. L. Jones  
 Denison, Tex.....C. P. Grigsby  
 El Reno, Okla.....Mrs. C. Sellers  
 Enid, Okla.....P. E. Drawver  
 Fort Smith, Ark.....J. W. Gilliam  
 Fort Worth, Tex.....W. Y. Nolley  
 Gainesville, Tex.....H. H. Henderson  
 Galveston, Tex.....F. C. Cole  
 Greenville, Tex.....Mrs. L. H. Bowlby  
 Guthrie, Okla.....C. N. Jones  
 Helena, Ark.....J. G. Faulkner  
 Hillsboro, Tex.....W. H. Hord  
 Hope, Ark.....A. P. Andrews  
 Hot Springs, Ark.....D. L. Edwards  
 Houston, Tex.....J. D. McLelland  
 Jennings, La.....Miss L. A. Dobrowolski  
 Joplin, Mo.....J. F. O'Donnell  
 Laredo, Tex.....T. J. Bolleter  
 Lake Charles, La.....C. M. Wilgus  
 Little Rock, Ark.....O. M. Lowe  
 McAlester, Okla.....E. L. Church  
 McKinney, Tex.....G. D'Armand  
 Marshall, Tex.....L. E. Keasler  
 Monroe, La.....J. L. Ketchum  
 Mulvane, Kans.....R. P. Seyfer  
 Muskogee, Okla.....P. H. Fennell  
 Nederland, Tex.....  
 New Iberia, La.....Miss R. Carter  
 Oklahoma City, Okla.....J. Coffey  
 Orange, Tex.....M. A. Bravo  
 Paris, Tex.....H. E. Simms  
 Pine Bluff, Ark.....V. V. Vandeventer  
 Plano, Tex.....L. T. Pellerin  
 Port Arthur, Tex.....Miss K. Polansky  
 Rayne, La.....J. D. Marks  
 San Antonio, Tex.....W. E. Herring  
 Shawnee, Okla.....J. P. Moore  
 Sherman, Tex.....P. R. Napier  
 Shreveport, La.....J. I. Hendrick  
 Taylor, Tex.....E. C. Matthews  
 Temple, Tex.....Jeff Light  
 Texarkana, Tex.....J. B. Prudhomme  
 Tyler, Tex.....Miss K. Frazier

Tioga, La.....  
 Tulsa, Okla.....E. E. Louderback  
 Waco, Tex.....A. G. Steele  
 Wichita Falls, Tex.....M. W. Morris  
 Welsh, La.....W. M. Loving  
 West, Tex.....J. H. Chambliss  
 Winfield, Kans.....Miss K. K. Poling

**THE DEAN RAPID TELEGRAPH CO.**

Executive offices, Postal Building Annex, Kansas City, Mo.; capital \$25,000,000.

OFFICERS.

Robert L. Dean, president; S. A. Akins, first



ROBERT L. DEAN.

President of the Dean Rapid Telegraph System, Kansas City, Mo.

vice-president; Charles T. Taylor, second vice-president; G. E. Gleason, treasurer; W. H. Mendenhall, secretary, all of Kansas City.

The property consists of the necessary appliances and equipment for rapid automatic telegraphy. The same is now in commercial operation, and has been since 1906, between Kansas City and St. Louis, Mo., over a leased telephone line.

J. C. Rohlf, manager at San Francisco for the marine department of the Standard Oil Company, has arranged to equip the company's steamers Atlas, Asuncion and Maverick and barge 91 with the United Wireless Telegraph Company's system of wireless telegraph apparatus.

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—\$2 a year.



**HENRY A. TUTTLE,**  
Vice-President and General Manager North American Telegraph  
Company, Minneapolis, Minn.

## THE NORTH AMERICAN TELEGRAPH COMPANY.

Executive offices, 511 Phoenix Building, Minneapolis, Minn; incorporated 1885; capital \$1,000,000.

### OFFICERS.

Clinton Morrison, president; H. A. Tuttle, vice-president and general manager; E. C. Cooke, treasurer; A. S. Harris, secretary.

The property of this company consists of telegraph lines and offices in States of Illinois, Iowa, Wisconsin and Minnesota.

### MANAGERS OF PRINCIPAL OFFICES.

Aurora, Ill.—D. C. Brant.  
Dubuque, Iowa.—W. G. Norman.  
Duluth, Minn.—J. L. Fuller.  
La Crosse, Wis.—T. F. Keegan.  
Mankato, Minn.—J. S. Davies.  
Minneapolis, Minn.—D. G. McIntosh.  
St. Paul, Minn.—T. Doherty.  
Superior, Wis.—A. T. Ritzman.  
Winona, Minn.—H. E. Averill.

## TELEPOST COMPANY.

Executive offices, 225 Fifth avenue, New York; incorporated under the laws of Maine in 1907; capital \$18,000,000. The company owns the Delany system of automatic rapid telegraphy, and operates under lease the lines of the Atlantic Tel-

egraph Company between Boston and Portland, Me., and Lowell, Mass.

### OFFICERS.

H. Lee Sellers, president; C. H. Silliman, first vice-president; Jules Guthridge, second vice-president; R. H. Sellers, secretary and treasurer; Thomas Conyngton, general counsel; Jacques Krebs, assistant treasurer; Patrick B. Delany, E.E., consulting engineer; J. W. Larish, electrical engineer; Robert Morton, manager eastern division.

### VOTING TRUSTEES.

Hon. Henry W. Blair, Manchester, N. H.; Gen. A. R. Buffington, U. S. A., Madison, N. J.; Gen. M. C. Butler, U. S. V., Edgefield, S. C.; Hon. Charles J. Faulkner, Martinsburg, W. Va.; Rev. Charles H. Parkhurst, D. D., H. Lee Sellers, F. W. Shumaker, New York City.

### DIRECTORS.

Rear-Admiral W. J. Barnette, U. S. N., Washington, D. C.; Thomas Conyngton, New York City; James S. Gailey, Waterbury, Conn.; Jules Guthridge, Washington, D. C.; H. Lee Sellers, R. H. Sellers, C. H. Silliman, F. H. Stillman, New York City.

### OFFICES AND MANAGERS.

Boston, Mass., Arthur E. Mason.  
Lowell, Mass., R. F. Murphy.  
Lawrence, Mass., E. B. Searls.  
Haverhill, Mass., George A. Smith.  
Exeter, N. H., George B. Shaw.  
Biddeford, Maine, F. L. Malone.  
Portland, Maine, J. H. Price.  
Portsmouth, N. H., T. C. Leckey.  
Dover, N. H., G. M. Stevens.

### Trade Notice.

The United Uniform Company, of New York and Brooklyn, has extensive facilities for the manufacture of uniforms of all kinds, this particular line of business being pursued exclusively. The excellent character of the products of this company is well known, while its ability to fill orders; and with the utmost promptitude, no matter how large or how urgent the demand may be, is so complete as to enable the concern to quote very close prices. This company has done very acceptable work for the Postal Telegraph-Cable Company, and in supplying uniforms lately for the messenger service of that company at Los Angeles, Calif., were said to have made a great "hit." The advertisement of this company may be read on another page.

The Spanish Government is just completing four new wireless telegraph stations—one at Almeria, on the coast of the Mediterranean, about four hundred and twenty kilometers from Granada, to communicate with another situated at Melilla, on the coast of Morocco, two hundred kilometers distant. The other two stations are at Chamartin and Guadalajara, in Castilia, the distance between them being fifty kilometers.



H. LEE SELLERS,  
President Telepost Company, New York.



**BRIGADIER-GENERAL JAMES ALLEN.**  
Chief Signal Officer, United States Army, Washington, D. C.

**TELEGRAPH AND CABLE LINES,  
SIGNAL CORPS, UNITED STATES ARMY.**  
PRINCIPAL OFFICER: BRIGADIER GENERAL JAMES ALLEN, CHIEF SIGNAL OFFICER OF THE ARMY.

Miles of aerial lines:

United States . . . . .	155
Alaska . . . . .	1,395
Philippine Islands . . . . .	115
<b>Total . . . . .</b>	<b>1,665</b>

Miles of cables:

Washington-Alaska system . . . . .	2,592.0
Philippine Islands . . . . .	9.6
<b>Total . . . . .</b>	<b>2,601.6</b>

- Cables:
- "Burnside," Seattle, Wash.
  - "Cyrus W. Field," New York.
  - "Liscum," Philippine Islands.
  - "Joseph Henry," New York.

The mileage of aerial lines and cables given herewith does not include the lines in the Philippine Islands transferred to the Insular Government by the Signal Corps in 1907. These comprised 3,982 miles of land lines and 1,296 miles of cable.

**OFFICES WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM.**

Nome-Valdez Section. Land lines.	Interme- diate. Miles.	Total. Miles.
Nome . . . . .	0	0
Fort Davis . . . . .	4	4
Safety . . . . .	20	24
St. Michael (wireless) . . . . .	107	131
Golsova . . . . .	35	166
Unalakleet . . . . .	30	196
Old Woman . . . . .	50	246
Kaltag . . . . .	45	291
Nulato . . . . .	40	331
Koyukuk . . . . .	30	361
Louden . . . . .	50	411
Melosi . . . . .	35	446
Kokrines . . . . .	38	484
Birches . . . . .	40	524
Fort Gibbon . . . . .	55	579
Rapids . . . . .	24	603
Rampart . . . . .	23	626
Glen . . . . .	35	661
Hot Springs . . . . .	21	682
Tolovana . . . . .	37	719
Minto . . . . .	39	758
Nenana . . . . .	35	783
Chena . . . . .	29	822
Fairbanks . . . . .	10	832
Salcha . . . . .	37	869
Delta . . . . .	29	898
Richardson . . . . .	2	900
McCarty . . . . .	20	920
Doneley . . . . .	40	960
McCallum . . . . .	37	997
Paxson . . . . .	18	1,015

Hogan . . . . .	29	1,044
Gulkana . . . . .	37	1,081
Copper Center . . . . .	26	1,107
Tonsina . . . . .	25	1,132
Teikhell . . . . .	24	1,156
Saina . . . . .	24	1,180
Thompson Pass . . . . .	5	1,185
Wortmans . . . . .	7	1,192
Valdez . . . . .	19	1,211

	Interme- diate. Miles.	Total. Miles.
Fort Egbert branch.		
Gulkana . . . . .	0	1,211
Talsona . . . . .	20	1,231
Chistochina . . . . .	20	1,251
Mentasta . . . . .	46	1,297
Tanana Crossing . . . . .	51	1,348
Ketchumstock . . . . .	55	1,403
North Fork . . . . .	19	1,422
Fort Egbert . . . . .	68	1,490
Boundary . . . . .	12	1,502

Cables. Seattle-Seward.		
Seattle . . . . .	0	0
Sitka . . . . .	1,085	1,085
Valdez . . . . .	599	1,684
Fort Liscum . . . . .	4	1,688
Seward . . . . .	189	1,877
Montague Island-Cordova Cape Whitshed . . . . .	68	1,945

Sitka-Skagway.		
Sitka . . . . .	0	1,945
Cape Fanshaw (no station) . . . . .	211	2,156
Juneau . . . . .	98	2,254
Haines Mission . . . . .	106	2,360
Skagway . . . . .	18	2,378

Cape Fanshaw-Ketchikan.		
Cape Fanshaw (no station) . . . . .	0	2,378
Wrangell . . . . .	63	2,378
Hadley . . . . .	60	2,510
Ketchikan . . . . .	28	2,538

Lawton-Worden.		
Fort Lawton . . . . .	0	2,538
Fort Worden . . . . .	42	2,580

Ward-Lawton.		
Fort Ward . . . . .	0	2,580
Fort Lawton . . . . .	12	2,592

Wireless.		Miles.
Egbert-Circle . . . . .		162
Circle-Fairbanks . . . . .		180
Fairbanks-Gibbon . . . . .		150
Gibbon-Nome . . . . .		390
Nome-St. Michael . . . . .		131
Petersburg-Wrangell . . . . .		49

**Total . . . . . 1,062**

Recapitulation.		
Land lines . . . . .		1,395
Wireless . . . . .		1,062
Cables . . . . .		2,592

**Total . . . . . 5,049**

## LAND LINES IN THE UNITED STATES.

From—	To—	Miles.
Huachuca, Ariz.	Lewis Springs	19.0
Ft. Bayard, N. Mex.	Bayard	3.0
Ft. Bayard, N. Mex.	Silver City	10.0
Holbrook, Ariz.	Fort Apache	92.0
Fort Myer, Va.	Ft. Washington, Md.	21.5
Fort Clark, Tex.	Spofford Junction	9.5
Total		155.0

## SIGNAL CORPS WIRELESS TELEGRAPH STATIONS.

Station	Power (kw)	Height of Mast (feet)	Call
Fort H. G. Wright, N. Y.	1	150	FW
Fort Totten, N. Y.	3	125	FT
Fort Wood, N. Y.	3	150	FD
Fort Hancock, N. J.	1	117	FN
Fort Omaha, Nebr.	3	175	FN
Fort Leavenworth, Kan.	1	90	FL
Nome, Alaska	10	200	FD
Fort Gibbon, Alaska	10	200	FG
Fairbanks, Alaska	3	175	FB
Circle City, Alaska	3	175	FK
Fort Egbert, Alaska	3	200	FQ
St. Michael, Alaska	3	200	FM
Petersburg, Alaska	1	100	FB
Warngell, Alaska	1	100	FW
Camp Columbia, Cuba	1	110	SO
Zamboanga, P. I.	3	175	FM
Jolo, P. I.	3	175	FS
Transport Logan	3	..	ATL
Transport Sherman	3	..	ATR
Transport Thomas	3	..	ATU
Transport Sheridan	3	..	ATS
Transport Kilpatrick	3	..	ATK

## TELEGRAPH OFFICES OF SIGNAL CORPS IN THE PHILIPPINE ISLANDS.

Camp Bumpus, Leyte.  
 Camp Daraga, Luzon.  
 Camp Gregg, Luzon.  
 Camp Hayt, Samar.  
 Camp John Hay, Luzon.  
 Camp Jossman, Guimaras.  
 Camp McGrath, Luzon.  
 Camp Stotsenberg, Luzon.  
 Camp Vicars, Mindanao.  
 Camp Wallace, Luzon.  
 Camp Wilhelm, Luzon.  
 Cudarangan, Mindanao.  
 Fort Pikit, Mindanao.  
 Fort William McKinley, Luzon.  
 Grande Island, Luzon.  
 Jolo, Jolo.  
 Reina Regente, Mindanao.  
 Taft, Samar.  
 Tagabiran, Samar.

## Inherent Strength of New York State Loan Associations.

Officers of State League Co-operative Building and Loan Associations have completed an in-

quiry, begun a few weeks ago, on the effect of these associations in New York State. The Metropolitan League of New York City, a co-ordinate organization, assisted in the inquiry, which was thorough, and covered more than two hundred co-operative savings and loan associations.

The results show conclusively that, so far as associations in the smaller cities, towns and village are concerned, the panic was not felt by their members in the slightest degree. This was clearly shown by the fact that withdrawals were never above the normal point, and several secretaries reported that less money was paid out than usual, compared with previous years.

Co-operative savings and loan associations in the city of New York naturally expected to have many members applying for their money, and, in most cases, the outcome was the same as in other sections of the State. The larger associations, especially those that are open every day during business hours, had more demands from members than usual, it is true, and the officers were prepared to meet all comers. It was not an easy matter to get money from banks and trust companies, with several closed and interest rates soaring higher and higher each day. There was no fear of ultimately getting money which associations had in closed banks or trust companies, as co-operative building and loan organizations' deposits are preferred under the State law, and one association that had a large deposit took steps to get it immediately, the court ordering temporary receivers to pay it with six per cent. interest.

Many directors and other members voluntarily came forward and loaned their associations money to pay withdrawals. One large association's directors passed a resolution that they would not withdraw their money or that of any of their friends until all other members were paid. This action was followed by other associations, and everybody was paid "over the counter." It was shown that at least one-half of those members who needed money were in the unfortunate predicament of having all other surplus funds tied up in closed banks and trust companies. In a few weeks these societies had forgotten all about the panic, all of which shows confidence in the management of the associations in New York State, and a large increase in assets will be shown at the end of the year.

There is another phase of the tight money market of a few months ago, as affecting co-operative savings and loan associations, and that is that many persons who have small mortgages on their homes were saved from foreclosure by these organizations. They could not get money when their mortgages expired, and came to the associations. They are now paying the mortgages off and sleep nights—their mortgages cannot be called in.

Among the strongest of these associations is the Serial Building Loan and Savings Institution managed in the interest of and by telegraphers.



### MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED.

Executive offices, Watergate House, York Buildings, Adelphi, London, W. C., England; capital, £750,000, of which £250,000 are 7% cumulative preferred, and £500,000 common.

#### DIRECTORS.

Sir Charles Euan-Smith, chairman; G. Marconi, managing director; J. F. G. Bannatyne, H. Jameson Davis, Albert L. Ochs, Major S. Flood Page, Henry S. Saunders; Henry W. Allen, secretary.

### MARCONI INTERNATIONAL MARINE COMMUNICATION COMPANY, LIMITED.

Executive offices, Watergate House, York Buildings, Adelphi, London, W. C., England; capital, £350,000.

#### DIRECTORS.

G. Marconi, managing director; J. F. G. Bannatyne, Albert L. Ochs, Major S. Flood Page, Henry S. Saunders, Sir Charles Euan-Smith, Charles Roux, Edgar St. Paul de Sinçay, H. Jameson Davis.

### MARCONI WIRELESS TELEGRAPH COMPANY OF AMERICA.

Executive offices, 27 William street, New York; capital \$6,650,000; incorporated 1899.

#### OFFICERS.

J. W. Griggs, president; G. Marconi, vice-president; John Bottomley, vice-president and general manager; directors, inclusive of the officers: James M. Townsend, James W. Pike, Major S. Flood Page, Charles A. Terry, George T. Campbell, George W. Fishback, H. Jameson Davis.

### MARCONI WIRELESS TELEGRAPH COMPANY OF CANADA, LIMITED.

Executive offices, 1724 Notre Dame street, Montreal, Que.; capital \$5,000,000.

#### DIRECTORS.

Andrew A. Allen, president; G. Marconi, vice-president; J. N. Greenshields, Robert Bickerdike, John Bottomley.

### LA COMPANIA MARCONI DE TELEGRAFIA SIN HILOS DEL RIO DE LA PLATA.

Executive offices, 132 San Martin, Buenos Aires, Argentina; capital \$6,750,000.

#### DIRECTORS.

Dr. Manuel Qunitana, president; G. Marconi, vice-president; Commendatore Tomas Ambrosetti, Ventura G. Coll, Commendatore Tomas Devoto, Henry Beautemps, Antonio Terrarosa, Captain Guillermo Jose Nuñez, Sir Charles Euan-Smith, Colonel Sir Thomas Holdich.

### LA COMPAGNIE DE TELEGRAPHIE SANS FIL.

Executive offices, 19 Rue Brederode, Brussels, Belgium; capital 600,000 francs.

#### DIRECTORS.

Lieut.-Col. Albert Thys, president; Maurice

Travailleur, managing director; Charles Balser, Isidor Loewe, Berlin; Baron de la Chevrelière, Paris; G. Marconi, Albert L. Ochs, H. Jameson Davis, Major S. Flood Page, Gaston Perier.

### LA COMPAGNIE FRANCAISE MARITIME ET COLONIALE DE TELEGRAPHIE SANS FIL.

Executive offices, 35 Boulevard des Capucines, Paris, France; capital 100,000 francs.

#### DIRECTORS.

Baron de la Chevreliere, managing director; John Dal Piaz, Cie Générale Transatlantique; Alfred Musnier, Charles Roux, Messageries Maritime, G. Marconi.

Marquis L. Solari, 315 Corso Vittorio Emanuele, Rome, Italy. Branch of London Marconi Wireless Telegraph Company, Limited.

Marconi's Wireless Telegraph, Rue da Quitanda, 133-A, Rio de Janeiro, Brazil; Agency of London, Marconi's Wireless Telegraph Company, Limited.

The property of the various affiliated companies of the Marconi system consists of 31 stations on the Atlantic Coast north of New York City, and on the Gulf of St. Lawrence; 37 in Great Britain and Ireland; 37 in Europe; 4 in Brazil; 3 in Chile; 3 in China; 5 in Egypt; 1 in Gibraltar; 5 in the Hawaiian Islands; 1 in Malta; 2 in Mozambique; 1 in Uruguay. There are 146 steamers fitted with the Marconi system. In addition to these, the ships of the navies of the following countries are likewise fitted: Great Britain, Italy, Brazil and the Argentine Republic.

### THE UNITED WIRELESS TELEGRAPH COMPANY.

Executive offices, 42 Broadway, New York City; organized under the Laws of the State of Maine, charter obtained February 15, 1907; capital \$20,000,000, divided into ten millions preferred and ten millions common stock.

The company maintains twenty-two stations along the Atlantic Coast from Boston, Mass., to Havana, Cuba, and Galveston, Texas. Two more stations are being built. There are eighty-eight commercial vessels equipped and operating on the Atlantic, equipments for seventeen others being installed or in process of manufacture. On the Pacific Coast there are eighteen stations extending from Cordova and Katella, Alaska, to San Diego, Cal. Work on other stations is not yet completed. Twenty commercial vessels are equipped and operating on the Pacific.

#### OFFICERS.

C. C. Wilson, Denver, Colo.; president; S. S. Bogart, New York, vice-president; W. A. Diboll, Denver, Colo., treasurer; Cloyd Marshall, New York, secretary; L. C. Wallace, New York, assistant treasurer; E. P. Davis, New York, assistant secretary.

C. C. Galbraith is general manager of the Pacific Coast and Western Division; H. J. Hughes is superintendent of the service on the Atlantic Coast.

DIRECTORS.

George H. Parker, Seattle, Wash.; M. A. Kopperl, Austin, Texas; S. S. Bogart, New York; C. C. Galbraith, New York; C. M. Fickert, San Francisco, Cal.; Rev. D. J. Starr, Columbus, O.; C. C. Wilson, Denver, Colo.; Cloyd Marshall, New York; G. Ross Eshleman, Lancaster, Pa.; W. A. Diboll, Denver, Colo.; Captain J. F. Burke, Atlanta, Ga.; Dr. I. Newton Snively, Fred'k. I. J. Hanson, Philadelphia, Pa.

EXECUTIVE COMMITTEE.

C. C. Wilson, chairman; S. S. Bogart, C. C. Galbraith, W. A. Diboll, M. A. Kopperl.

**MASSIE WIRELESS TELEGRAPH COMPANY.**

(Manufacturing and holding company.)

Executive offices, 4 Market square, Providence, R. I.; incorporated 1905; capital \$300,000, actual property, stock on hand, and office and shop equipments.

OFFICERS AND DIRECTORS.

Walter W. Massie, president and general manager; Frank H. Cranston, vice-president; John G. Massie, secretary and treasurer; James S. Kenyon, Francis A. Cranston, Richard S. Howland.

**MARINE TRANSMISSION COMPANY.**

(Holding exclusive right to operate the Massie system in the United States.)

Incorporated in New Jersey, 1904. Equipment consists of 26 boat installations, 6 land stations.

OFFICERS AND DIRECTORS.

Walter W. Massie, president and general manager; Frank H. Cranston, secretary and treasurer; Wm. R. Arnold, Jr., assistant treasurer; Frederic Culver, Granville Whittlesey.

**INTERNATIONAL ASSOCIATION OF MUNICIPAL ELECTRICIANS.**

The object of this association shall be the acquisition of experimental, statistical and scientific knowledge relating to the construction, equipment and operation of fire and police telegraph, light, heat and power systems, and the diffusion of this knowledge among the members of this association with the view of improving the service and reducing its cost; and the establishment and maintenance of a spirit of fraternity among its members.

Place of next meeting—Atlantic City, N. J., 1909, at a date to be selected later.

OFFICERS FOR 1908-1909.

J. B. Yeakle, Baltimore, president; W. S. Devlin, New Castle, Pa., first vice-president; H. C. Bundy, Watertown, N. Y., second vice-president; F. A. Cambridge, Winnipeg, Man., third vice-president; C. R. George, Houston, Tex., fourth vice-president; Frank P. Foster, Corning, N. Y., secretary; C. E. Diehl, Harrisburg, Pa., treasurer.

EXECUTIVE COMMITTEE.

A. C. Farrand, chairman, Atlantic City, N. J.; C. G. Sundquist, Jamestown, N. Y.; L. L. Kingsbury, Baltimore, Md.; C. F. Gall, Louisville, Ky.; S. W. Manning, St. Paul, Minn.; T. C. O'Hearn, Cambridge, Mass.; R. A. Smith, Norfolk, Va.; Wm. Crane, Erie, Pa.; John O'Brien, Fond-du-lac, Wis.

OTHER COMMITTEES.

Police Signal—A. C. Farrand, Jerry Murphy, A. L. Kittridge. Fire Telegraph—C. F. Gall, S. W. Manning, H. C. Bundy.

ACTIVE MEMBERS OF THE ASSOCIATION.

Herbert W. Angier, superintendent of fire telegraph, Marlboro, Mass.

S. G. Anderson, city electrician, Dallas, Tex.

T. F. Almon, superintendent of fire and police telegraph, St. Louis.

H. R. Allensworth, superintendent of fire and police telegraph, Columbus, O.

A. J. Balizet, superintendent of fire telegraph, Meadville, Pa.

Harry A. Bowen, superintendent of fire telegraph, Cleveland, O.

Edward Borke, manager electrical bureau, Philadelphia.

W. T. Brown, electrical engineer, electrical bureau, Philadelphia.

M. J. Burns, superintendent of police telegraph, Lowell, Mass.

Adam Bosch, superintendent of fire telegraph, Newark, N. J.

Capt. Wm. Brophy, 17 Egleston street, Jamaica Plain, Mass.

J. F. Burns, 442 State street, Schenectady, N. Y.

B. A. Blakey, city electrician, Montgomery, Ala.

W. H. Bradt, superintendent of fire telegraph, Troy, N. Y.

A. J. Bell, superintendent of fire telegraph, New Rochelle, N. Y.

H. C. Bundy, superintendent of fire telegraph, Watertown, N. Y.

G. R. Babcock, superintendent of fire and police telegraph, Oakland, Cal.

John Berry, superintendent of fire and police telegraph, Indianapolis, Ind.

C. E. Bradshaw, city electrician, Charlotte, N. C.

Abner Coleman, city electrician, Taunton, Mass.

F. A. Cambridge, city electrician, Winnipeg, Man.

John S. Craig, superintendent of fire telegraph, Toronto, Ont.

William Crane, city electrician, Erie, Pa.

E. C. Chamberlin, 451 E. 176th street, New York.

W. D. Claiborne, superintendent of fire telegraph, Savannah, Ga.

J. T. Dugger, city electrician, Chattanooga, Tenn.

C. S. Downs, city electrician, Altoona, Pa.

Wm. S. Devlin, city electrician, New Castle, Pa.

E. N. Davis, superintendent of lights and wires, Brookline, Mass.

- William Dodds, superintendent of fire telegraph, Waterbury, Conn.
- J. H. Dorrington, 418 Orchard street, Pittsburg, C. E. Diehl, superintendent of fire and police telegraph, Harrisburg, Pa.
- M. J. Donohue, city electrician, Niagara Falls, N. Y.
- W. Y. Ellett, superintendent of fire telegraph, Elmira, N. Y.
- L. D. Firman, assistant electrical inspector, electrical bureau, Philadelphia.
- H. C. Fernald, superintendent of fire telegraph, Lowell, Mass.
- Frank P. Foster, superintendent of electrical department, Corning Glass Works, Corning, N. Y.
- A. C. Farrand, city electrician, Atlantic City, N. J.
- Joseph Graff, electrician Delaware Lackawanna and Western Railroad, Hoboken, N. J.
- C. F. Gall, superintendent of fire telegraph, Louisville, Ky.
- C. R. George, city electrician, Houston, Tex.
- Louis Gascoigne, superintendent of fire telegraph, Detroit, Mich.
- James Grant, superintendent of fire telegraph, New Haven, Conn.
- C. A. Hofses, superintendent of fire and police telegraph, Reading, Pa.
- A. S. Hatch, Burnside, Ky.
- L. L. Kingsbury, chief inspector, Baltimore.
- W. L. Kent, city electrician, Lynchburg, Va.
- A. L. W. Kittredge, superintendent of police telegraph, New Haven, Conn.
- Elmer G. Loomis, superintendent electrical bureau, Allegheny, Pa.
- F. F. Loomis, city electrician, Akron, O.
- Chas. H. Lyon, city electrician, Peoria, Ill.
- R. W. LeBaron, inspector of wires, Arlington, Mass.
- John Leininger, city electrician, Canton, O.
- Wm. C. Lucas, superintendent of fire telegraph, Meriden, Conn.
- F. R. Mistershy, city electrician, Detroit.
- Stanley W. Manning, superintendent of fire telegraph, St. Paul.
- Charles Marizot, superintendent of fire telegraph Shrevesport, La.
- C. S. McCosker, city electrician, Mobile, Ala.
- F. E. Maize, assistant manager, electrical bureau, Philadelphia.
- James F. McLaughlin, chief of electrical bureau, Philadelphia.
- James F. McElholm, inspector of wires, Lowell, Mass.
- G. F. Macdonald, city electrician, Ottawa, Ont.
- Frank C. Mason, Washington Mills, N. Y.
- Jerry Murphy, superintendent of police telegraph, Cleveland.
- T. F. Marron, superintendent of fire and police telegraph, Utica, N. Y.
- P. H. McManus, superintendent of fire and police telegraph, Wilkes Barre, Pa.
- C. R. Newman, superintendent of fire telegraph, Passaic, N. J.
- T. C. O'Hearn, city electrician, Cambridge, Mass.
- John O'Brien, city electrician, Fond-du-Lac, Wis.
- Ambrose Perkins, city electrician, Youngstown, O.
- Price I. Patton, assistant manager of electrical bureau, Philadelphia.
- A. L. Pierce, superintendent borough electrical plant, Wallingford, Conn.
- F. E. Pierson, city electrician, Morristown, Walter M. Petty, borough electrician, Rutherford, N. J.
- Jacob B. Platt, superintendent of fire and police telegraph, Augusta, Ga.
- R. A. Phillips, electrician of fire department, Phoebus, Va.
- C. G. Sundquist, superintendent Municipal Electric Light Plant, Jamestown, N. Y.
- J. C. Simpson, superintendent of fire telegraph, Washington, D. C.
- H. L. Stanton, superintendent of fire telegraph, Norwich, Conn.
- Geo. F. Sever, Columbia University, New York.
- Leon Sullivan, city electrician, Decatur, Ill.
- Frank M. Sutton, city electrician, Lexington, Ky.
- R. A. Smith, city electrician, Norfolk, Va.
- Frank Shinnen, assistant city electrician, Atlantic City, N. J.
- Ion Simmons, city electrician, Charleston, S. C.
- Oliver M. Schaffer, superintendent of fire and police telegraph, Trenton, N. J.
- Henry Smith, chief operator fire department, Buffalo.
- Joseph Trautner, superintendent of fire telegraph, Winona, Minn.
- Ulrich E. Taubenheim, superintendent of water and light department, Archangel, Russia.
- Wm. H. Thompson, city electrician, Richmond, Va.
- J. W. Waggoner, superintendent of fire telegraph, Roanoke, Va.
- Frank R. Whitney, superintendent of fire and police telegraph, Lewiston, Me.
- S. L. Wheeler, superintendent of fire and police telegraph, Springfield, Mass.
- James Warren, superintendent of fire telegraph, New Brunswick, N. J.
- D. F. Waters, superintendent of fire telegraph, Cortland, N. Y.
- C. L. Williams, city electrician, Meridian, Miss.
- J. B. Yeakle, superintendent of fire telegraph, Baltimore.

"Modern Practice of the Electric Telegraph" maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.



MAJOR WALTER A. J. O'MEARA, C.M.G., R.E.,  
The Head of the English Telegraphs.

**Major O'Meara, Head of the British Telegraphs.**

Major Walter Alfred John O'Meara, C. M. G., late R. E., the engineer-in-chief of the British post office, London, a position which places him at the head of the telegraph in Great Britain, where he presides with so much acceptability, is the immediate successor to that office of John Gavey, whose predecessor was Sir William H. Preece. Thus it will be seen that the late administrative heads of the English telegraph system embraced men of high character and of pronounced practical and scientific attainments, not alone in the special department of telegraphy, but as well also in a more extended field of applied electrical engineering.

Major O'Meara, who was appointed to the important office he now holds in April, 1907, was born at Calcutta, India, January 28, 1863. Completing his studies in England, his first connection with the telegraph dates from April, 1885, when he became commander of the 2d telegraph company of the Bengal sappers and miners. He became attached to the telegraph department of the British post office in June, 1889, remaining so employed until May, 1894, when he returned to military duty. During the Boer War in South Africa, he saw active service, at one time performing the duties of director of army telegraphs at Kimberley, for which work and for his otherwise fine engineering and civic executive abilities exercised in his capacity as an army officer, he was highly complimented.

In April, 1902, he was made assistant engineer-in-chief of the telegraph department of the post office at London, from which he was advanced to the head of his department, as before stated, just five years later. In September, 1908, Major O'Meara was sent as a British delegate to the first International Technical Conference, held at Budapest, Hungary, and of which body he was elected vice-president; in the following October, serving also as a delegate to the Conference on Electrical Units and Standards, held at London.

Major O'Meara has had an unusually active career for one of his years, events closely crowding one upon the other in his life; but he has met responsibility, acquitting himself with distinction and ability in whatever he has been called upon to perform. In the trend of his keen, analytical mind its working is that of a trained and practical man of affairs, controlled and directed by the intelligence of the student.

It will be of interest to American readers, as showing the extent of the British telegraph system, to know that there are in the United Kingdom 10,862 telegraph offices, located in connection with post offices, the controlling government department of the telegraph in that country, besides 2,402 offices maintained at railway stations and at other public places. In London there are 520 branch offices. The total length of pole lines in Great Britain and Ireland is 45,655 miles, with 2,639 miles additional of underground, a total of 48,294. The length of conductors and miles of

the aerial system is 329,236, underground 213,838, a total of 543,074. The total length of pneumatic tubes in the Kingdom measures 118,044 yards.

**GOVERNMENT TELEGRAPH SERVICE.**

## DOMINION OF CANADA.

Executive office, Department of Public Works, Ottawa, Ont.

This system embraces 6,829.25 miles of land lines, 380.50 miles of cable, and 382 offices.

## EXECUTIVE.

Hon. William Pugsley, Minister of Public Works.

A. Gobeil, I. S. O., Deputy Minister of Public Works.

## STAFF AT HEADQUARTERS.

D. H. Kceley, general superintendent.

M. W. Crean, technical assistant.

J. P. Demartigny, accountant, telegraph branch.

## GENERAL INSPECTORS.

A. B. McDonald, Meat Cove, Cape Breton, lines in Nova Scotia and New Brunswick.

J. S. Macdonald, Kamloops, B. C., lines in Northwest and south British Columbia.

J. E. Gobeil, lines in Yukon division.

## SUPERINTENDENCIES.

Edwin Pope, Quebec, dist. supt., North Shore and G. N. W. traffic.

J. C. Taché, dist. supt., Chicoutimi district and north shore to Bersimis.

E. H. Tetu, Long Point of Mingan, dist. supt., North Shore, East Bersimis.

P. Pouliot, dist. supt., Quarantine line, etc., to Grosse Isle.

A. Malouin, dist. supt., West Point, Anticosti Island.

A. Le Bourdais, Grindstone, dist. supt., Magdalen Islands.

D. C. Dawson, St. John, N. B., dist. supt., Cape Breton system.

Mrs. C. C. Seely, Grand Manan, N. B., dist. supt., Bay of Fundy system.

J. McR. Selkirk, Leamington, Ont., dist. supt., Pelee Island system.

Robert C. Macdonald, Qu-Appelle, dist. supt., Northwest Territories.

Wm. Henderson, Victoria, dist. supt., British Columbia, south.

C. S. Stevens, Kamloops, B. C., supt., Penticton line.

J. T. Phelan, Vancouver, B. C., acting supt., Yukon, system.

H. Gilchen, Whitehorse, Y. T., acting dist. supt., Atlin-Boundary.

**MEXICO.**

Camillo A. Gonzales is director-general of telegraphs of Mexico, with offices in the City of Mexico.

The telegraph system of Mexico embraces 24,647 aerial miles of lines, and 3 miles of underground.

## The Military Telegrapher in the Civil War.

### PART XI.

John Thomas, now deceased, who in 1878 was superintendent of the Cleveland and Pittsburg Railroad, a division of the Pennsylvania Company, wrote from Cleveland, O., to Colonel William R. Plum, the historian of the United States Military Telegraph Corps, in September of that year, in which he referred to his connection with the Union army in the capacity of a telegraph operator. Concerning his early life, he said by way of introduction to his subsequently interesting recital, that he learned to telegraph in 1852 at Poughkeepsie, N. Y., in the office of the New York, Albany and Buffalo Telegraph Company. Going thence into the service of the Erie Railroad as a telegraph operator, promotion soon advanced him to the position of division operator with headquarters at Jersey City. In 1856 he was appointed telegraph train despatcher on the Michigan Central Railroad at Kalamazoo, Mich., a position he continued to hold for seven years, when, yielding to the patriotic enthusiasm of the time, he applied for an indefinite leave of absence with the avowed intention of joining the army, seeking service in its telegraph department. He writes:

"My preference was for the signal corps, of whose work I had heard considerable, but I determined first to enter, if possible, the telegraph department, where I felt that I could be useful at once. Going to Washington in the fall of 1863, I there met Major Thomas T. Eckert and David Homer Bates, with both of whom I previously had corresponded. My first assignment was at the War Department, where I remained for a comparatively brief period. Here much occurred of a nature to interest me, for I was brought in close touch with government matters and had a constant and realizing sense of how vast and important the army telegraph was. Soon after I had entered upon my duties the gubernatorial election in Ohio occurred, in which John Brough and C. L. Vallandigham were the opposing candidates, an event which stirred the country profoundly, for the contest was regarded as a test case showing the relative strength at that time at the North of union and disunion sentiment, Vallandigham representing the so-called "copperhead" element. It was an election in which Edwin M. Stanton, Secretary of War, an Ohio man, was intensely interested. On the night of the election we operators were kept at the key receiving the returns until a late hour, the bulletins as they came in being handed to Mr. Stanton. He was particularly anxious to know how Steubenville, his home town, had gone. About 12 o'clock, after sufficient news had been received to indicate that the people of the Buckeye State were loyally supporting the cause of the Government, and that, too, by overwhelming majorities, the secretary invited all of

us operators, a tired lot, for we had worked incessantly all of the long evening, to partake of a luncheon served in one of the rooms of the department. It really was a fine spread, and the secretary himself presided. Mr. Stanton was by nature testy and imperious in manner. On this occasion he was most gracious, the cheering news from Ohio having the tonic effect of calming an irritability too frequently his characteristic. Major-General Halleck, Major Eckert and several other prominent men were also present at the midnight repast.

"Soon after this I was assigned to duty at Alexandria, Va., at which point was located the headquarters of the management of the United States Military Railroads. Here I met my old friend, J. M. McCrickett, who at that time was train despatcher on the military railroads. He formerly had been an operator on the Michigan Central Railroad at a time when I was train despatcher. Now in the changed conditions our positions were reversed. But that fact made no difference in our relations, for we were good friends. I was mighty glad to see him and he gave me a hearty welcome, and we were soon working most amicably together. Here I also first met J. H. Devereaux, superintendent of the military railroads. Other co-workers in the railroad field were O. M. Dorrence, G. M. Huntington, A. H. Holden and Messrs. Glasscott and Power, fine fellows all of them, and I can truthfully say that the telegraphic service rendered along the lines of the military railroads of Virginia at that time was superior in every way, although the duties required of the operators were arduous in the extreme. But we were there to serve the cause of our country.

"When I first reached Alexandria our army was in retreat, and all locomotives and cars had been brought to that point. The telegraph offices out along the several lines of railroad were closed and the operators had been recalled to headquarters. In the course of a few days, however, fortunes changed, the enemy were driven back, railroad service was resumed and the operators returned to their deserted posts. The military telegraphers, who were an intelligent body of men, were always alert, attentive to duty, fearless, frequently performing their work under the most perilous circumstances. In almost every case one call was sufficient to raise any office. I have had much experience, but never knew men more prompt.

"Mr. R. N. Rice, of Detroit, general superintendent of the Michigan Central Railway, had obtained for me from Governor Blair, of Michigan, a letter to the Secretary of War, requesting that I might be appointed to a position in the signal corps of the army. I had taken some steps, after consultation with Major Eckert, to obtain such an appointment, one of which led to a pleasant interview on the subject with Colonel Albert J. Myer. Finally, in response to orders from the Secretary, I was examined as to



my fitness for admission to the signal corps, an examination which I successfully passed. Reporting to Colonel Myer, I was requested by that officer to remain at the signal corps located at Georgetown Heights, and make a thorough examination of its telegraph apparatus, an equipment that needed a general overhauling. While there I had a tent assigned for my use on the camp grounds. At that time many of the signal officers took their meals at the home of a Southern lady situated near the camp, and I, too, joined the number, and became a 'mealer' at this hospitable board. The good lady positively assured me that at the commencement of hostilities she had been informed and believed that the Yankees had horns!

"My examination of the wires and apparatus of the signal corps promptly convinced me that in order to do effective work not only were some new wiring and Morse instruments urgently needed, but also that the services of some skilled telegraph operators should be secured. At about this time, however, all the telegraph paraphernalia, including all wires, instruments, etc., of this corps were ordered turned over to the military telegraph department. Owing to this state of affairs I deemed it best to return to the military telegraph service, which I at once did, and was assigned to the headquarters of the Chief Quartermaster of Washington, General Rucker. While so stationed I met President Lincoln at one of his evening receptions. He had but just recovered from an attack of varioloid, which I afterwards was taken down with. Whether this was the result of contagion from the President or whether I was a victim of a disease at that time very prevalent at the Capital, I cannot say. While ill I received a letter from J. H. Devereaux, superintendent of United States military railroads at Alexandria, where previously I had been stationed, offering me the position of telegraph train despatcher to be held in conjunction with my old friend, McCrickett. This tender I gladly accepted and as soon as my health would permit went to Alexandria and entered upon the discharge of my duties. This work brought me in close contact with the military operators, between many of whom and myself a warm personal friendship grew up.

"In the early spring of 1864 Mr. Devereaux was appointed superintendent of the Cleveland and Pittsburg Railroad, with headquarters at Cleveland, O. He invited me to accompany him, which, after due consideration, I decided to do, accepting the position of superintendent of telegraph and train despatcher, with headquarters at Wellsville. Since then various changes and promotions have occurred, Mr. Devereaux being called to a post of higher responsibility elsewhere, and I have succeeded my former chief as superintendent.

"My service with the United States Military Telegraph Department, although comparatively speaking somewhat brief, was sufficiently long

and intimate to show me its very great usefulness, and to convince me that not a braver set of men than the operators and linemen could be found in the army."

### **The Interstate Commerce Commission to Guard Security Issues.**

A far-reaching bill for the regulation of future issues of securities by transportation companies and telegraph and telephone companies engaged in interstate commerce was introduced in the Senate on December 9 by Mr. Dolliver, one of the authors of the railroad rate law. It is said that the measure represents the administration view of the subject.

"The measure is designed," said Mr. Dolliver, "to subject the future issues of stocks and bonds by transportation companies, telephone and telegraph companies engaged in interstate commerce to the scrutiny of the government of the United States. It is drawn on the theory that these corporations should be so organized that there should be some just and reasonable relation between their assets and their liabilities. It is intended to prevent for the future over capitalization, stock watering, bond manipulating and all similar abuses, which in times past have brought more or less disrepute upon the management of railway properties. The effect of it will be to give stability to the existing volume of railway securities and at the same time to guard future issues so as to give normal values to stocks and bonds.

"The bill is applicable to all corporations which are subject to existing laws for the regulation of interstate commerce, and, in addition, to telephone and telegraph companies engaged in interstate commerce.

"It is undertaken in the bill to make a standard of legality by which the validity of stock and bond issues may be adjudged. These features of the bill have been drawn without any intention to hinder or embarrass legitimate enterprise, either of railroad building or railroad consolidation."

After defining the standard of legality the bill requires corporations subject to it, when a new issue of securities is proposed, to make a full report of their proceedings in respect to them to the Interstate Commerce Commission, showing the amount and character of the securities it is proposed to issue and the purpose to which the proceeds are to be applied. The bill then provides that the Interstate Commerce Commission, after a full hearing, shall determine whether the proposed issues are in conformity to the act. In case properties are sought to be united full authority is given to the commission to make a valuation of the property in order that the combination may not operate unreasonably to increase the obligations outstanding. It is provided finally that securities issued without compliance with the provisions of the bill shall be considered fraudulent and void and that they shall subject those responsible for the unlawful issue to the penalties of the law.

## Wireless Signaling Through Space.

BY CLIFFORD D. BARCOCK.

The desire of man for an easy and rapid means of communicating between widely separated points is traceable far back into the history of the human race. From those early ages there have been handed down many ingenious attempts to solve the problem, some of which were audible, some visual, and despite their crudeness as measured by present standards, they probably answered quite well the needs of the then existing social conditions.

These primitive means of signaling are still employed in many parts of the world, frequently in the form of signal fires, kindled on conspicuous points, smoke columns, beating of drums, horn or trumpet blasts, etc., while refinements of these methods are in daily use among civilized races under the guise of whistle blasts, bugle calls, semaphores, heliographs, systems of flag signaling, wig-wagging, beams of light, etc.

It remained for Morse with his wire telegraph to solve for the first time in a satisfactory manner the problem of annihilating distance from the signalman's point of view. His answer to the question stood unassailed for years until the advent of the telephone, which quickly forced the slower telegraph with its specially trained operator to share the field with it. These two held undisputed sway for years until the historic work of Heinrich Hertz began to attract the attention of the scientific world to it and its great possibilities in the late eighties.

Investigations of electro-magnetic, or Hertz wave phenomena, progressed rapidly and its commercial application was simultaneously undertaken by able inventors in several countries, and reports of the adaptation of Hertz waves to the wireless transmission of intelligence began to come in from many points. At first distances of a few miles were covered with no great degree of certainty, but soon the same distances were negotiated reliably at all times, then distances across which successful transmissions were made increased by leaps and bounds, until capping all, indubitable evidence was at hand that the Atlantic had been spanned and messages sent over distances in excess of 2,500 miles without the intervention of a man-made conductor.

Soon the equipment of vessels with wireless apparatus was taken in hand in an experimental way, and reports of successful tests were forthcoming, and from this time down to date the art has advanced with rapid strides, until well-nigh perfection has been attained both as to distances covered and reliability of service. Governments throughout the world began equipping their vessels about this same time, and to-day there is scarcely a government boat larger than a tug that has not its wireless installation on board, training schools for operators being maintained by the various departments, from which schools competent men are drafted for the various installations.

The growth of the art from a plaything to a

business need has been rapid and the evolution has been interesting to watch, ample opportunity being afforded by the marked change in the tone of the average message transmitted. Those of earlier dates were largely of the "souvenir" type, something to be preserved as a novelty, while at the present time the messages presented for transmission are of as diversified a nature as are those handled by any one of the old wire-telegraph companies.

The manufacture of the necessary apparatus was taken up and pushed to a high state of mechanical and electrical perfection by two large companies in the United States, each having designs and methods of connecting their apparatus up differing from the other, but both using the same electro-magnetic waves. These manufacturing companies, the United Wireless Telegraph Company and the International Telegraph Construction Company, have not confined their activities to the manufacturing end alone, but have gone much further in that they have organized and still maintain large operating departments which follow as closely as the differences of the services will permit the practices of the old "wire-line" companies. These operating departments have for their ends the transmission and delivery of messages between shore stations, or between ships and shore stations.

To maintain their systems and permit of the establishment of anything like a reliable service, extensive chains of land stations were built, equipments installed on passenger liners and operators put in charge for handling both the official and the commercial business arising on or forwarded to the ship. Arrangements were then effected with the various "wire-line" companies whereby messages are received at any point and transmitted by wire to the nearest wireless shore station, from which they are forwarded by wireless to the ship designated as soon as she is "picked up," her operator accepting the message, transcribing it on a blank and delivering it to the addressee, just the same as happens in the case of a land telegram. In cases where the ship cannot be reached direct, the message is relayed from a vessel nearer the sending station. The process is reversed when a passenger wishes to send a message to some inland point. Thousands of such messages are handled monthly by the company, which practically controls the field in the United States.

Elaborate rules are laid down governing the operation of this service, with the end in view of making it reliable at all times and of avoiding any infraction of the International Radio-Telegraphic regulations. Arrangements are in effect between these companies and the United States Government wireless stations whereby each handles the business of the other when for any reason their own station is unable to send or receive it. Hundreds of commercial messages are thus handled daily and the failures of delivery are not more numerous than is the case with land-line messages.

Down to the present time wireless telegraphy has not proven itself an enemy to wire telegraphy; on the contrary, it has collected and handed to the old companies thousands of messages which they would never have handled had wireless not been in use. Bearing in mind the strides this art has made in the last few years, it would be indeed reckless to make any prophesies as to what the future will develop that may mar this amicable relationship.

It may be truthfully said that up to this time wireless signaling has been developed more with the end in view of satisfying the great need of a means of communicating between ship and ship, or ship and shore, than of signaling across land from point to point, but as the very active demand for marine equipments is gradually met, no doubt but inventive ability will be directed to solving the many problems which present themselves in cross-country work when it is undertaken on a commercial scale.

In many instances wireless land stations are already doing most creditable work. This is particularly the case where the local conditions are such as not to warrant the erection of wire lines, or where their erection and maintenance is not possible. A beautiful example of such a case is afforded by the stations installed and operated by the Signal Corps of the United States Army in Alaska. Here was a territory demanding a reliable means of communication with the outside world, whose climate at all times made the usual means of telegraphing impossible, as neither wire lines nor cables could be built or installed, or if erected could not be maintained. The only solution to the problem involved was wireless telegraphy and the Army Signal officers have applied the solution so successfully that uninterrupted communication is maintained, and a service established that is as reliable in all respects as a wire service of equal length would be in any part of the world. A less pretentious field of cross-country signaling is being rapidly opened up by the same arm of the service with its beautifully worked out portable field sets. The designs of these wireless "Lilliputs" is such that they can be knocked down and packed for mule-back transportation in a few minutes. Particularly ingenious among the features of these sets are the sectional masts, the joints of which are modeled after the bamboo, such construction lending itself to the production of a mast of ample strength, the weight of which is so insignificant that a detail of four men can raise and guy it in less than ten minutes.

The effective range of one of these portables is from twenty-five to thirty miles, which may under favorable conditions run up to even fifty miles. These sets are suited for all classes of wireless work where portability is an essential feature; larger sets are made for wagon transportation and become what might be called semi-permanent. They receive their power from a small direct connected generating set, which can

also be utilized for charging the storage batteries used with the smaller field sets; larger masts being practicable with the wagon sets, the range over which they are operative is much increased and might easily reach one hundred miles.

It does not seem possible to tell in advance what range a wireless installation will have. On many occasions a set having a power consumption of six-tenths of one horse-power has held uninterrupted communication between Cape Hatteras and a station located on the roof of 42 Broadway, New York City. It is the usual practice to install 1 kilowatt equipments on the coasters which run between New York and Atlantic and Gulf ports, but no rule can be laid down as being more than approximately correct as to the size of an equipment needed to cover certain distances.

Great changes have been made in the way of simplification of the apparatus. We no longer see the cumbersome coherer with its complicated tapping mechanism and tape recorder; in its stead the operator receives the message on a pair of head telephones which are actuated by the simple crystalline receiver.

The transmitting apparatus is much the same as that first used, and consists of a high-tension transformer giving a secondary voltage of from twenty-five to thirty thousand volts, used to charge a condenser, usually a battery of Leyden jars, which condenser in turn discharges across a spark gap, a suitable impedance coil of a few turns being in the circuit for the purpose of establishing the frequency or length of the waves given off from the aerial wires; in other words, to establish the "tune" of the set.

In large installations it is customary to substitute plates of glass coated with tinfoil and immersed in oil for the Leyden jars, and in rare instances plates of glass are used without the oil insulation. Another type of condenser which promises many advantages is made up of a large number of small glass jars filled with water and immersed in a tank also containing water.

The transformer is in all instances supplied with an alternating or with an interrupted current, which it steps up from a relatively low voltage to one of several thousand. In portable sets it is the custom to supply a constant current from a set of storage cells and to interrupt in many times each second by vibrator, but a better practice, and the one most generally followed, is to generate an alternating current which is led directly to the transformer through a key. In many cases the alternating current can be tapped directly from the supply mains, but on shipboard motor-driven generators are installed, which the operator starts up whenever he wishes to transmit messages.

The key used to brake the primary current is in no wise different from the regular telegraph key, except as to the size of the contact points, which are so proportioned as to handle the

greater currents employed, any of the recognized telegraph codes are used; the Morse is standard in the United States.

Electro-magnetic, or Hertz waves, are rapidly oscillatory in character, which peculiarity enables them to induce waves of a like nature in distant conductors when the circuits attached thereto, both sending and receiving, have the same natural periods of oscillation. Much the same phenomenon is familiar to us in the case of sound waves and is spoken of as "sympathetic vibration," but if the radiating and receiving circuits do not possess the same period then no vibrations are set up; in the latter this characteristic is the one availed of in tuning or syntonizing, and makes it possible for many stations to be sending at the same time without interfering with each other.

Each receiving equipment includes a tuner, which can be so adjusted as to allow the operator to vary the natural period of vibration of his circuit and so cut out stations which he does not want to hear, and each transmitting station can vary the period of its vibrations by changing the number of turns in the impedance coil through which the current passes on its way across the spark gap. Were "tuning" not possible the field of wireless utility would be greatly restricted, as every station would interfere with every other one within its operating radius and no messages could be received, as the installations within working distances of each other are, as a rule, far too numerous to permit getting out anything like an operating schedule for each station.

Navies and all maritime interests find in wireless telegraphy the most valuable means of signaling at their disposal, a means whose effective radius is not measured by the range of audibility, not bounded by the horizon, but dependent only upon the amount of energy impressed upon and radiated by the aerial wires. With the equipments as usually installed this distance runs up into the hundreds of miles and larger units are under consideration, the idea being to more than double the distances over which messages can be reliably exchanged between ships or ships and shore stations.

To operate in conjunction with these long-range floating installations higher power shore stations are being erected, all of which points to the probability that the present generation will witness such a marvelous annihilation of distance, from the signaling point of view, as to allow of communication between a high power station and any vessel, regardless of location, at any hour of the twenty-four. Such tremendous extensions to the ranges of practical signaling mean a very general revision of the rules governing the movements of both naval and merchant vessels.

Shipowners find wireless telegraph service of great value to them, as it makes it possible for the home office to get in communication with its vessels when at sea, or allows the vessels them-

selves to call up the management for instructions or for aid when disaster of any kind befalls them. A lost propeller no longer means rolling at sea for days at a time until picked up and towed into port by some ship chancing to pass near-by. A wireless equipment means the ability at hand to call for assistance from the owners, who can direct that a tow be sent to render the needed assistance without loss of valuable time.

The item of salvage saved in the case of a screw lost at sea meets the cost of the wireless equipment many times over, a fact which the marine underwriters will doubtless soon recognize in the form of a substantial reduction in rates for insurance of vessels equipped with apparatus of any of the recognized standard designs. Furthermore, it can be a matter of but a short time before no passenger permit will be granted to ships unless a wireless set be part of the fixtures installed for the insurance of the safety of the passengers, just as life-saving appliances are now insisted on in the form of rockets, rafts, life buoys, etc.

Many other uses for these same waves have been found and the suitable apparatus developed for these purposes to a high state of perfection. For instance, the United States Navy Department sends out the time automatically every noon so that all ships may adjust their chronometers, a service for which there is of course no charge. The Weather Bureau now receives reports as to meteorological conditions at sea, such being sent in by both navy and merchant vessels, while storm warnings are of course sent to sea from the navy shore station. The positions of storm-centers, icebergs, derelicts and other menaces to navigation are passed from ship to ship and many a disaster and delay thereby avoided.

The Treasury Department is installing stations on all of its revenue cutters, so that no time be lost by them in responding to calls for help. Wireless telegraphy will prove of great value on the derelict destroyer about to be put in commission by this same department, as she can reach the point where the wreck was last seen without waiting for the ship to dock and send in the report through the old channels.

The passengers on most liners are furnished with the daily news in the form of bulletins which are posted from time to time, as these in many instances include stock market quotations, and it is not at all uncommon for a passenger to send a message instructing his broker to take some certain action in regard to a stock transaction.

Reliable hand-operated devices adopted by these companies indicate the distances between ships or between ships and land, allowing ample time for a change of course so that collision or grounding can be avoided, while others with the same ends in view are automatic in their nature. These devices, depending as they do upon the rate at which sound travels through the air, are not effective over great distances, but as foul

weather calls for reduced speed there is time in which to alter a ship's course. The general procedure in one type of these safety devices is to sound the whistle and start a wireless wave at the same time. The listener notes the time clapping between hearing the two sounds, one through the wireless receiver, the other through the air; a table shows at a glance how many fathoms the sound has had to travel to consume the time that elapsed between hearing the two messages. The enormous speed at which the Hertz waves travel makes it quite unnecessary to consider them other than instantaneous in this case.

Self-propelling dirigible torpedoes have been constructed and their practicability demonstrated. They contain the necessary switching devices and relays to allow them to be started, stopped, steered and exploded at the will of the officer in charge. "Wireless" is waiting to perform the same service for a dirigible airship and compel it to drop its deadly charge on ship or camp. Mines can equally well be fired without the complicated cable systems now used, which fall such an easy prey to the grapples of the enemy or the motion of the waves.

Certain dirigible torpedoes made in this country for a foreign power answered perfectly to their control mechanisms over distances up to six miles; they had airdisks supported by masts fifteen feet above water and only two inches in diameter, dimensions which proved very difficult to see even at short distances.

### C. J. Mar, Head of the Hearst News Service.

Curtis J. Mar, executive head of the Hearst News Service and the Hearst Syndicate, is a newspaper man of fine training. He is acquainted with all departments of the business, for when a boy he began at the bottom, and has familiarized himself with every department in his upward climb. His first editorial position was that of telegraph editor on the New York Press, when that journal was started in 1887. Subsequently he became city editor of the Star, and later, when Frank Munsey secured control of that paper, Mr. Mar became managing editor. After this, and for three years, he was interested in a managerial capacity in the theatrical business, during which time he wrote and produced a play of his own. This occupation took him into all parts of the country, gaining for him an experience the educational value of which was pronounced. Returning to the newspaper field, his first engagement was with the New York World, afterwards becoming city editor of the Journal. Special writing and syndicate work next engaged Mr. Mar's attention, in which occupation he displayed much aptitude, so that when he was called to take charge of the Hearst interests, as already noted, he brought to the position a mind trained and ripened for that special character of work. Under his fostering care the Hearst service has assumed large proportions, country wide in extent, and rendered with a high degree of care and faithfulness.

### The Oliver Typewriter.

The Oliver Typewriter Company presents on an advertising page elsewhere in this issue numerous tangible reasons embodied in a bold announcement, why the typewriting machine of that name is commending itself to the use of telegraph operators, and why it is steadily gaining in favor as a telegraphers' "mill." The reasons set forth are certainly cogent ones, will attract attention, and must appeal with much force to intending purchasers.

In the first place the Oliver is a "visible writer," thus conforming in this respect with the recognized modern requirement in a first-class machine. It is not lacking in other essentials, for it is equipped with such conveniences as the balance shift, ruling device, double release, locomotive base, automatic spacer, automatic tabulator, the disappearing indicator, adjustable paper fingers and the scientific condensed keyboard, all contributing to efficiency in model, and to make the machine one of much desirability. In a summing up of its virtues a paragraph in the advertisement of this machine reads: "Simplicity, strength, ease of operation, and visibility are the corner-stones of its towering supremacy," not omitting to further state that it "writes in an undertone."

The company make a special easy payment proposition to telegraph operators, calling for but a small cash advance payment and expressing a willingness to trust the buyer for the remainder of the purchase under a system which it terms a "seventeen-cents-a-day plan," regarding which correspondence is invited with the home office, 104 Oliver Typewriter Building, Chicago, or the nearest agent of the company.

### Mercadir's Multiplex Telegraphy.

In the multiplex telegraphy of Mercadir, says a French contemporary, several alternating or undulatory currents are used on the line at the same time. These currents differ in wave length, and as signals are sent by electro-magnetic vibrators or tuning forks, they are received in monotelephones or vibrating plates, each responding only to impulses of the period of one of the vibrators. The Morse signals are not only heard in an ear tube, but if necessary they can be made to register as well. For this a delicate lever is placed against the telephone disk, and as the disk vibrates the lever is repeatedly repelled, making contact for a local battery circuit through a Morse or Hughes register. Such a device is the mono-telephonic relay. In a late trial over a 540-mile line between Paris and Marseilles, six Hughes instruments and six mono-telephone relays were used at each end, and twelve different messages were sent over the same wire at once. Two instruments using direct current were also operating on the line. There was no interference, and it is believed that a much larger number of messages can be sent simultaneously, although its commercial value is yet to be demonstrated. Theoretically, however, it gives evidence of possible utility.

## Early Days Of Telegraphing.

BY G. C. CHENEY.

(In the Rochester Post-Express.)

Telegraphing which has become of world-wide importance commercially has had a comparatively short life. The first line through the state from New York to Buffalo was completed in 1846, and the first office in Rochester was opened in the basement of the Hotel Congress Hall, June 1, 1846. The line was built by the New York, Albany, and Buffalo Company, and was called the New York, Albany, and Buffalo Telegraph Company, with headquarters and offices at Utica. The opening of the office here was an eventful and exciting day in the city. When the machine was connected and the operator had adjusted his relay, Albany called him up and asked, "Do you hear me?" When Rochester answered, "To be sure I do," Albany quickly rejoined, "Ha, ha! Dr. Tichnor, give me your hand!" These words communicated to the crowd, were caught up by the excited spectators and passed from mouth to mouth, and the telegraph and the mysterious hand-shaking were on every lip. The morning papers teemed with vivid descriptions of the machinery and the influence which the telegraph was to exert on human history, socially and commercially.

Finding that Congress Hall was too remote from the business center, the office was shortly moved to the west gallery of the Reynolds arcade, and occupied at the head of the stairs the room later in use by George T. Clarkson as a tailoring establishment, and I have good reason for remembering the next location of the office, as will be seen.

In the year 1850 or 1851, I visited Rochester for the first time. With a party from Oswego, on a Saturday afternoon, by boat on the lake, we came to Charlotte, intending to return the same evening by the down boat, which we expected to meet at Charlotte; but reaching there and learning that the boat had gone up the river to the Upper landing, we drove there just in time to miss the boat on its return to Charlotte and Oswego. This compelled us to remain in Rochester over Sunday. We took rooms at the Eagle Hotel, which occupied the grounds where now stands the Powers block. On Sunday morning I went out in search of a church and very promptly I discovered the Third Presbyterian Church, where now is located Maurer's grocery on East Main Street. Here for the first time I listened to a sermon by Rev. Dr. Hall, one of the pioneer ministers of the city. After dinner I went out again in search of something new and was not long in reaching the entrance to the Arcade, where many people were going in and coming out. I joined the crowd and as I entered, a sign revealed the location of the telegraph office. It had been moved from the gallery to the room on the lower floor, west side, later occupied by D. M. Dewey as a bookstore. The ocean had not yet been spanned

by cables and news brought by steamers was of great importance. A steamer had just arrived and the office was filled with newspaper reporters receiving the news. It was being read to the reporters by a repairer whose knowledge of telegraphing was too limited for his position as reader, and it being Sunday the manager was not on duty. By my occasional assistance in the reading, I was recognized as an operator and the reporters insisted upon my assuming the place as reader, with the result that I was so occupied till the evening. This report covered a full page in the morning papers.

The next move of the office was to the first room south of the postoffice, on the east side of the hall, where was already the office of an independent line, extending to Dansville, with offices at Avon, Lima, Mt. Morris, Geneseo, and Cuylerville. This line was leased by the New York, Albany, and Buffalo Company in 1851, and later the New York, Albany, and Buffalo Company took possession of the office of the Genesee Valley Company and occupied it for over thirty years, or till the postoffice was moved to its present quarters.

It was in this room thirty years, from 1852 to 1882. After a few years we occupied the room over the office for an operating room, but later Mr. Reynolds built us an operating room, one story above, on the roof, and our instruments and switchboard were installed there till the removal of the office to the postoffice rooms.

The first daily report to the papers by telegraph was received January 1, 1847. The New York, Albany and Buffalo Company became a part of the Western Union on January 1, 1864.

(Mr. Cheney was manager of the Rochester telegraph office for thirty years, retiring in 1880.—Editor.)

As a verification of the above it is interesting to note the appearance in the Rochester Democrat and Chronicle of December 1, 1908, the following republication from the columns of the Democrat of that date, 1863:

**LOCAL:** At a meeting held at Utica the stockholders of the New York, Albany & Buffalo Telegraph Company ratified the consolidation with the Western Union Telegraph Company. Rochester was made headquarters, with Edward Chapman, of Rochester, secretary.

Mr. J. C. Browne, general foreman of construction, Missouri Pacific Railway Company, St. Louis, Mo., in renewing his subscription, writes: "Telegraph Age has become an absolute necessity for every man in our business. It surpasses many other journals devoted to a specialty by giving all the up-to-date telegraph news, as well as other important items of general interest."

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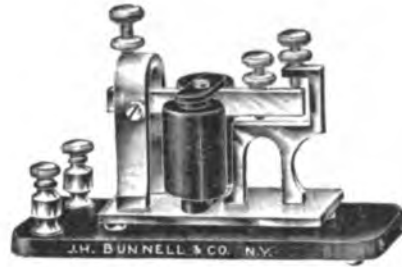
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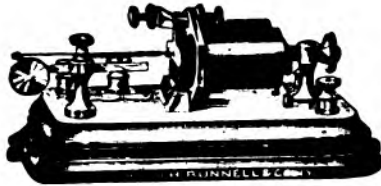
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## Association of Railway Telegraph Superintendents.

MEETING OF WESTERN SECTION IN ST. PAUL.

The quarterly meeting of the Western section of the Association of Railway Telegraph Superintendents, held in St. Paul, Minn., December 14-15, 1908, was one of the most numerous attended and successful gatherings of the kind that ever assembled. From beginning to close it was instinct with interest and animation, for the subject that was uppermost in the minds of those in attendance was that of train despatching by telephone, and which was the principal topic of discussion. That the question is one that appeals vitally to railroad operating, holding closely the attention of the telegraph superintendents, was abundantly manifest by the presence at the meeting of a number of eastern representatives. The meeting was held in the rooms of the Transportation Club, where also there were exhibited four of the principal systems of telephone train despatching apparatus, namely, the selector invented by Mr. Gill, of the United States Electric Company, New York; that of Mr. Rugh, manufactured by the Sandwich Electric Company, of Sandwich, Ill., and those of the Ray-Cummings and the Groce designs. The Transportation Club, of which H. C. Hope, superintendent of telegraph and signals of the Chicago, St. Paul, Minneapolis and Omaha Railway, is president, in courtesy to the visiting superintendents gave a smoker in the evening of December 14, at which two hundred and fifty railway officials were present. George T. Slade, of St. Paul, general manager of the Northern Pacific Railway, was the principal speaker. He considered at length the comparative value of the telegraph and telephone in railroad uses. In the course of his address, which had the great merits of brevity and pointedness, Mr. Slade gave a brief history of the telegraph and telephone from the first experiments in their use down to the present time. He pointed out that the telegraph was perfected and put into use in 1837, while it was not until 1874, or thirty-seven years later, that Alexander Graham Bell made the use of the telephone practicable. Thus, he said, the telegraph had become firmly established for railroad use before the telephone was heard of, and this, he believed, was the principal reason why the railroads had not previously made use of the telephone.

Another reason which he thought had its weight was the sentimental attachment for the telegraph possessed by many high railroad officials, who have worked their way up from the position of telegraph operator.

One great advantage in the use of the telephone, he asserted, was that it would increase the available material from which the railroads could select station agents and train despatchers. Telegraphy was difficult to learn except by the young, he said, so it happened that most of the operators were men of immature years who did

not feel the same responsibility that older men did. The use of the telephone would also enable the superintendent and train despatcher to come into closer personal contact with the men under them, which would tend to improve the service. It was also proving to be more expeditious than the telegraph, enabling an operator to accomplish more work.

Mr. Slade was followed in a general discussion of the subject by Charles Selden, superintendent of telegraph of the Baltimore and Ohio Railroad; G. H. Groce, of the Illinois Central; William Bennett, of the Chicago and Northwestern, who has lately succeeded G. W. Dailey in that office; P. W. Drew, of the Wisconsin Central; G. A. Cellar, of the Pennsylvania; C. S. Rhoads, of the "Big Four," and F. R. Pechin, general superintendent of the Chicago, St. Paul, Minneapolis and Omaha Railroad. The latter gentleman spoke more particularly on the use of the telephone for train despatching and of the need that existed in the railroad service for skilled operators.

In the absence of E. A. Chenery, of St. Louis, superintendent of telegraph of the Missouri Pacific, the regular chairman, the meeting was presided over by C. S. Rhoads. The principal animating subject of the session, namely, that of train despatching by telephone, was quickly reached, and much discussion on the question followed during the two days of the meeting, in which the members very generally took part. Many, indeed, spoke to the point several times. The question of the desirability of greater newspaper publicity touching this matter was entered into. It was thought that the press should be put in possession of correct information respecting train operating by telephone in opposition to much that is appearing in print of a misleading character, and that the proper channel for the dissemination of such information was the American Railway Association. This movement was especially favored by Messrs. Drew, Hope, Groce, Selden, Cellar and Millington.

It was further moved by Mr. Groce and seconded by Mr. Selden, that a recommendation be conveyed to the General Managers' Association that some competent representative be secured to direct and handle this particular phase of the work. The large cost of telephone equipment was acknowledged, and while it was recognized that general managers from well known motives in the practice of economy favored the keeping down of expenses, still the advantages afforded by the telephone in train despatching were so pronounced that the innovation was not only expedient and wise, but was one bound to come into general use.

It was developed in the course of the discussion that there are interests within the railroads that are strenuous in opposition to the employment of the telephone in detriment, or even auxiliary, to the telegraph, and that such opposition may be carried so far as to be embodied in an appeal to Congress.

Mr. Cellar spoke of the increasing interest manifest within the membership of the Association of Railway Telegraph Superintendents respecting the many and important questions that were coming before that body. It was, he said, difficult to divide and localize interests, apportioning the same to the West and East, as represented in the Western and Eastern sections. Such limitations were too narrow. While separate meetings might be held as matter of convenience, there should be a closer relationship each with the other, and with the parent organization. There should be at least an interchange of minutes of the meetings held in the two sections. In furtherance of this consideration two committees were named, that of the Eastern including Messrs. Selden, Foley and Taylor; the Western, Messrs. Chenery, Davis and Rhoads.

It was thought in view of the growing scope and larger needs of the Association that a revised form of organization might be considered with propriety. It is likely that this subject may come up at the next annual meeting to be held in Detroit on June 23, 24, 25 and 26.

The concluding discussion was one affecting the use of motor cars in connection with the telephone train despatching service, the incidental cost thereof for maintenance, and the question of salary paid to inspectors.

The superintendents of telegraph present were: Charles Selden, Baltimore, Md.; U. J. Fry, Milwaukee, Wis.; C. S. Rhoads, Indianapolis, Ind.; O. C. Greene, St. Paul, Minn.; H. C. Hope, St. Paul, Minn.; E. P. Griffith, New York; W. J. Camp, Montreal; P. W. Drew, Chicago; G. A. Cellar, Pittsburg; G. H. Groce, Chicago; W. W. Ashald, Montreal; E. J. Little, St. Paul; H. A. Tuttle, Minneapolis, Minn.; J. G. Jennings, Chicago; J. B. Sheldon, Omaha, Neb.; E. H. Millington, Detroit, Mich.; S. K. Bullard, Sedalia, Mo.; Wm. Bennett, Chicago; A. Hatton, Winnipeg; E. Parsons, Chicago; Percy Hewett, Houston, Tex.; R. L. Logan, Kansas City, Mo.; H. D. Teed, St. Louis; B. Weeks, Memphis, Tenn.; E. E. Dildine, St. Paul, Minn.; E. A. Patterson, Milwaukee, Wis.; Geo. S. Stewart, Willmar, Minn.; J. H. Taylor, Superior, Wis.; C. A. Christoferson, St. Paul; Geo. Boyce, St. Paul; Val. B. Mintun, Kansas City, Mo.

A number of supply men were also present.

#### The Railroad.

The Erie Railroad is putting up a telephone line for use in train despatching between Meadville, Pa., and Corry.

The Northern Pacific, which for some time has been despatching trains between St. Paul and Fargo by telephone, is about to put in telephones on other portions of its line.

The telephone service on the Erie and Ashtabula division of the Pennsylvania Lines is to be improved. Every office is to be equipped and a central operator will be put in charge.

The New York Central, which has for some time used telephones for train despatching between Albany and Syracuse, is installing apparatus for the extension of the telephone despatching system from Syracuse to Buffalo, about 150 miles.

Mr. G. W. Dailey, who was recently promoted from the position of superintendent of telegraph of the Chicago and Northwestern Railway, to the superintendency of the Wisconsin division, in a recent letter says: "I wish to say that in my past work I found Telegraph Age of very much value and interest, and was well worth the subscription."

A telephone and train despatching circuit has been completed over the Morris and Essex division of the Delaware, Lackawanna and Western Railroad. This embraces the section extending from Hoboken to Phillipsburg, crossing the State of New Jersey, a distance of seventy-eight miles. At each of the twenty-two stations therein a selector has been installed.

The Great Northern has telephones installed for train despatching on the Minot division from Devil's Lake to Williston, 239 miles, and the telephone system is to be extended from Williston to Culbank, Mont., over the Montana division, 437 miles, and also on the Butte division, 507 miles. As the Great Northern is now despatching the trains on its Willmar division, 203 miles, by telephone, this will give a grand total of 1,386 miles of line.

The Union Pacific is erecting a telephone line to be used in train despatching from North Platte, Neb., westward to Sidney, 123 miles. This line is all single-track and is equipped with automatic block signals. At the three sidings where there are no stations booths are to be erected in which there will be telephones, available for the use of conductors, who can thereby call upon the despatcher for instructions whenever necessary. Each of these booths will have a train order signal, connected electrically with the despatcher's office, so that he can at any time put the signal in the stop position for the purpose of stopping a train. These train-order signals will be kept lighted night and day, acetylene lamps being used.

The Michigan Central Railroad for the past six weeks has been despatching its trains by telephone on that portion of the double-tracked main line between Detroit and Jackson, Mich., a distance of seventy-six miles. A similar service has also been established on the single track from Detroit to Saginaw and Bay City, covering one hundred and twenty-five miles, while the new system is about ready to be put in operation on the single track between Detroit and Toledo, Ohio, a sixty-mile section. Mr. E. H. Millington, superintendent of telegraph of the Michigan Central Railroad system, states that the service rendered is of a highly satisfactory character; that it meets with the appreciation of the train despatchers, and that the operators declare heartily in favor of the method, appearing well pleased with results attained.

William Bennett who has lately been appointed superintendent of telegraph of the Chicago and Northwestern Railway, with headquarters at Chicago, succeeding G. W. Dailey, as announced in our issue of December 16, offers another instance of successive and successful promotion of an intelligent and progressive man in the railroad service. Born at Mazomanie, Wis., May 14, 1857, Mr. Bennett entered the telegraph service as a messenger, December 7, 1869, when a lad of twelve, at Janesville, in his native state. Learning to telegraph, he soon became an operator, subsequently and in sequential order filling the various positions of clerk, train despatcher, train brakeman and conductor, trainmaster, assistant division superintendent, division superintendent, and superintendent of telegraph, bringing to the discharge of his new duties a mind well trained by long experience.

#### A Lincoln Incident of the War Department Telegraph.

EDITOR TELEGRAPH AGE:

David Homer Bates' splendid article in the Century magazine entitled "Lincoln in the Telegraph Office," which has been printed in book form, recalls to my mind many interesting events

dent spent much of his time, in order that he might without delay be in communication by telegraph with the commanding general of the Army of the Potomac, and other army commanders, so as always to be in ready touch with the latest news from the front.

I remember on one occasion that one of the cipher operators came into the operating room and asked me to call up "Mc," which was the signal or call for "Headquarters Army of the Potomac," and request General Meade to come into his office, and then to ask him, in President Lincoln's name, if he could see, smell or hear anything. General Meade quickly complying, understood this terse but searching request, and minutely described the situation of the enemy on his front; how and where his own troops were located; in fact, furnishing all the information in his possession. His reply covered four pages of letter-size telegraph blanks. President Lincoln, being anxious for the news, came in and looked over my shoulder, as I jotted down the perfect "Morse" transmitted by A. Harper Caldwell, chief operator, Army of the Potomac.

JAMES HERVEY NICHOLS.

Denver, Colo., December 21, 1908.

Mr. L. H. B. Robinson, of Algomah, Calif., in a recent letter states: "I find much of interest in



THE "73" CARNEGIE DINNER, HOTEL MANHATTAN, NEW YORK, NOVEMBER 27, 1908.  
Given by the Old Time and Military Telegraphers in Honor of Mr. Carnegie's Seventy-third Birthday.

(Courtesy of Leslie's Weekly.)

that came under my observation during the strenuous times referred to. President Lincoln spent a good share of his time at the telegraph office of the War Department, which was located near the office of Secretary of War Stanton, a small room intervening, through which the operators found ingress and egress when going on and off duty. The small room was occupied by General Eckert and the cipher operators, where the Presi-

every issue of Telegraph Age; always something new. I wish the paper came weekly at five dollars per year."

Telegraph Age constitutes a "school of instruction" to every would-be telegrapher. It is accurate and authoritative and worth many times the price of subscription (\$2.00) to any who would inform themselves respecting the telegraph.



### The Gill Selector.

(Contributed.)

At a time like the present when the despatching of trains by telephone in preference to telegraph has proven itself sufficiently superior to have won the endorsement, not only of the railway telegraph superintendents, but also that of the American Railway Association, it will be interesting to consider when and by whom this work was begun and carried on, and by what means it was made possible.

The complexity of the code signal ringing by telephone with all its well known attendant disadvantages had made the general use of this instrument for train despatching impracticable until selective calling was applied to the telephone lines by Edwin F. Gill, electrical engineer of the United States Electric Company, of New York, and inventor of the Gill selective devices. Mr. Gill was the originator of the selective art and the first to put it into actual use on the railroad telegraph lines.

At the convention of Railway Telegraph Superintendents held at Atlantic City in June, 1907, an exhibit was made of the Gill selective devices by the United States Electric Company, which strongly appealed to the railway telegraph superintendents. Superintendents Taylor and Van Akin, of the New York Central, were especially quick to grasp the great advantages which the selector when used in connection with the telephone would give the railroads in train despatching. The United States company realizing their opportunity offered to equip on trial an entire train dispatchers' circuit with its devices, as applied to the telephone. This offer was shortly after accepted and so the first train dispatchers circuit ever operated on a steam railroad by the telephone and selectors was put into actual service between Albany and Fonda, N. Y., a distance of about forty-four miles, on the main line of the New York Central Railroad, about October 1, 1907, connecting sixteen stations. This circuit was afterwards extended to Little Falls, twenty-eight miles further, and eight stations were added. This service has been continuous since that time, reliable and satisfactory, and the Gill selective devices have been accepted and paid for by the New York Central Railroad Company. On November 13, 1908, Superintendent Taylor reported that there had been no failure on the part of any selector to work since the preceding May. The suggestions and efforts of the United States Electric Company toward the improvement of the service have always met with the heartiest co-operation of the railroad superintendents in charge. Such co-operation has resulted in entire success which is a great satisfaction to those who have been the pioneers in this far-reaching and now successful movement, demonstrating the truth that the telephone with the selector for calling, is decidedly superior to the telegraph for train despatching purposes.

The Gill selector is an instrument designed to

furnish an absolutely reliable and speedy method of calling any station or group of stations on any telegraph or telephone line. Its operation is not limited by distance, nor by the number of stations upon a line. It operates effectively so far as it is possible to transmit an ordinary telegraph or telephone message. The Postal Telegraph-Cable Company in Boston call up their operator at Buffalo with a selector, a distance of about 500 miles. The Delaware, Lackawanna and Western Railroad Company has its longest circuit on its main lines of 203 miles from Binghamton to Buffalo equipped with telephone and Gill selectors for train despatching. There are forty-five stations in this circuit, and the train dispatcher who is located at Buffalo can call any station he wishes of these forty-five without confusion and with absolute certainty.

When a station is called by means of the Gill selector the bell at that station, and no other, rings continuously until the operator answers or until the one who has made the call causes the bell to cease ringing. This feature, namely, the power to ring the bell as long as the dispatcher wishes, is a great time-saver to the sender of the message, one call being sufficient, and is especial-



AUTOMATIC CALLING DEVICE FOR TRAIN  
DISPATCHERS' OFFICE.  
(Cover Removed.)

ly advisable in offices when the person called is not always close to his telephone or telegraph instrument. Moreover, in stations which are not being called the use of the selector does away with the distracting noises, such as repeated calls on the telegraph instrument or the ringing of telephone bells when a code system of ringing is employed. An "answer-back" signal is automatically given to the sender when the station receives its call. This is of great value, as it proves to the dispatcher that the selection has been made and the bell is ringing.

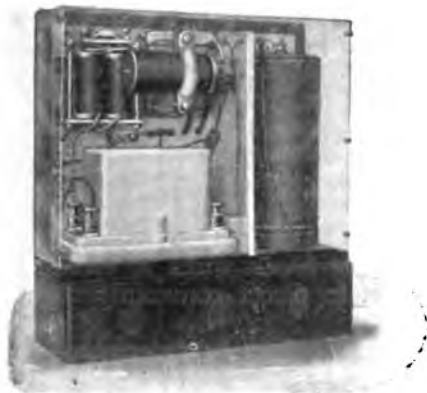
As an emergency call, in an office where the wire business hardly warrants an operator's services for twenty-four hours each day, the operator can be called on emergency at night from his home by a selector bell placed in his sleeping room.

The Gill selector is also being used to call operators at points where it is necessary to test the condition of the lines, as for instance, on the commercial lines of the Canadian Pacific Railway, where seventy-five test points from Montreal to Vancouver are equipped with Gill selectors. In connection with the automatic answer back, the se-

lector furnishes a quick method of testing the line condition, and of locating trouble, if any, even if the operator in the office called should be absent, for the answer-back signal coming to the sender of the call from any office proves that the line to that point at least is in good condition.

The use of this selector reduces operating expenses by enabling the despatcher of a message to get his operator quickly, and in the case of train despatching the time of delay of a train and crew waiting for orders is thus put at a minimum. On one of the large trunk lines the time of running of freight trains, a distance of two hundred miles, is stated to have been cut down two hours since the Gill selectors have been installed in connection with the telephone for train despatching.

Besides ringing a bell the selector has been adapted for use in throwing the arm of a semaphore when for any reason the despatcher desires to stop a train at any point or office on his line. The advantage of this safety device in emergency is evident when the train despatcher is made aware of danger to his train of which



SELECTOR BOX—OUTFIT COMPLETE.  
(Cover Removed.)

its own crew are ignorant, and from which they could not otherwise escape. It has been stated that if one of the southern roads, which lost its president in a collision a few years ago, had had its lines equipped with semaphores operated by selectors there would have been no accident.

By the use of the selector to work a special signal arm in the semaphore, the train can be stopped for orders at an office where there is no operator. The conductor by a key can have access to the telephone at such a closed station, get his orders from the despatcher quickly and go on.

In addition to the use of the selector on all the great steam railroad and telegraph lines, it may be used advantageously on the electric roads all over the country, largely in connection with the telephone and semaphore in despatching. With this end in view, the United States Electric Company gave an exhibit, October 12 to 16, 1908, at the Convention of the American Street and Interurban Railway Association, at Atlantic City, N. J., which was very well received. The commercial telegraph companies are finding it valuable as a calling device, and it opens up for them

a new use for the telephone on their lines. Telegraph companies can use this device in connection with the telephone to gather up messages, (and in many instances are planning so to do), transmit them over long distance lines with their automatic telegraph machines to terminal points, from which they may be distributed by telephone. By a little figuring of actual results of a test installation of this character in any district, an estimate can be made plainly showing an increase in net income, together with a more complete and satisfactory service to the public.

The United States Electric Company is prepared, with the co-operation of the telegraph companies, to furnish its part of such equipment and make such demonstrations as may be necessary without charge. It is prepared, also, not only to supply merely the selective equipment to the railroad, telegraph and telephone companies, but to finance even the building of the lines, and equip them with telephones, to demonstrate the full value of their device to such companies, when such financing is necessary to make the demonstration.

In brief it is fair to assume, first, that the Gill selector ultimately will be generally used on the commercial lines in the United States, both telegraph and telephone; second, that it will be generally used in all the railroad offices in the United States, and in many cases two selectors will be required in each office, one on the message wire and one on the despatcher's wire; third, that it will be generally used on the electric railroads throughout the country; fourth, that it will be generally used on both steam and electric roads in connection with the semaphore for signaling.

The number of selectors which will be required in these several fields in the United States will, it is believed, reach 750,000.

The United States Electric Company, which is the sole owner of the Gill selective devices, has its New York office at 95 William street. Besides the New York Central Railroad, which was the first to use the selector for telephone train despatching, the following are some of the roads where the selector has been installed and is in constant operation, namely, Canadian Pacific, Lake Shore and Michigan Southern, Delaware, Lackawanna and Western, Pennsylvania, Southern Pacific, Northern Pacific, Baltimore and Ohio, and the Illinois Central.

The company opened an office in the Monadnock Building, Chicago, October 1, 1908, which is in charge of a thoroughly experienced salesman and electrical engineer, M. E. Launbranch.

The company owns controlling patents on all of its devices. The patents are basic. It has a working sales arrangement with the Western Electric Company. It is now manufacturing all its machines in its shop in connection with its offices, at 95 William street, New York City, but has been obliged owing to increase of business to place a large order for selectors with another large electrical manufacturing concern, which is well known on two continents.

### Train Despatching By Telephone Not a New Idea.

While railroading by telephone seems like an innovation, it was really put into serious use thirteen years ago, remarks the New York Sun. It was then adopted by the Terminal Association at St. Louis, which in 1895 erected a new Union station with twenty-odd tracks running north and south, all of which had to be available for trains running east and west. To complicate matters all trains had to back in, making it necessary to focus all the tracks in the station at one point, from which a number of tracks curved east and west to meet the main lines.

This arrangement required a complex system of switch movements to permit a train coming from the east or west to be switched to any of the station tracks. The handling of heavy traffic offered many opportunities for mistakes and delays in the passage of trains. The telephone was not adopted until several other plans had failed, and then this scheme, which is still in operation, was tried.

The man who directs the trains is stationed in an interlocking switch tower just beyond the crossover. From his desk he can see all the tracks entering the station, and also all the east and west main lines. He is connected with telephone lines extending along the main lines for several miles in either direction and receives over these wires reports of the movement of trains as they enter or leave the yards.

These reports are made by switchmen stationed at various points who control the switches on the main line tracks. By giving them instructions the train director can shift the outgoing or incoming trains at will before they have reached or after they have left the terminal.

The train director is able to clear the station tracks for incoming trains in sufficient time to permit them to enter without delay. He is connected with the station master's office, so that the station master can be notified of the arrival of trains when they are still some distance away and shift the station force to take care of them.

The station master can stop the movement of a train even after it has started, as the train director can set the necessary stop signals before the train has left his control. By having the movement of all trains and switches in this terminal under the control of the train director over 700 trains a day are handled.

When the system of despatching trains by telegraph is abandoned, if ever, there will be an end to an institution that was started in 1850. The use of the telephone for this purpose has been objected to on the ground that it is not as accurate as the telegraph owing to the similarity of sounds of different words, letters and figures. The adoption of the telephone at this time is indication that this trouble has evidently been overcome.

One road that has been using the telephone for years is the Lake Erie, Alliance and Wheeling, which has nearly a hundred miles of single track road. The line handles much coal traffic and its schedule covers thirty trains each way a day. There are twenty-four telephone stations along the line at the various stations where the agents or train crews receive their orders.

On the division of the Pennsylvania lines between Columbia, Pa., and Parkersburg, Pa., a distance of thirty-eight miles, the trains have been operated by telephone supplemented by block signals since 1906. This division handles ninety-five trains of 4,800 cars daily, but the arrangement differs from that on the Lake Erie, Alliance and Wheeling.

At each terminal of the division and at three intermediate points there are small switchboards to which are connected three classes of telephone circuits. One of these, called the director's wire, is a through circuit connected with each of the five switchboards. Another circuit, known as the long distance emergency wire, connects the switchboard at each end station with the board in the centre of the division only. The switchboards are also connected with lines running from some twenty-five stations at various points along the track, these lines being known as block wires.

The train director can get in touch with the operators at the various switchboards and through them be connected with the telephone stations on the block wires in either direction, and thus get in direct communication with the crews.

In receiving orders by telephone conductors and engineers are both required to go to the telephone, one to receive the order and the other to write it down as repeated by the first. After it has been received the man who writes it from the other's repetition must repeat it back, while the man who received it must underline each word as it is repeated, in this way giving a check on the order and insuring a correct understanding.

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### The President of Guatemala a Telegrapher.

During the trouble between Nicaragua and Honduras, when the Honduras government was overthrown because President Cabrera, of Guatemala, refused to interfere, the President found that his telegraph operators were not to be trusted. He set about learning telegraphy and worked at the key until he could send all of his despatches himself. Now when he has anything very confidential to transmit over the wire, he does it himself in his own private cipher. He is one of the few rulers of the world who can manipulate the telegraph instrument.

---

The Emperor Menelik has signified his desire that Ethiopia shall be admitted as an adherent to the International Telegraph Convention.

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W. H. HODGINS, Secretary

**A Complete List of Living Members of the  
United States Military Telegraph Corps,  
So Far as Known.**

- |                        |                        |                       |                       |
|------------------------|------------------------|-----------------------|-----------------------|
| Abernethy, John T.     | Davin, Thos. A.        | Holmes, George S.     | Mason, J. Q.          |
| Albright, Geo.         | Davis, Samuel          | Homan, Chas. A.       | Matlock, Henry H.     |
| Allison, George        | Dealy, William J.      | Holt, Theodore        | Maynard, George C.    |
| Anderson, Joseph       | De Bree, Nathan        | Hood, Oliver Perry    | Meagher, James        |
| Armes, William J.      | Dennis, L. B.          | Hoover, R. B.         | Mixer, Charles H.     |
| Armour, Thomas         | Denny, J. C.           | Hotchkiss, Z. P.      | Montaigne, C. D.      |
| Armstrong, Ewing L.    | Dixon, Jno. R.         | Howe, G. W.           | Moore, Charles W.     |
| Armstrong, S. T.       | Dougal, William H.     | Hull, A. K. V.        | Moreland, Theodore E. |
| Ash, Wm. M., M. D.     | Dougherty, C.          | Hull, Henry P.        | Morris, Absalom M.    |
| Atwater, Henry H.      | Dow, D. D.             | Huntington, Geo. M.   | Morrison, Thomas      |
| Atwell, J. W.          | Duell, John T.         | Huyck, Maynard        |                       |
|                        | Duncan, J. C.          |                       | Naile, George W.      |
| Bacon, Duncan T.       |                        | Ingram, S. E.         | Newton, E. C.         |
| Barron, Wallace C.     | Eckert, Gen. Thomas T. | Ives, William L.      | Nichols, J. Hervey    |
| Barton, Stephen E.     | Eitemiller, George M.  |                       | Nichols, A. M.        |
| Barwick, Thomas        | Elliott, R. H.         | Jaques, Charles W.    | Nohe, A. W.           |
| Bashford, Philip       | Evans, Frank H.        | Jayne, John E.        | Norris, James B.      |
| Bates, David Homer     |                        | Johnson, A. E. H.     | O'Brien, Dr. John E.  |
| Baxter, George W.      | Farnham, G. M.         | Johnstone, W. F.      | O'Brien, Richard      |
| Beckwith, Samuel H.    | Ferris, D. V.          | Jones, George E.      | O'Neal, William C.    |
| Bender, Robert W.      | Fish, E. G.            |                       | Orton, Albert W.      |
| Benedict, C. H.        | Fitch, Derick H.       | Kanode, A. H.         |                       |
| Bliss, Abel H.         | Fonda, Ten Eyck H.     | Kennan, F. W.         | Palmer, Charles H.    |
| Bliss, J. E.           | Forsey, W. S.          | Kenney, Edwin         | Parsons, James K.     |
| Bohle, R. H.           | Fowler, J. J.          | Kerbey, Joseph Orton  | Parsons, John W.      |
| Boyd, Joseph W.        | Fraser, Philip B.      | Kerner, Marion H.     | Paxson, Charles A.    |
| Boyle, E. C.           | Freeland, J. W.        | Kettles, William E.   | Peel, Edwin           |
| Brenneman, A. Thomas   | Frisbie, M. D.         | Kiley, John K.        | Perdue, L. Ford       |
| Brooke, Thomas H.      | Fuller, J. A.          | King, Thomas M.       | Perkins, George W.    |
| Brown, Charles Exera   | Furr, R. A.            | Knapp, Stewart W.     | Peterson, Joseph H.   |
| Brown, J. R.           |                        | Knight, Frank B.      | Pettit, James E.      |
| Browne, Henry R.       | Gard, D. H.            | Knittle, Joseph       | Phelps, Ransom        |
| Bruch, Adam            | Geiger, John M.        | Korty, L. H.          | Pierce, George C.     |
| Bruner, Philip         | Gentry, Rev. W. D.     |                       | Pitfield, James W.    |
| Brush, S. T.           | Gilmore, Col. J. R.    | Lafaye, J. H.         | Plum, Henry W.        |
| Buell, Madison         | Glascott, W. H.        | Laird, Thomas A.      | Plum, William R.      |
| Bull, Henry P.         | Goalding, George J.    | Lamb, Frank H.        | Pond, Chester H.      |
| Burhans, William W.    | Graham, Richard        | Langdon, Thomas       | Pope, J. William      |
| Burnett, Geo. A.       | Greene, E. C.          | Lemoreaux, C. L.      | Power, Richard        |
| Bush, B. F.            | Gregg, Harry L.        | Lennox, Geo. P.       | Pritchard, John W.    |
|                        | Griffin, Russell B.    | Lewis, W. T.          | Purcell, P. Jos. A.   |
|                        | Griffin, S. L.         | Lindauer, A. C.       |                       |
| Carnegie, Andrew       | Griffith, C. H.        | Lithgow, Charles H.   | Railton, G. W.        |
| Chaddock, W. H.        | Groomes, Isaac C.      | Loneragan, John       | Rand, D. E.           |
| Chandler, Col. A. B.   | Gross, Charles F.      | Long, F. C.           | Rawlings, T. E.       |
| Chandler, Charles E.   | Gross, Col. Wm. L.     | Loomis, Charles F.    | Reid, Douglas         |
| Child, Hubert          | Gulick, C. W.          | Low, George A., Sr.   | Reese, Samuel         |
| Clarke, Jonathan B.    | Guthridge, John F.     | Lowe, Jas.            | Reeves, J. E.         |
| Clowry, Col. Robert C. |                        | Ludwig, J. F.         | Richardson, E. E.     |
| Cochrane, Achilles P.  | Hall, H. H.            | Lyons, William J.     | Robinson, Byron L.    |
| Cole, George           | Hallam, Isaac W.       |                       | Robinson, Jesse H.    |
| Colestock, Daniel      | Hammond, Charles D.    | McCleverty, Joseph D. | Robinson, Merritt F.  |
| Craig, H. H.           | Hammond, Charles W.    | McClosky, I. T.       | Robinson, S. L.       |
| Crain, M. D.           | Hancock, A. G.         | McClure, J. P.        | Roche, Thos.          |
| Cromwell, George E.    | Hansen, Joseph         | McCoy, Daniel B.      | Rodgers, T. J.        |
| Cronin, Daniel         | Hartman, Wm. H. von    | McIlvaine, J. P.      | Rose, Luther A.       |
| Crouse, Jesse W.       | Hatton, O. C.          | McKelvey, A. T.       | Rowe, R. D. E.        |
| Cruise, J. D.          | Henderson, George      | McKenna, F. W.        | Rumsey, S. B.         |
| Culbertson, Cambridge  | Henderson, Harvey B.   | McKenna, J. A.        | Rupley, Samuel K.     |
|                        | Hogan, Daniel          | McMichael, Isaac      |                       |
| Darlington, H. P.      | Hoge, O. E.            | McMurtry, B.          | Sackett, Herbert R.   |
| Daugherty, Walter      | Holley, Minard Y.      | Magehan, W. H.        | Sanborn, F. A. H.     |
| David, Thomas B. A.    |                        | Maize, Isaiah D.      | Sargent, W. D.        |
|                        |                        | Martin, Henry S.      | Schnell, Andrew C.    |
|                        |                        | Martin, Robert W.     | Schnell, Joseph       |



Schnell, Thad. M.	Vincent, H. C.	Eckert, Gen. Thos. T.	1848..St. Clairsville, O.
Snedon, Irvin B.	Vincent, O. B.	Elagg, Jno. A.....	1849..
Sheldon, William A.	Voltz, J. D.	Frey, George H., Sr....	1849..Springfield, O.
Shepard, O. M.	Von Eye, Edward	Gentry, W. D., Dr....	1848..Hopkinsville, Ky.
Sholes, Cass G.		Greene, Joseph S.....	1846..Philadelphia
Shrigley, James A.	Waddell, F. G.	Guthridge, J. F.....	1849..Attica, Ind.
Shuman, W. A.	Waddell, Orin J.	Haskins, Charles H....	1846..Buffalo, N. Y.
Sloat, Harry D.	Walsh, Arthur	Haviland, James D....	1847..Detroit
Smith, Charles W.	Ward, Edward T.	Hepburn, H. C.....	1845..Philadelphia
Smith, George K.	Washburn, M. E.	Homans, Benjamin....	1848..Baltimore
Smith, J. Elliott	Watts, John C.	Hoyt, Samuel.....	1848..Milan, O.
Snow, H. N.	Webb, J. G.	Hucker, Nathaniel....	1847..Buffalo, N. Y.
Spencer, Harry B.	Weir, Levi Candee	Hunt, Thomas.....	1849..Morrow, O.
Spencer, J. M.	Weitbrec, R. F.	Huntington, George M	1849..Watkins, N. Y.
Sponagle, John L.	West, H. W.	Lasscell, W. B.....	1849..
Spinner, William	White, W. N.	Louis, L. A.....	1848..Louisville, Ky.
Sprague, Henry C.	Wickard, J. W.	Lombard, Julius G....	1847..Ashtabula, O.
Stewart, D. N.	Williams, D. A.	Matthews, Charles P..	1849..Columbus, O.
Stewart, John N.	Williams, Robert E.	Melbourne, W. A....	1848..Bardstown, Ky.
Stumm, Frank A.	Wilson, Ellis J.	Merrihew, James.....	1849..Wilmington, Del.
Sullivan, Daniel	Wilson, Col. Wm. B.	Morris, S. R.....	847..
Talbot, Robert M.	Winder, Alfred	Pitcairn, Robert.....	1849..Pittsburg, Pa.
Talmage, George J.	Wintrup, John	Porter, E. P.....	1846..Geneva, N. Y.
Taylor, Periander A.	Wolfe, C.	Reed, Henry A.....	1849..Carmel, N. Y.
Thode, George F.	Wood, William B.	Reid, Douglas.....	1847..Sandusky, O.
Tinker, Charles A.	Woodard, W. R.	Ryan, Reuben H.....	1848..Milan, O.
Tompkins, E. P.	Woodring, W. H.	Scott, M. A.....	1848..
Tyler, James D.	Wortzman, L. W.	Sutherland, John A...	1849..Buffalo, N. Y.
		Talcott, A. B.....	1849..Boston
		Titcomb, H. B.....	1848..Memphis, Tenn.
Van Valkenburgh, F. S.	Zion, A. A.	Tomlinson, E. M.....	1846..Hartford, Conn.
		Townsend, John A...	1849..Akron, O.
		Tree, J. B.....	847..Washington
		Tubbs, F. H.....	1848..Milan, O.
		Tyler, Artemus E....	1848..Erie, Pa.
		Van Duzer, A. M....	1849..Fredonia, N. Y.
		Ward, Henry H.....	1848..Springfield, Mass.
		Ware, Jas.....	1847..
		Weller, Alfred.....	1847..Marshall, Mich.
		Williams, George T...	1849..Sinclair, N. Y.
		Wood, Orrin S.....	1844..Washington
		Wood, Otis E.....	1846..Buffalo, N. Y.
		Worl, James N.....	1848..Philadelphia
		Worl, W. S.....	1849..Philadelphia

#### Forty-Niners of the Telegraph.

The following list embraces the names of the oldest living members of the telegraph profession; they include so far as known those who entered the service during the forties:

Name.	When entered the service.	Where entered the service.
Arnoux, Wm.....	1847..	
Barr, M. W.....	1847..	Wheeling, W. Va.
Berry, Stephen.....	1846..	Boston
Bethune, N. W.....	1847..	Montreal
Booth, N. M.....	1849..	Louisville, Ky.
Brenner, J. A.....	1849..	Washington
Brigham, George F....	1848..	Fredonia, N. Y.
Brigham, Henry H....	1849..	Warren, Pa.
Bright, Louis A.....	1849..	Pottsville, Pa.
Brownson, W. G.....	1849..	Poughkeepsie, N.Y.
Buell, Madison.....	1847..	Buffalo, N. Y.
Carleton, G. W.....	1849..	
Carnegie, Andrew.....	1848..	Pittsburg, Pa.
Clark, James J.....	1845..	Philadelphia
Clark, William H....	1849..	Frankfort, Ky.
Cleveland, Uriah....	1847..	Toledo, O.
Cobb, Emory.....	1848..	Fredonia, N. Y.
Compton, J.....	1848..	Wheeling, W. Va.
Cutler, Charles S....	1849..	Buffalo, N. Y.
Daugherty, A. D....	1848..	Coldwater, Mich.
David, T. B. A.....	1849..	Pittsburg, Pa.
Davis, A. G.....	1849..	Poughkeepsie, N.Y.
Dodge, L. C.....	1847..	Burlington, Vt.
Dunham, James.....	1847..	Poughkeepsie, N.Y.
Dwight, H. P.....	1847..	Montreal
Easson, R. F.....	1849..	Toronto, Ont.

Every telegrapher who loves his profession, who is determined to master its technicalities, and thus insure for himself the confidence and respect of his official superiors and place himself in the direct line of promotion, should subscribe for and become a careful reader of Telegraph Age.

We desire to state that back numbers of this paper, those issued more than one month prior to any current date, will be charged for at the rate of twenty-five cents apiece when they can be furnished. This price is fixed because of the necessarily limited stock we carry, and of the difficulty we sometimes have in filling an order. Oftentimes the request is for papers of a more or less remote date, with the expectancy of being charged at but ten cents a copy, whereas in order to obtain the desired issue we are ourselves frequently obliged to pay the larger sum, or even more. The growing value of complete files of Telegraph Age should cause our readers to carefully preserve their issues.

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CAPACITY**

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TELEGRAPHIC SYSTEMS.**

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BALTIMORE, MARYLAND, U. S. A.**

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Factory for the manufacture of Mechanical and Electrical Apparatus.

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FAMOUS

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HOLDS ALL SPEED RECORDS AS WELL AS ALL LONG-DISTANCE SENDING RECORDS.

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NORCROSS, GEORGIA

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of various designs, may be installed in your office, factory or residence, at a rental of \$1.00 per month and upwards, on application to the Manager of any office of the Western Union Telegraph Company, or direct to the SELF WINDING CLOCK COMPANY, NEW YORK.

We also offer for sale time plants for Public and Office Buildings, Factories, Schools, Colleges and Universities, operated by our Self Winding and Automatically Synchronized movements, recognized superior in every way to key-wound clocks.

**SELF WINDING CLOCK COMPANY**

161-163-165 Grand Avenue

Brooklyn, N. Y.

### Mr. English as a Huntsman.

The association between S. M. English, of Dallas, Tex., general manager of the Postal Telegraph-Cable Company of Texas, and the employes of that corporation, appears to be established on the most amicable footing, and a degree of happiness between all concerned prevails within that environment, at once delightful to behold and to contemplate. It appears that Mr. English recently determined upon a hunting trip as a sort of preparatory measure for a fuller enjoyment of Christmas and the closing holiday period of the year. Getting wind of this intention, a few of the Texas Postal employes, consisting of M. B. Wyrick, F. C. Cole, W. E. Herring and W. A. Logan, acting as a committee in behalf of the remaining employes of the system, presented to Mr. English a hunting outfit, embracing a battery sufficient to meet any demands and emergencies that should beset the genial general manager in his intrepid advance in search of game into the jungles of Texas. When all was ready the presentation was made and with it the accompanying letter:

MR. ENGLISH:

This outfit is presented to you as a slight token of the esteem and appreciation of the three hundred employes of the company of which you are the general manager. These employes are of one accord when expressing their appreciation of your fair treatment toward them, your ability to direct them in their work and your ability to jock them up when they need it.

This gift is presented to you on the condition that you do not allow the acceptance of it to interfere with the accustomed practice of pointing out our mistakes. Some of us have been associated with you for years and have seen you direct the affairs of the company in such a manner that it has grown from a small concern to the splendid organization we have to-day. Your employes consider it a privilege to have the benefit of your wide experience, and they know that their visions are obstructed by the four walls of their respective offices and that they cannot obtain that broad view of things that you enjoy from the executive offices on the fourth floor.

When the committee selected this gun it was not noticed that it possessed several qualities that are possessed by your employes. It is like some of us because it will not do its work unless you are behind it; it is like some well-meaning employes because it will sometimes aim at the mark and miss it, and it is like some who have been in the service because it will sometimes get loaded. When you find it in that condition it will be your duty to fire it. If you will treat it as you have always treated your employes—never overload it—we are sure it will never kick.

Accept it with our best wishes for a merry Christmas and a happy New Year.

TEXAS POSTAL EMPLOYES.

Mr. English responded in a note which read as follows:

I assure you of my appreciation of the good feeling which prompted you to tempt me to spend an occasional day in the woods watching the game run when I shoot. I am going to spend the next few days hunting deer and quail, and if I fail to get my share with the splendid outfit you have given me I fear I shall have a hard time explaining how it happened.

The conditions prescribed are good. None of you will be overlooked when the occasion for a "jacking up" arises, but I hope I shall not be called upon to fulfill so unpleasant a duty.

May your Christmas and New Year be as happy as your expression of loyalty and friendship has made me.

We are anxiously awaiting to know the result

of Mr. English's hunting expedition, undertaken with a boldness and coolness of judgment quite Rooseveltian in character.

### Serial and Electric Building Loan and Savings Institution Nominations.

At a meeting of the shareholders of the Serial Building Loan and Savings Institution, held at the office of the corporation, 195 Broadway, New York, on December 15, the following names were placed in nomination for office for the next year, to be voted on January 19, at the annual meeting: J. C. Barclay, president; J. R. Beard, vice-president; E. S. Butterfield, treasurer; E. F. Howell, secretary; J. B. Sabine and A. J. Schem, attorneys; directors, T. A. McCammon, G. W. Blanchard, E. E. Brannin, J. T. Laidlaw, M. S. Cohen, W. H. Jackson, J. F. Nathan, T. M. Brennan, J. B. Taltavall, C. A. Killioyle, F. D. Giles, M. J. O'Leary, F. J. Scherrer, W. J. Quinn and M. W. Rayens.

On December 11, at the office of the corporation, 253 Broadway, New York, the following named were placed in nomination for officers of the Electric Building Loan and Savings Association, to be voted on January 8, at the annual meeting: J. J. Whalen, president; J. R. Beard, vice-president; E. S. Butterfield, treasurer; E. F. Howell, secretary; J. B. Sabine and A. J. Schem, attorneys; directors, M. J. O'Leary, G. R. Schnitgen, M. W. Rayens, P. O. Purcell, G. W. Blanchard, E. P. Tully, M. S. Cohen, W. B. Dunne, W. H. Jackson, C. F. Leonard, T. E. Fleming, W. J. McNickle and F. E. McKiernan.

### An Original Morse Telegram.

W. G. Brownson, 1225 Monroe street, Toledo, O., is an Old-Timer and Forty-niner of the telegraph. Although long since out of the service, he still, like all loyal telegraphers, retains a keen interest in an occupation that once absorbed all of his efforts and thoughts, the recollection of which is now a favorite subject of reminiscence. He is offering to send to any one desiring the same, who will send a self-addressed stamped envelope for reply, a fac-simile message written by Samuel F. B. Morse, dated October 28, 1857. Its authenticity is vouched for on the reverse of the message, for it bears the endorsement of Henry A. Reed, president of the Bishop Gutta Percha Company, New York, who, when manager of the telegraph office of the New York, Albany and Buffalo Telegraph Company, at Poughkeepsie, N. Y., where Professor Morse then resided, was the operator who sent the message. The telegram bears the pen and ink sketch of a skull, the dead head mark of that time.

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.

### A New Transmitter.

(Contributed)

An absolutely new and unique apparatus for the automatic transmission of Morse characters, entirely stripped of all technical perplexities, and so constructed that it can be conveniently carried in a coat pocket, has just been brought to the attention of the profession by its inventor, Thomas J. Dunn, 1 Broadway, New York, who is well and favorably known to the fraternity throughout the country.

The transmitter is scientifically and mechanically perfect, handsome in design, simple in construction, easy to adjust, a single contact screw being the only thing necessary to adjust to meet any change in the conditions of a long or short distance circuit.

It is the first automatic dot-making machine to utilize the typewriter movement, making it easy to learn to manipulate, and only bringing into play the two most sensitive fingers on the hand, thereby relieving the arm of the work necessary in the operation of former methods of sending impulses over a wire, and at the same time gives the operator absolute control, in the formation of the characters, as the vibrating arm



THE T. J. DUNN TRANSMITTER.

is thrown the same distance at every pressure of the plunger blade, which insures dots of the same length at a high or low speed.

The operative parts are mounted on a light nickel-plated base, 2x4 inches in size, at one end of which is a permanent post, to which a horizontally arranged vibrator is attached, while at the other end is a low transversely reciprocating plunger, nominally held in elevated position by coil springs, the first being the dash key, the second the dot key, and the third the switch. These three key posts extend through the top of a rectangular casing that is finished with metal corners, which gives it a very attractive appearance, and serves the double purpose of protecting the working parts from being tampered with by curious and meddlesome persons during the temporary absence of the owner from his or her desk, at the same time keeping the machine free from dust.

This compact and clever device should prove a welcome addition to the telegraph field, where the need of a mechanical aid to the sending operator is absolutely necessary in order to bring the sending side of the wire up to the capacity made possible by the introduction of the type-

writer into the telegraph business, a fact that is becoming more apparent every day to employing interests, and the lack of which is largely due the installation of the Barclay and Rowland machines between the principal cities of the country.

### Sultan's Adviser Made Telegraph Help His Star-Reading.

With the fall of the old regime in Turkey, Ab-ul-Huda, the Sultan's astrological guide, philosopher and friend, has come to the end of his brilliant and lucrative career. He is now confined on the Island of Prinkipo, in the sea of Marmora, on a charge of high treason.

An Arab by birth, Ab-ul-Huda's career has been remarkable. He came to Constantinople as a penniless youth and used to earn a few paras by telling fortunes at street corners. Then he made connections at the palace and one day was called to the Sultan.

From that day his fortune was made, and for thirty years the crafty wizard enjoyed Abdul Hamid's implicit confidence. He gained a great reputation as an explainer of dreams, but it was chiefly as a magician that he commanded his august patron's faith.

He kept up his game by the assistance of an accomplice, a pasha, now in disgrace abroad, who was in charge of the telegraph department at Yildiz Kiosk.

This worthy used to send the astrologer advance information of all the telegrams received at the palace from the provincial governors and military commanders, and the wily astrologer would report to Abdul Hamid what the stars had told him. Several hours later the telegrams would be delivered, and they backed up the stars every time.

But now Ab-ul-Huda's reputation, as well as his occupation, is gone.

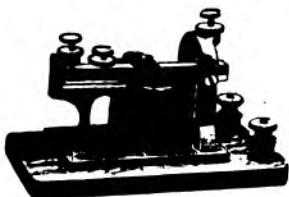
The steamship Luchenbach, plying between New York and Porto Rico, was equipped recently by the United Wireless Telegraph Company with wireless telegraph apparatus. The vessel sailed for her destination on December 7, and the efficiency of the wireless system was shown in a prompt report transmitted to New York at given hours each day, showing the progress of the vessel. The despatch dated at 6 o'clock on the evening of December 14, as the ship passed Morro Point, San Juan, for Mayaguez, was received at Manhattan Beach, N. Y., the distance covered being 1,400 miles. As the steamer left Mayaguez at 11 o'clock at night for Ponce, Porto Rico, a wireless message announcing the fact was successfully transmitted to Charleston, S. C., a distance of 1,200 miles, thence to 42 Broadway, New York. Considering the fact that the ship installation is of one kilowatt and was a hurried one, being installed in thirty-six hours, the record made in transmission may be regarded as noteworthy.

# Something Electrical for Everybody



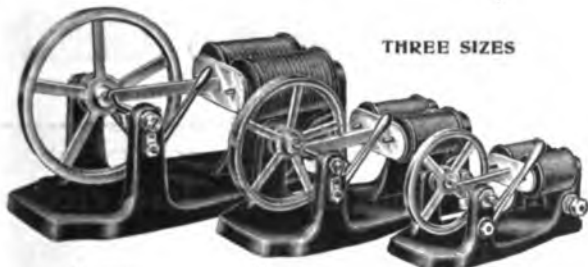
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 Standard of the Postal and Western Union Telegraph Companies. Lever is of steel, has solid trunnions and is heavily nickel-plated. Can be mounted on desk with two small screws.

List No.	Net Price.
108 Key, Nickel-plated Lever, Brass Frame...	\$1.05
109 " Fully Nickel-plated .. . . . .	1.15



**IMPROVED GIANT SOUNDER**  
 Unequaled for quick action, clear tone and volume of sound. Can be operated by one cell of Crowfoot Battery, metal parts highly finished and lacquered.

List No.	Net Price.
110 Sounder, 5 ohms, brass lever . . . .	\$1.40
111 " 5 " aluminum lever. . . . .	1.40
112 " 20 " brass " .. . . .	1.50
113 " 20 " aluminum " .. . . .	1.50



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 Fun for boys. Runs toys. Amusing as well as instructive. Can be run with one, two or three cells of Dry Battery. A Dry Battery equal to the Red Seal will run one of these engines continually for days. Our engines can be belted with long strings extending entirely across a room and a number of toys can be operated in this manner.

List No.	Length.	Width.	Weight.	Diameter Fly Wheel.	Net Price.
1011	7 in.	3 3/8 in.	45 oz.	3 1/2 in.	\$1.25
1012	5 3/4 in.	2 1/4 in.	22 oz.	2 5/8 in.	1.00
1013	4 in.	1 3/4 in.	10 oz.	2 in.	.75

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This Company furnishes estimates and equipments for land stations, ship installations and portable sets, also for communication between offices and factories, at reasonable prices. Three fully equipped factories. Prompt deliveries.

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You get service from Edison Primary Batteries. By service we mean voltage that is strong and constant from first to last, electrical energy that is not wasted by local action or reduced by internal resistance.

This service is uninterrupted; that is, it is to be had without attention on your part and without constant adjustments.

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### Henry Scrivens, Postal Superintendent at Pittsburg.

Henry Scrivens, who has been appointed superintendent of the Postal Telegraph-Cable Company at Pittsburg, succeeding Charles E. Bagley, transferred to Philadelphia, has had a long training in the peculiar work falling to the lot of the superintendent, and goes to this new post well equipped for its multifarious duties. Mr. Scrivens is a native of England, having been born at Ightham, Kent, January 30, 1871. Coming early to this country, he became in January, 1887, connected with the telegraph department of the banking firm of Henry Clews and Company, in the office of their Brooklyn branch. A year later he entered the service of the Western Union Telegraph Company in Brooklyn, in which he remained until 1898, occupying the various positions of collector, operator, branch office manager, and finally assistant to the manager in that borough. After this for a short period he was engaged in the operating department of the Postal Telegraph-Cable Company at its main office, 253 Broadway, New York, when he received the appointment as manager of the offices in Jersey City, N. J. In January, 1899, he was



HENRY SCRIVENS,  
Superintendent Postal Telegraph-Cable Co., Pittsburg, Pa.

recalled to New York to receive the appointment of chief clerk in the office of Superintendent G. H. Usher. From thence, on January 1, 1900, he was transferred to the position of chief clerk to E. G. Cochrane, general superintendent of the Eastern division. In this office he remained until March, 1908, when he became chief clerk to Vice-President Charles C. Adams.

### W. B. Kendall, Western Union Manager at Dallas, Tex.

William B. Kendall, who has lately been promoted to the managership of the Western Union Telegraph Company at Dallas, Tex., where he succeeds George C. Felton, transferred to Laredo, that state, advances to that position a gentleman well equipped for its duties both by business training and long acquaintance with the

needs of Dallas, of which city he has been a resident for over twenty years. Mr. Kendall was born at Aberdeen, Miss., in September, 1867. His boyhood was spent in Tennessee. In 1887 he entered the employ of the Texas and Pacific Railway at Dallas, three years later accepting the position of clerk to the then manager of the office of the Western Union Telegraph Company. In 1892 he became stenographer to Assistant Superintendent Cook, a position in which during the next five years he gained much insight into telegraphic business methods. In 1897 he was appointed chief clerk to Assistant Superintendent Felton, so remaining until October, 1904, at which time Dallas was made a district headquarters of the Western division, with J. C. Smith as superintendent. From that date to the time of his present appointment Mr. Kendall acted as chief clerk to Mr. Smith. He has been an ob-



W. B. KENDALL,  
Manager Western Union Telegraph Company, Dallas, Tex.

servant and painstaking man, and few managers accept office with a better knowledge of what is required to make such stewardship successful.

### Obituary.

J. Henry Shuckhart, a telegraph operator, died at Mears Junction, Colo., on November 26.

Edgar B. Croxford, an operator, of Cleveland, O., died at that place on November 21.

Mrs. J. G. Murray, wife of the electrician of the Central and South American Telegraph Company, New York, died at her home in Brooklyn, on December 11. The funeral was attended by Superintendent B. H. Reynolds and other members of the staff, who also sent numerous floral offerings.

Captain John C. Baker, aged seventy-three years, noted for his work as a telegraph operator for the Confederacy and well known in New Orleans, where he had lived many years, died on December 13. He was one of the pioneer telegraph operators of the South and had the distinction of having sent the first message out of Natchez and then when he was a boy of only

sixteen years. During the war General Beal recognized his ability and placed him in charge of the telegraph office at Edwards Depot, Miss., and he operated the only connecting line between General Pemberton at Vicksburg, General Gardner at Port Hudson, and General Johnston at Jackson. He also played an important part in the service in the telegraph office at Mobile.

### LETTERS FROM OUR AGENTS.

#### PHILADELPHIA, POSTAL.

The Rowles brothers, Ralph and John, have returned after over an absence of a year on a ranch in the Far West. Both boys went to work at once, but Ralph only remained a few days, having accepted his old position with the Carnegie Steel Company.

Walter Blair has returned to the main office, the brokerage firm by which he was employed having unfortunately failed.

George Merrihew, our traffic chief, who has been ill for several weeks, has once again resumed his duties.

Arrangements are being made to provide the operators with a spacious resting and smoking room, devoting to that purpose the present bookkeeping department, the latter in turn moving to more suitable quarters on the second floor of the building. The telephone operators, who are at present working in the bookkeeping department, will be moved to the operating room proper, a portion of which has been suitably partitioned off for them. This is being done so as to concentrate all telegraphic operating business in the same room, and to expedite the handling of the same. The ladies' retiring room has also been refitted and now has a more homelike and inviting appearance.

Mr. W. G. Fluharty, assistant Rowland chief, has been transferred to Baltimore to take charge of the Rowland machines at that point.

The operators of the office were invited to attend a lecture on December 19, given under the auspices of the telegraph department of the Pennsylvania Railroad building annex. Quite a number of the men were present and listened to an address by Wm. E. Lindsay, one of the engineers of the Western Electric Company, who spoke on the subject of "Railway Composite Grounded Telephony." Subsequently an adjournment was had to the Boys' High School, where Dr. Paul R. Heyl spoke on testing instruments, their construction and uses. These lectures were interesting and instructive and are the first of a series to be given under the auspices of the Pennsylvania Railroad for the edification of the craft.

Miss Bessie Berlinghoff is a new addition to the Rowland operating force, vice Mrs. Hay, resigned.

#### SAN FRANCISCO, WESTERN UNION.

A duplex has been installed on the Eureka, Cal., local, and is giving satisfaction, greatly improving the efficiency of this circuit.

The work of placing the Barclay printing system in this office is progressing rapidly under the supervision of A. L. Fish, electrician, of New York, and circuits will soon be established between here and Los Angeles, and probably Portland. Mr. Midlam, wheatstone chief, will have charge of this department also.

After an absence of about three years, J. G. Decatur has returned to the operating department. During this time he has been engaged in newspaper and commercial work. His many friends welcome his return and trust he will decide to remain permanently in the service.

#### DALLAS, TEX., WESTERN UNION.

Night Chief Operator W. S. Strawbridge is on a visit to his home in Williamsport, Pa. All Night Chief E. C. Davis is filling in for him.

Chief Operator W. P. Davis recently paid a visit to the Fort Worth office.

Miss Maud Walling has resigned the managership at Bonham, Texas, in order to accept a position in this office.

Mrs. Bessie Gardner, who has been absent on a vacation passed at Mexia, this state, is back again at her post.

#### DULUTH, MINN., WESTERN UNION.

Miss Charlotte Nowack, who has been assigned to the St. Paul-Duluth local at this office, and F. E. Smith, chief operator, were married on December 11.

E. E. Beebe, formerly of New York, but who has been working the Duluth Board of Trade Chicago local, has resigned to go into other business.

#### NEW YORK, WESTERN UNION.

Mr. E. Payson Porter, one of the veterans of this office, a forty-niner of the telegraph, the first person to use the typewriter in connection with telegraph work, which was in 1868, will spend the winter at Geneva, N. Y., of which place he is a native.

#### NEW YORK, POSTAL.

Mr. G. H. Wiser has been appointed to represent the interests of Telegraph Age in this office to succeed J. B. Havice, who is now located in the office of The United Press. Mr. Wiser will be glad to fill any orders for subscriptions or books that may be intrusted to his care.

#### OTHER NEW YORK NEWS.

Assessment No. 487 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Rufus R. Haines at Los Angeles, Calif.; Charles F. Hawley at Cambridge, N. Y.; Peter J. McKeever at Pittsburgh, Pa.; John Delany at Brooklyn, N. Y., and Alfred L. Kenney at Helena, Mont.

#### United Press Changes.

E. P. Conkle, who was formerly manager of the Cleveland office of The United Press Asso-

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**NEW YORK**

ciation, has been placed in charge of the headquarters in New York in the place of Roy W. Howard, the newly appointed general manager. A. P. Ames, manager of the Boston bureau, succeeds Mr. Conkle in Cleveland, and F. J. Wilson, formerly of the New York office, takes Mr. Ames' place.

**Telegraphers' Aid Society Quarterly Statement.**

The Telegraphers' Aid Society of New York makes the following statement for the quarter ended December 6, 1908:

Balance on hand Sept. 6, 1908	\$21,260.30
Receipts . . . . .	1,339.50
<b>Total . . . . .</b>	<b>\$22,599.80</b>

**Disbursements.**

Sick benefits . . . . .	\$742.50
Death benefits . . . . .	400.00
Expenses . . . . .	172.28
	\$1,314.78
Balance on hand Dec. 6, 1908	21,285.02

<b>Total . . . . .</b>	<b>\$22,599.80</b>
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**Summary.**

Receipts . . . . .	\$1,339.50
Disbursements . . . . .	1,314.78

Gain for quarter . . . . .	\$24.72
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**Relief Fund.**

Balance on hand Sept. 6, 1908 . . . . .	\$3,913.88
Receipts . . . . .	350.00

<b>Total . . . . .</b>	<b>\$4,263.88</b>
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Disbursements . . . . .	\$71.50
Balance on hand Dec. 6, 1908 . . . . .	\$4,192.38

<b>Total . . . . .</b>	<b>\$4,263.88</b>
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**Balances.**

Aid Society . . . . .	\$21,285.02
Relief Fund . . . . .	4,192.38

<b>Total . . . . .</b>	<b>\$25,477.40</b>
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On Deposit . . . . .	\$25,332.90
Cash on hand . . . . .	144.50

<b>Total . . . . .</b>	<b>\$25,477.40</b>
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J. H. Driscoll, W. T. Rogers, F. J. Nurnberg, auditors.

**Letter Telegrams in France.**

On December 1 the French Post Office authorities made an important innovation in the shape of second-class telegrams, to be sent over the wires during the slack periods of the night. The tariff for the proposed telegram-letters is one centime per word, or ten words for two cents. The minimum charge is ten cents a message. They will be accepted for transmission after nine o'clock at night, and will be delivered at their destination by the postmen with the first delivery of letters on the following morning. For the present the system will

be tried in those towns where there is an all-night telegraph service, but it will be extended if the public accord it a welcome. It is declared by its projectors that the expensive plant of the telegraph system during the unoccupied hours should show a profit if managed economically. It is an experiment that will be watched with interest. The government reserves the right to discontinue this letter-telegram feature if it is not properly supported by the public, or if the rate is found to be too low.

**The Serial Building Loan and Savings Institution**, 195 Broadway, New York, extends New Year greetings to its friends! With the dawn of 1909 it invites a larger correspondence with prospective depositors—telegraphers who are directly or incidentally seeking the purchase of a home. This corporation can confer practical benefits to all who desire its co-operation, and inquiries, personal or by letter, are requested.

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

**Patents—Charles Selden, Jr.**, Patent Attorney, 1342 New York Ave., Washington, D. C. Specialties: Electrical Inventions and Railroad Appliances. Advisory Associate, Charles Selden, Supt. Telegraph B. & O. R. R. and Western Union Telegraph Cos.

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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.

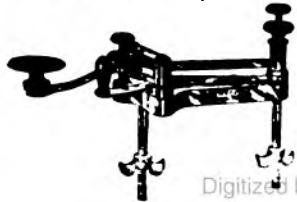
**Rubber Telegraph Key Knobs.**

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### Some Valuable Telegraph Books.

All of the books described in the following list embody a choice number from which selections may advantageously be made, and furnishes an excellent catalogue for the consideration of telegraphers, especially at this holiday season, when so many are desirous of selecting suitable books for gifts. Any book named will be sent upon receipt of price to any address, carrying charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York:

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"Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students" is acknowledged on all sides to be the standard work of the telegraph. Speaking strictly within bounds, it is not too much to say that this volume presents the finest study of the complex subject of the telegraph ever attempted. There is no other book like it or even approaching it, in thoroughness, comprehensiveness, or in original detail of statement. The author, Willis H. Jones, is a practical telegrapher himself—an engineer in his profession of recognized ability, who knows exactly what other telegraphers want to know, and has the faculty of imparting that knowledge in a manner at once so clear, so simple, so bright, so entertaining, so free from needless technicalities, that his readers, even the least informed among them, readily understand his meaning. The helpful qualities of the work will be clearly manifest alike to the beginner, to the student, to the operator and to all telegraphers, whether in the commercial or in the railroad service.

"Pocket Diagrams" does not deal in theory; it is packed full from cover to cover of the common sense of telegraphy, the side which the ordinary every day operator runs up against, and respecting which he desires information of the kind that will aid, not mystify, him. The book contains 334 pages, and has 160 splendid diagrams. It has the unqualified endorsement of telegraphers everywhere.

The price of "Pocket Edition of Diagrams," etc., is \$1.50.

#### PHILLIPS CODE.

The popularity of the Phillips Code, by Walter P. Phillips, was never more apparent than at the present time. Its acceptance by the telegraphic fraternity, as a standard work of the kind, dates from its first publication, and the constantly increasing demand for this unique and thoroughly tested method of shorthand arranged for telegraphic purposes, has necessitated from time to time the issuance of several editions. The present edition was carefully gone over under the supervision of Mr. A. P. Velie, an expert press and code operator, for many years identified with The Associated Press, New York, a few revisions made and a number of contractions added, until now this "staunch friend of the telegrapher" is strictly up-to-date in every particular. It has been declared that an essential qualification of a "first-class operator" was a thorough understanding of Phillips Code.

Many expert code operators have examined the revised edition of this code, and all unite in pronouncing it perfect. Mr. George W. Canning, who has won the championship for sending code in many tournaments, says:

"I have examined thoroughly the additions contained in the latest edition of the Phillips Code and most heartily approve of them. Every operator who is familiar with the code should find no difficulty in mastering the new contractions, as they 'fit in' smoothly and I think the ground has been entirely covered."

The price of the book is \$1 per copy.

"Telegraphers of To-day," illustrating the personnel of the telegraphic profession, as it existed in 1894, with more than 900 biographical and historical sketches of leading members of the craft, is a unique and valuable work; it has become standard, being the only work of the kind extant. It contains 354 double-column pages 7 x 11 inches in size, has gilt edges and is bound in imitation morocco.

Of this fine publication, becoming more and more valuable as times pass, we have but a few copies left. The original price was \$5. In order to readily dispose of these remaining volumes, and place them where they rightfully belong, in the hands of every telegrapher who failed to secure a copy at the higher original price, we have cut the figure to \$2 a volume, express charges prepaid. At this low rate, a sum about the cost of binding the book, no telegrapher who desires to own a copy should fail to obtain one at this time, for this "bargain" price will probably never be repeated.

The life of Prof. S. F. B. Morse, is the standard work, authorized by the Morse family, and compiled from original papers and other authentic data in their sole possession. It is a clearly written biography, charmingly told by a trained newspaper man, a close personal friend, and presents the life of this great inventor of the telegraph in a broader, more intense, human and truthful attitude than ever before attempted or even made possible; 775 pages, illustrated; sheepskin binding. The original price was \$6, which we have reduced to \$3, on receipt of which the book will be sent, express charges prepaid.

"The Telegraph in America," by the late James D. Reid, the "father of the telegraph," furnishes an authentic and complete history of the telegraph, tracing out its early start, its development, the organization of the various telegraph and cable companies, etc. The book is bound in full Russia, has 846 pages and is abundantly illustrated; a magnificent gift to any telegrapher. There are now but a few copies left of this great work and when these are gone the work will be out of print. The original price was \$7, but as the covers are a little shopworn the price has been reduced to \$5.

"Sketches Old and New," by Walter P. Phillips, is a handsomely bound volume of 164 pages of interesting and charmingly told telegraph stories; one of the very best works of the kind ever published and which will appeal strongly to every telegrapher; price \$1.

"Lightning Flashes and Electric Dashes," a book made up of bright, ably written stories and sketches, telegraphic and electrical, that should find a place in the home of every telegrapher; 160 large double-column pages; profusely illustrated; price reduced from \$1.50 to \$1.00 per copy.

Old Timers' Souvenir—Miniature Legless Key. This is a beautiful emblem for operators; an attractive charm for the watch chain; a perfect duplicate in every detail of the celebrated miniature steel lever telegraph key that attracted so much attention and which was distributed as a souvenir at the banquet of the Old Time Telegraphers' and Historical Association at the Waldorf-Astoria, New York, August 31, 1905. It has a French lacquered body and nickel-plated lever. Price, by registered mail, prepaid, \$1.50.

The diagrams appearing in "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines" were made from the company's blueprints and are absolutely correct. This volume, which is published by Telegraph Age, under official sanction and supervision, is of especial value to operators and linemen. It will be sent to anyone, postpaid, on receipt of fifty cents.

By taking a little trouble, when TELEGRAPH AGE first comes to hand, it may be preserved to form a permanent and valuable addition to the reading matter of a kind which all telegraphers should be supplied. We furnish a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1. It has good, strong covers, on which the name TELEGRAPH AGE is stamped in gold, and means by which each issue may be securely held as in a bound book. One binder may thus be made serviceable for a number of years, and when successive volumes, as they are completed, are bound in permanent form, the subscriber ultimately finds himself, for a moderate cost, in possession of a most valuable addition to his library, embracing a wide variety of telegraph, electrical and general information.

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 American Cable Across the Pacific ..... July 16, 1908  
 Alaskan Telegraphs ..... Jan. 1-16, Feb. 1, 1908  
 Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1904  
 Barclay Combination Quadruplex Rheostat ..... July 1, 1908  
 Barclay's Direct Repeating Relay for Multiplex Circuits, July 16, 1908  
 Barclay Printing Telegraph System, W. H. Jones ..... May 16, 1908  
 Barclay's Repeating Relay, Main Line Relay and Box Relay, Jan. 1, 1908  
 Barclay Typewriting Telegraph System ..... Jan. 16, 1904  
 British Patent Office Rules ..... Apr. 16, 1908  
 British System of Timing Messages ..... Dec. 1, 1908  
 Buckingham Long Distance Page Printing Telegraph ..... Sept. 1, 1908  
 Burry Page Printing Telegraph ..... Apr. 1, 1908  
 Cable Station in Mid-Pacific, Our, Dr. Martin Crook ..... Feb. 16, 1908  
 Central Telegraph Office, London ..... Oct. 16, 1904; May 1, 1908  
 C. K. Jones' Automatic Telegraph Circuit Protector and Signaling Machine ..... June 16, 1908  
 Collins Overland Telegraph ..... May 16, 1908  
 Composite Teleg. and Telep. on Canadian Pacific Ry. .... Mch. 1, 1904  
 Composite Telephone Lines ..... Mch. 1, 1908  
 Crehore-Squire Automatic Telegraph System ..... May 16, 1908  
 Definitions of Electrical Terms, Mch. 16, Apl. 1-16, June 1, July 1-16, 1904  
 Delany's, P. B., Automatic Telegraph System ..... Mch. 16, 1908  
 Delany's, P. B., New System of Rapid Telegraphy ..... Apl. 16, 1904  
 Direct Polar Relay Repeater of the Postal Telegraph-Cable Company ..... Oct. 16, 1908  
 Earth Currents ..... May 1, 1908  
 Engraving of Clarence H. Mackay ..... Nov. 16, 1908  
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 Engraving of the Late John W. Mackay ..... Aug. 1, 1908  
 Field's, S. D., Quadruplex ..... May 1-16, 1904  
 Flow of Electricity in the Earth ..... Dec. 16, 1908  
 Ghegan's Automatic Repeater ..... June 1, Dec. 1, 1908  
 Ghegan's, J. J., Multiplex System ..... Aug. 1, 1904  
 Gray Submarine Signaling Apparatus ..... Jan. 1, 1904  
 Hand vs. Machine Telegraphy ..... Sept. 1, 1908  
 Improvements of Roberson Quadruplex ..... Feb. 1, 1908  
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 Low Resistance Relays ..... Oct. 1-16, Nov. 1, Dec. 16, 1902, Jan. 1, 1904  
 Midway Islands Cable Station ..... July 1, 1904  
 Passing of the Quadruplex ..... Aug. 1, 1908  
 Phillips' System of High Speed Telegraphy, J. W. Larish, Nov. 1, 1904  
 Pollak-Wirag System ..... Mch. 1, 1908  
 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, 1908  
 Progress of Telegraphy During Last Thirty Years, W. H. Mavor, Jr. .... Mch. 16, 1904  
 Proper Adjustment of Telegraph Apparatus ..... Aug. 16, Sept. 1, 1904  
 Protection of Telegraph and Telephone Lines When in Hazardous Proximity to High Speed Lines ..... June 1, 1904  
 Random Recollections of 145 Broadway, W. P. Phillips ..... Feb. 1, 1908  
 Rapid Telegraphy, P. B. Delany ..... Nov. 16, Dec. 1, 1904  
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 Rowland Printing Telegraph System ..... Sept. 11, 1903  
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 Specifications in Construction of 25-foot Pole Line, American Telephone and Telegraph Company ..... Feb. 16, Mch. 1-16, 1904  
 Stevens' Wheatstone Transmitter ..... July 16, 1908  
 Stick Telephone, J. C. Barclay ..... June 16, 1904  
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 Telephone and Telegraph Bureau, U. S. Washington, D. C., May 1, 1908  
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 Typewriting Telegraphs, L. S. Wells ..... Aug. 1, 1904  
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When to a Storage Battery Fully Charged ..... Aug. 16, 1904  
 Wind Pressure on Telegraph Structures, F. W. Jones ..... Dec. 16, 1908  
 Wire Tables—How to Remember Them, C. F. Scott ..... Apl. 16, 1908  
 Adams-Randall Telephone Transmitter ..... July 1, 1908  
 Braun's New Method of Directing Wireless, A. Fred'k Collins ..... Apl. 1, 1908  
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 Testing by Voltmeters and Ammeters, F. W. Jones ..... Nov. 1, 1908  
 Train Order Rules, Chas. Selden ..... Aug. 1, 1908  
 Wire, Hard Drawn Copper, History of, Thos. B. Donlitttle ..... Jan. 1-16, 1908  
 Wheatstone Bridge, F. W. Jones ..... Nov. 16, 1908  
 Wright Keyboard Transmitter and Printer, R. Eltcheock ..... Apl. 1, 1908

Automatic Telegraphy—Various Systems Discussed ..... Dec. 1, 1907  
 Canadian Pacific Railway Company's Telegraph, History of, illustrated ..... May 1, 1907  
 Concrete Telegraph Poles—G. A. Cellar ..... July 1, 1907  
 Creed Receiving Telegraph Perforator ..... July 1, 1907  
 Dean Rapid Telegraph System ..... Aug. 16, 1907  
 Fortong's Picture Transmission ..... Apl. 16, 1907  
 Giara's Telegraphic System ..... Feb. 16, 1907  
 Hertzian Waves—Practical Application ..... Apl. 16, 1907  
 How to Make a Telegraph Company Popular ..... Feb. 1, 16, March 1, 16, 1907  
 Mental Anguish Doctrine in Telegraph Cases ..... Nov. 16, 1907  
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 Morse Spaced Letters ..... Sept. 1, 16-Oct. 1-Nov. 16, 1907  
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 Simultaneous Telegraphy and Telephony (Slough & Taylor) ..... Mch. 16-May 1, 16, 1907  
 Simultaneous Telegraphy and Telephony Over one Grounded Circuit (Kissell) ..... Dec. 16, 1907  
 Storage Batteries—How to Reclaim Them ..... June 16, 1907  
 Steno Telegraphy ..... June 16, 1907  
 Standard Time—W. J. Camp ..... Aug. 1, 1907  
 Train Despatching by Telephone ..... May 16, 1907

**Directory of Annual Meetings.**

- Association of Railway Telegraph Superintendents meets at Detroit, Mich., June 23, 24, 25, 1909.
- 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 Atlantic City, 1909, at a date to be named later.
- Old Time Telegraphers' and Historical Association, will meet at Pittsburg, Pa., 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 in 1909 at Columbus, O., at a date to be determined upon.
- 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.

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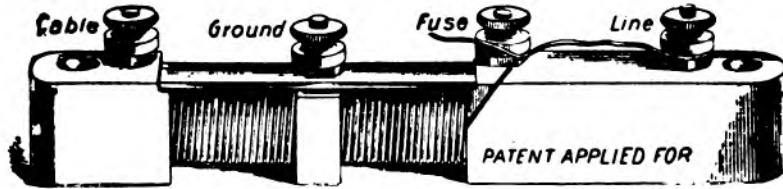
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Train Despatching by Telephone ..... May 16, 1907

Directory of Annual Meetings.

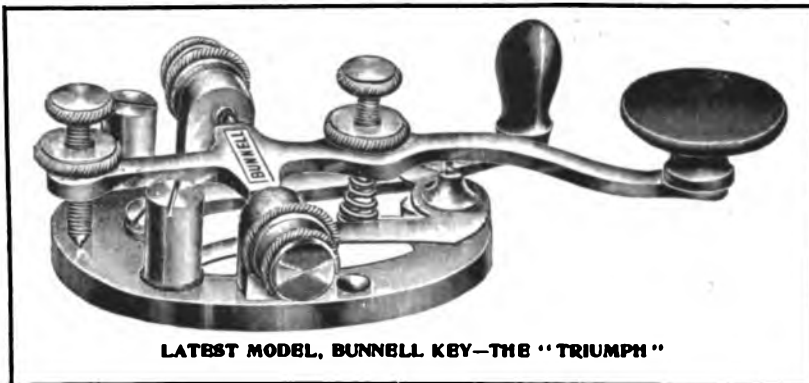
- Association of Railway Telegraph Superintendents meets at Detroit, Mich., June 23, 24, 25, 1909.
Commercial Cable Company meets the first Monday in March, at New York.
Gold and Stock Life Insurance Association meets the third Monday in January, at New York.
Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.
International Association of Municipal Electricians meets at Atlantic City, 1909, at a date to be named later.
Old Time Telegraphers' and Historical Association, will meet at Pittsburg, Pa., 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 in 1909 at Columbus, O., at a date to be determined upon.
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.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by TELEGRAPH AGE on the day of receipt.

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# TELEGRAPH AGE

No. 2.

NEW YORK, JANUARY 16, 1909.

Twenty-sixth Year.

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## SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

### The Murray Loop Test Method.

We are in receipt of a request to explain the significance of the Murry Loop Test formula

$$X = \frac{B}{B+R} \times L.$$

Where X = distance to fault.

B = resistance in one arm of bridge.

R = resistance in rheostat after balancing.

L = total length or resistance of the loop formed.

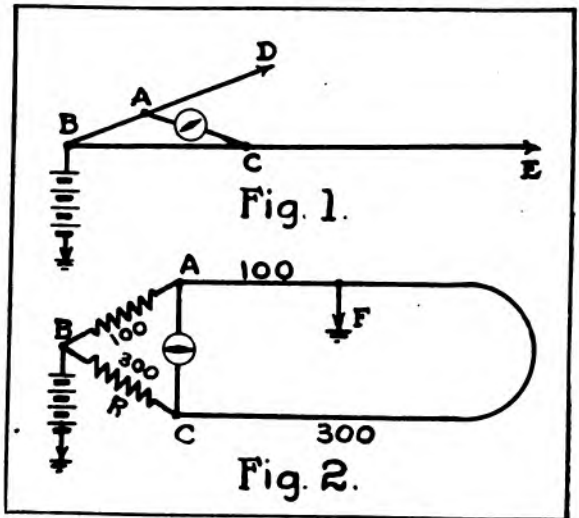
In reference to this question, we will say that the Murry method is very similar in many respects to the Varley test which was fully described in this column some time ago. Its aim is to provide a means of rendering the unknown resistance of an accidental "ground" negligible. Each method requires a second wire in order to first form a loop which shall include the faulty conductor as part of the circuit, the total length or resistance of which loop gives us the value of one of the necessary factors in the final computations.

In the Varley method both arms of the Wheatstone bridge are usually made equal where the

distance is great, and a "balance" is obtained when the resistance of the two sides of the loop are equalized by means of the rheostat, and a formula suitable for that arrangement is required.

In the Murry method but one ratio arm of the bridge is required, and there is no attempt made to equalize the two sides of the loop, ohmically speaking. The aim in this case is to find a second value of resistance for another factor which will bear the same ratio to that of the resistance of the good or long side of the loop, that the known resistance in the one arm of the bridge does to the resistance of the short side. The computation therefore is merely a mathematical problem in proportion.

In order to make this point clear the reader will please glance at Fig. 1 of the accompanying diagram. B—D, and B—E, respectively,



represent two wires of different lengths and resistances of unknown value. As the electromotive force in a line drops in direct proportion to the resistance of the circuit at the point measured, it is evident that with a given voltage the pressure will be the same in each of any two separate circuits (regardless of the difference in their lengths) at all common points in both wires which are equally distant the same ratio of their entire lengths. In other words, in each wire at a point which is exactly  $\frac{1}{3}$ ,  $\frac{1}{2}$  or any other common fraction of the total distance in ohms from the battery. Thus in Fig. 1 if A and C are located at exactly, say, one-third of the respective lengths of the two wires, the electromotive forces at A and C will be identical, and if a galvanometer is connected between those points as shown in the diagram, no current will flow through it. Under these circumstances a balance will be said to



have been obtained and we shall find that we have made a connection which tells us that no matter what the wires measure the resistance between B and A will be the same proportion of B—D that the resistance of BC is to B—E.

So far we have had no figures to work with, and of course it would be impractical, if not almost impossible, to connect a galvanometer across two long conductors themselves in the manner shown, but there is a way of accomplishing the same result as depicted in Fig. 2, which illustrates the method followed by Murry. He takes an ordinary Wheatstone bridge and inserts a certain amount of resistance in one arm thereof, which will represent B—A. He then cuts out the resistance in the other arm and connects an adjustable rheostat in its place. The resistance in the rheostat after a balance has been taken will represent B—C, or the other arm. We now have two factors of known value to begin with, the third factor being that representing the total resistance of the metallic loop formed by means of the good and the faulty conductors shown in the diagram. This value is obtained in the usual way and the measurements may be taken either before or after BA and BC values are found.

As the galvanometer is connected between A and C, it follows that after a balance has been obtained we shall have made the following conditions: BA :: AF : BC :: CF, which is exactly the same proportion we find in Fig. 1.

The balance of the proceedings may be greatly simplified and easily memorized if one will simply make the form of a fraction with the respective values in ohms of the bridge arm and the rheostat arm, being that of the bridge resistance BA as the numerator, and BC as the denominator. This will show the proportion of the loop each side contains.

For example, using the values suggested by our correspondent, 100 ohms in the bridge, or BA, and 300 ohms in the rheostat, which he found was necessary to balance the two sides of the loop, as BC, we get the fraction 100—300 or 1-3.

If we now add the numerator and the denominator together, we will know how many equal parts we may divide the loop resistance into. Thus  $1 + 3 = 4$ . If the loop contains, say, 400 ohms the fraction 1-3 is useful merely as an indicator that one part (not 1-3) represents the resistance of the upper or defective side of the loop, and three parts that of the lower or good side.

If the loop contains 400 ohms and there are thus four equal parts, as must be the case with a 1-3 indicator, each part will contain 100 ohms. Using the fraction in order to keep the proportions in mind, we find that the distance to F is  $1 = 100$  ohms, while the other side is  $3 = 300$  ohms. Adding 100 and 300 together we get 400 ohms, thus verifying the computation.

In actual practice the fraction would of course not reduce so nicely as the figures we give in the example cited, but the principle is the same, as it tells the proportions.

The formula usually given for ascertaining the distance in ohms to the fault is somewhat different from that presented, but the result is identical. It is (using the same letters we have in the diagrams):

$$\frac{BA}{BA + BC} \times \text{Loop} = AF \text{ or } X$$

$$\text{Thus } \frac{100}{100 + 300} \times 400 = 100 \text{ ohms.}$$

#### Recent Telegraph Patents.

A patent, No. 907,604, for a keyboard telegraph system has been granted to C. K. Jones, of Rose-dale, Kan. Details in a system for increasing the speed of transmission.

The following patent has expired:

Patent No. 465,832, for a system of synchronism for telegraphy, held by G. A. Cassagnes, of Paris, France.

#### Personal.

Mr. Melville E. Stone, general manager of The Associated Press, New York, is the subject of an excellent special article, accompanied by a fine full-page portrait, in the January 1 issue of Harper's Weekly.

Mr. Francis W. Jones, formerly electrical engineer of the Postal Telegraph-Cable Company, New York, who since his retirement has been taking a long rest for the benefit of his health, is spending a few weeks in Florida.

Mrs. Marion Smyth, of Manchester, N. H., has been elected president of the Northern Telegraph Company with headquarters at that place. The wire facilities of this concern are leased to the Western Union Telegraph Company.

Mr. W. T. Gentry, vice-president of the Southern Bell Telephone Company, Atlanta, Ga., and formerly a well-known telegraph manager, was a recent New York visitor, whither he came on business connected with the telephone service. While in this city he took occasion to call on many old friends.

Mr. Cornelius Corbett, who resigned January 1 as superintendent of the Western Union Telegraph Company at Cleveland, O., will in future make his home at Detroit, Mich., devoting himself exclusively to the care of his extensive personal business. Mr. Corbett was in the service of the Western Union Telegraph Company for over forty-five years.

Mr. C. F. Annett, who lately resigned the managership of the Western Union Telegraph Company at New Haven, Conn., to go to the Far West, where in former years he had an extensive acquaintance, has established himself in the stationery and notion business in connection with his son, Norman, at Jerome, Idaho, under the title of C. F. Annett and Son. Jerome is a new town through which the railroad has just been built, and gives every indication of a promising future.

### Postal Telegraph-Cable Company.

#### EXECUTIVE OFFICES.

Mr. Shirley M. English, general manager of the Postal Telegraph-Cable Company of Texas, has been elected president of the corporation of which he has been general manager for so many years. His title will hereafter be president and general manager.

The Postal Club has elected the following officers for the year 1909: T. E. Heffren, president; J. F. McNeill, vice-president; F. J. Kernan, treasurer, and M. F. Geigle, secretary. The club has a membership of about one hundred, mainly clerks and others employed in the executive offices, although the president of the club is the manager of one of the branch offices of the company. The purpose of the club is to bring the employes into closer relations with each other, and to promote acquaintance and good fellowship. The annual dinner will occur in March.

Mr. Charles F. Fox, the retiring superintendent of this company, at Des Moines, Iowa, who in the future is to engage in farming in Montana, was on January 1 presented with a Remington automatic rifle, by the managers of his district as a token of the esteem in which he is held. Mr. Fox retired from the telegraph service carrying with him the good wishes of all. He will go to his new home following a brief trip to Cuba.

Mr. J. P. O'Donohue, district electrician at Boston, has been transferred and attached to the electrical engineer's office at New York.

The New York City managers of the company will hold their annual dinner in February, at a date yet to be announced. The object of this yearly affair is for the purpose of bringing the managers into a close personal relationship with a view of promoting acquaintance and so indirectly to advance the business interests of the company. At the dinner in question City Superintendent C. F. Leonard will be the guest of honor. It is expected that a number of the managers will speak on questions relating to increasing the efficiency of the service. S. E. Ostrom, of the 20 Broad street office, is the chairman of the committee of arrangements, and John Manning, of the cashier's office at 253 Broadway, is acting as treasurer.

The tariff book for the current year may be accepted as fairly reflecting the steady growth of the company, for whereas last year it contained 650 pages, the issue just at hand has 722 pages of text besides eleven pages devoted to maps showing the various routes of the company's extensive cable connections. The volume, while gaining in bulk, maintains all the excellences of former productions, is a welcome assistant in the chain of offices in the system of the company, and confers additional proof in its compilation of the aptitude of Isaac Smith, superintendent of tariffs, for work of this character.

#### RESIGNATIONS AND APPOINTMENTS.

Mr. W. W. Morrison, for several years past chief clerk to Superintendent C. F. Fox, at Des Moines, Iowa, has been appointed manager of the office in that city vice J. B. Sampley, resigned, on account of ill health.

### Western Union Telegraph Company.

#### EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer of the company, the inventor of the Barclay printing telegraph, has disposed of his rights to the same in Germany, Austria and Russia, to Messrs. Siemens and Halske, of Berlin.

Barclay printing telegraph circuits have been installed between Omaha and Kansas City and St. Louis and Nashville, and preparations are under way for the installation of printer circuits between Cincinnati and Cleveland, Cincinnati and Detroit, Dallas, Texas and St. Louis, Dallas and Chicago, and Dallas and Kansas City. This printing method is now employed in exchanging about fifty million messages per year over the wires of this company. Errors in transmission have been reduced to a minimum since its introduction, and every one who is called upon to handle the machines prefer the work of printing to that of Morse operation.

Mr. Leonard Cox, traveling auditor of the company, is seriously ill at his residence in this city.

Mr. James F. Nathan, assistant city superintendent, located at the Central Cable Office, 16 Broad street, New York, accompanied by his wife and daughter, spent the holidays in Chicago, at the home of his mother.

#### RESIGNATIONS AND APPOINTMENTS.

Recent appointments in the Cincinnati office embrace the following: L. E. Moores, chief operator, vice J. P. McCabe, resigned; A. A. Montgomery, assistant chief operator, vice Mr. Moores, promoted; W. E. Lukens, second assistant chief operator and traffic chief; Miss Mary Quinn, traffic chief; L. D. Johnson, wire chief. C. A. Adams, formerly of Columbus, O., has been placed in charge of the Commercial News Department.

Miss Anna E. Bruce has been appointed manager at Beaver Falls, Pa., vice Mrs. J. L. Hambleton, resigned.

Mr. C. H. Rauschenberg has been appointed manager at Charleroi, Pa., vice C. S. Harris, resigned.

Mr. John F. Shorey, of Portland, Ore., where he has extensive business interests, among other holdings being president of the City Messenger Delivery Company, a former well-known New York telegrapher, and who has been East for several months on business, has returned to his home.

### The Cable.

A patent, No. 466,492, for cable telegraphy, held by W. E. Facer, of Cleveland, has expired.

Cable communication is interrupted January 13, with:

Venezuela ..... Jan. 12, 1906  
Madura Island (Dutch East Indies) .. Feb. 3, 1908  
Macao ..... Aug. 29, 1908  
Messages can be mailed from Hongkong.

Mr. Bolend, says the London Electrical Review, inquires in the Parliamentary papers, of the English Postmaster General, whether his attention has been called to the continued damage caused to the Atlantic cables off the coast of Ballinskelligs, County Kerry, Ireland, by trawlers; and whether, in view of the representations made by the United States Government and the Chambers of Commerce in the United States and England on this subject, he will use his influence to have these trawlers excluded from the cable zone, within which thirteen cables are laid, to a distance of about fifteen miles from the shore. The Postmaster-General, in reply, stated that his attention has been drawn to recent further cases of damage to the Atlantic cables off the coast of Kerry which are attributed to trawlers. In consultation with the president of the Board of Trade he appointed a committee last summer, which carefully investigated the whole question. The committee had before it a proposal made by certain of the cable companies that trawlers should be excluded from an area extending some seventy miles from the shore (not fifteen miles, as suggested in the question), in which damage attributed by the companies to trawlers had occurred. The committee considered this proposal impracticable, a view in which His Majesty's Government concur. It reported, however, in favor of an alternative proposal made by certain cable companies for the inspection of trawling gear, and the practical steps to be taken to give effect to this recommendation are now under the consideration of the departments concerned.

Brazilian concessions to Germany for the laying of a new telegraph cable between Brazil and Europe and South Africa, which has been pending for something over a year, has finally been granted by the Brazilian Government, the details being as follows: The concession is made to the Felten and Guillaume-Lahmeyerwerke Actien-Gesellschaft, of Mülheim on the Rhine, in a presidential decree, effective October 27, 1908. A cable is to be laid from either Pernambuco or Maccio in Brazil to Teneriffe Island, and, in connection with arrangements to be made with the South American Cable Company, to the west coast of Africa. The concession is granted without time limit, except that the cable must be in operation within three years. The company is to pay the Brazilian Government ten centimes (about two cents) per word on all its business sent or received, and deposits fifty contos of reis (about \$15,000) with the Brazilian Government

as a guaranty for the performance of its part of the contract. The company must pay for the inspection of its service and accounts by the representative of the Government, give government business preference over all other, and also give the Government a discount of fifty per cent. on its messages. The company also agrees to forward messages from Brazil to Europe for at least sixty centimes (about twelve cents) less than the present cable companies are charging. The provisions as to the forfeiture of the contract, and the regulations under which the service will be given, are those usual to such concessions the world over. For the operation of this cable there has been formed at Cologne, Germany, the Deutsch Sudamerikanische Telegraphen Gesellschaft, with a capital of 4,000,000 marks (\$952,000). The plans of the company as announced include the laying of a cable from Germany to Teneriffe, thence to Liberia and German West Africa and German Southwest Africa, and from Teneriffe to Brazil. The German Government is granting a subsidy to the concern which will guarantee the interest and the amortization of the debentures issued by the company.

### Wilkinson's New Book on Submarine Cables.

Submarine Cable Laying and Repairing, by H. D. Wilkinson, M.I.E.E., in new and revised form, is just off the press, and is now ready for delivery. This fine work contains about six hundred pages, embellished by three hundred specially drawn illustrations, and presents the best thought extant on the subject. The volume describes the procedure on board ship when removing a fault or break in a submerged cable and the mechanical gear used in different vessels for this purpose; it considers the best and most recent practice as regards the electrical tests in use for the detection and localization of faults, and the various difficulties that occur to the beginner. It gives a detailed technical summary of modern practice in manufacturing, laying, testing and repairing a submarine telegraph cable. The testing section and details of 'boardship practice have been prepared with the object and hope of helping men in the cable services who are looking further into these branches. Those who have already received copies of this great work speak of it in the highest terms of praise. The price of the book is \$6 a copy, including the cost of delivery. Address and make checks or money orders payable to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

According to time-honored custom the Direct United States Cable Company, Ltd., distributed its desk calendar pad during the holidays. The old familiar form is adhered to, and the business man, banker or merchant or whoever he may be, who receives the pad, will doubtless place it where for years past he has likewise placed its predecessors, each of which have borne the legend, "Mark your telegrams via Direct Cable."

### A. R. Brewer, Treasurer of the Western Union Telegraph Company.

Abijah R. Brewer, who since July, 1875, over a third of a century ago, held the position of secretary of the Western Union Telegraph Company, was on January 1 elected treasurer of the company, to succeed M. T. Wilbur, lately deceased. Mr. Brewer yields only to Mr. J. B. Van Every, vice-president and auditor, the distinction of being the official longest in the service of the company in New York. By reason of his long connection in executive capacity, Mr. Brewer



ABIJAH R. BREWER,  
Treasurer, Western Union Telegraph Company, New York.

has become broadly and thoroughly familiar with company management. He possesses the gift of a ready writer, and because of his interest shown in the history of the company is frequently referred to as its historian. His mind is a storehouse of historical facts and of reminiscent thought not alone of the Western Union telegraph in particular, which it is current phrase to say he has "at his finger ends," but of the telegraph in general. His home is at Glen Ridge, N. J., of which beautiful suburb he has in the past held the office of mayor.

Mr. Brewer was born on a farm in Hunterdon County, N. J., May 3, 1847. He learned to telegraph when a lad of sixteen working in a newspaper office at Lewisburg, Pa., in the same room of which the telegraph company also had an office. Thus equipped he subsequently served as an operator at Trenton and at New Hampton Junction, N. J., later becoming manager of the office at Wilkes Barre, Pa. During the three years of this incumbency young Brewer studied shorthand, then a rare and much valued accomplishment, and which was the means of securing for him speedy advancement. He applied to David Homer Bates, then superintendent of the Western Union Telegraph Company at Philadelphia, who had previously written him encouragingly, for a position in that office as shorthand clerk. The application, however, went wide of its intent, for instead of Mr. Bates, it reached

General Thomas T. Eckert, then general superintendent of the company at New York, who sent for and gave the young aspirant a position in his office. Here he remained for five years, gaining experience and laying the foundation for his future career, which began substantially when he received the appointment as chief clerk in the office of G. H. Mumford, at that time vice-president and secretary of the company. Following the death of Mr. Mumford, Mr. Brewer was elected to succeed him as secretary, this being, as already stated, in July, 1875. Mr. Brewer has been actively identified with the Telegraphers' Mutual Benefit Association, and has held the offices of secretary and president, respectively, now and for many years past occupying that of treasurer.

### Lewis Dresdner, Assistant Treasurer of the Western Union Telegraph Company.

The revival of the office of assistant treasurer of the Western Union Telegraph Company, effective January 1, has placed in that position Lewis Dresdner, the long-time bookkeeper of the treasurer's office, and whose association with the company has covered his entire business career.

Mr. Dresdner was born in Germany, December 13, 1854. On July 15, 1873, he became a messenger at the former office of the Western Union



LEWIS DRESDNER,  
Asst. Treasurer, Western Union Telegraph Company, New York.

Telegraph Company at 145 Broadway. His sturdy, honest German character early exhibited itself in all that he did, and when fitness was rewarded and he became a clerk in the delivery department, none of his associates performed better work than did he. Promotion naturally awaited him, and he soon was made night clerk in charge of the delivery department. Then he was made money transfer clerk, and in 1882 was given a place in the treasurer's office. Here he served in various capacities until 1886,

when he was appointed bookkeeper. This responsible post he has since filled with much acceptability, gaining a profound and practical acquaintance with the details of that important department of the telegraph company. As assistant treasurer he also sustains like association with the American District Telegraph Company, and his advancement is a fitting recognition of a long, intelligent and faithful service. Since early in 1900 Mr. Dresdner has held the position of treasurer of the Gold and Stock Life Insurance Association.

**J. C. Willever, Secretary of the Western Union Telegraph Company.**

John C. Willever, chief clerk of the executive offices of the Western Union Telegraph Company,



**JOHN C. WILLEVER,**  
Secretary, Western Union Telegraph Company, New York.

New York, a position he has held with conspicuous credit to himself and with much fidelity to employing interests for a number of years past, was on January 1 elected secretary of the company, vice A. R. Brewer, who is now treasurer. Mr. Willever's appointment as secretary of the company will not affect his position as chief clerk.

Mr. Willever is a native of New Jersey, having been born at Montana, Warren County, that state, on March 9, 1865. Early in life he acquired the ability to telegraph, and in April, 1880, became an operator for the Delaware, Lackawanna and Western Railroad, later serving the Central Railroad Company of New Jersey in the same capacity. Leaving the railroad service for that of the commercial, he entered the employ of the Western Union Telegraph Company at Asbury Park, N. J., afterwards coming to New York, there continuing in the same interests, first in branch office work and later in the main office. At one time he also held the position of private line operator for the banking firm of John H. Davis and Company.

Of a naturally thoughtful, observing and studious disposition, young Willever made a care-

ful study of the telegraph, at the same time qualifying himself as a stenographer. In this latter capacity he became a clerk for the manager of the operating department, eventually being also appointed statistical clerk. From this position he was advanced to that of stenographer in the office of the general manager of the company. With this new environment came larger demands as well as wider opportunities to which Mr. Willever readily adapted himself. Following this service he was promoted to be private secretary to President General Thomas T. Eckert. With the advent of the present administration Mr. Willever was appointed to the position which he has since held, as before stated, of chief clerk in the executive offices.

It should be said that contemporaneously he held the office of secretary and treasurer of the American District Telegraph Company of New York, which he still retains, excepting that he becomes assistant treasurer instead of treasurer.

**F. J. Scherrer, Assistant Secretary of the Western Union Telegraph Company.**

Franklin J. Scherrer, private secretary to Colonel Robert C. Clowry, president and general manager of the Western Union Telegraph Com-



**FRANKLIN J. SCHERRER,**  
Assistant Secretary, Western Union Telegraph Company, New York.

pany, on January 1 had his duties further added to by being elected to the newly created office of assistant secretary of the company, an act by which in future will cause him to serve in dual positions. Mr. Scherrer, by reason of his long association with the administrative head of the company, his acquaintance with executive office detail and requirements, would seem to be particularly well qualified to meet the special and additional responsibilities which his new office will impose upon him.

Mr. Scherrer was born in Chicago, and his entry into the telegraph service occurred in August, 1882, when he became a check boy in the operating department of the Western Union Telegraph Company in that city. He was afterwards given

employment as an office boy by Superintendent F. H. Tubbs, subsequently, and in the same capacity, being taken into the office of Colonel Clowry, at that time a vice-president and the general superintendent of the western division of the company.

Later young Scherrer was advanced to a clerkship in the office, and gaining the confidence of his employer, was selected by Colonel Clowry as his private secretary. This is a position he has since retained and in which he has given his chief intelligent and loyal service. Mr. Scherrer accompanied Colonel Clowry when the latter came to New York in 1902 to accept the presidency and general management of the company, and in the larger sphere that he has since occupied incident to changed conditions, he has shown growing capacity and address which have won for him very general commendation. Mr. Scherrer was recently elected secretary of the Old Time Telegraphers' and Historical Association.

The Lincoln, Neb., State Journal, in a recent issue states editorially that at points where the two great telegraph companies meet no competition in rates exist. This leads us to observe, according to the argument advanced by that paper, that genuine competition means that each company should fight the other by reducing tariffs and resorting to methods that would indicate daily pugilistic encounters between the warring factions. In Lincoln, Neb., there may be more than one daily newspaper. There certainly are in Omaha and other Nebraskan cities, but there is no evidence of a war on the price charged for each paper notwithstanding the fact that there is the keenest possible competition in the endeavor of each to secure business.

#### Death of Thomas C. Devine.

Thomas C. Devine, assistant chief operator of the Western Union Telegraph Company at Boston, and one of the best known operators in New England, especially among newspaper men, died in that city on January 2. He was born in Providence, R. I., forty-three years ago. He had been connected with the Western Union for more than twenty years in various capacities, holding many important positions. The funeral services, which were largely attended, were held on January 5.

Mr. Devine's familiarity with sporting contests of all descriptions made him a valuable man in newspaper circles, and he "worked" at many big yacht races, football games and other contests in the interest of his company. The Harvard coaches selected him as secretary of the 'varsity crew in 1906, and took him to England with the crew. He married Miss Mary A. Dunn seventeen years ago, herself a former operator, who survives him, together with four children.

Mr. Devine had just recovered from a serious illness and reported for duty, when he was as-

signed to a temporary post in the heart of the Chelsea fire district before the embers had cooled. Being in line of the numerous streams, his clothing became soaked, he caught cold, suffered a relapse and his health gradually failed.

The Boston Post, of January 4, paid the following tribute to Mr. Devine, written by the managing editor of that paper, showing the esteem in which the deceased was held by newspaper men:

Of all the bitter blows that Newspaper row has suffered, none has fallen with greater force than when Tommy Devine was taken away. He was its cheeriest, kindest, brightest spirit.

I never heard a man speak ill of Tommy Devine in all my life, and I knew him many years. He would sacrifice health, time, money and ambition to do the slightest favor for a friend. No matter who the man was, he never applied to Tommy in vain. No one ever saw him down-hearted. Though disease was tearing at his heart he never gave the slightest sign and his smile was winsome as though he was care-free as a baby.

I am glad to have known Tommy Devine. You don't find many men who can measure up to the standard of loyalty, generosity and self-sacrificing work that he has set for us. His memory will never fade from Newspaper row, for whose people he did so much.

God rest you, Tommy Devine, brave knightly, tender soul; surely for you is the golden glory of immortality.

#### OBITUARY NOTES.

George M. Farnham, an old-time telegrapher, died at Chicago, Ill., recently. Mr. Farnham was a prominent military telegrapher serving in the Civil War.

Jonathan B. Clarke, an old-time telegrapher, and a member of the military telegraph corps during the Civil War, died at Caldwell, Kans., on December 22.

Otis Eddy Wood, aged seventy-eight years, a brother of the venerable Orrin S. Wood, of New York, the first telegrapher in the world, and who like his elder brother was a forty-niner of the telegraph, died at Ithaca, N. Y., on January 11. Mr. Wood had been in failing health for the past year, and his death was therefore expected. Mr. Wood entered the telegraph service in 1846, and was appointed superintendent at Buffalo in the following year. He was a brother-in-law of Ezra Cornell, the founder of Cornell University. Mr. Wood, although in the insurance business for many years past, continued to take a lively interest in telegraphic affairs.

The American Telephone and Telegraph Company will increase its capital stock of from \$250,000,000 to \$300,000,000 to take care of \$50,000,000 of convertible bonds recently issued.

An advocate of postal telegraphy in this country states that the only obstacle that he can see to its adoption is that he is afraid the Government cannot regulate the messenger boys.



**The Barclay Printing Telegraph System.**

BY WILLIAM FINN.

(Part XV.)

THE RECEIVING APPARATUS—CONTINUED.  
THE DISTRIBUTING RELAYS.

These relays—one of which is shown perspective-ly in Fig. 48, and in plan in Fig. 49—belong to that particular class of polarized instruments in which both the armature and pole-pieces are permanently magnetized; the magnetism being imparted thereto, in the case under consideration, through the medium of an energizing coil excited by a steady current. The kind of polarity developed in the relay by the energizing coil EC is

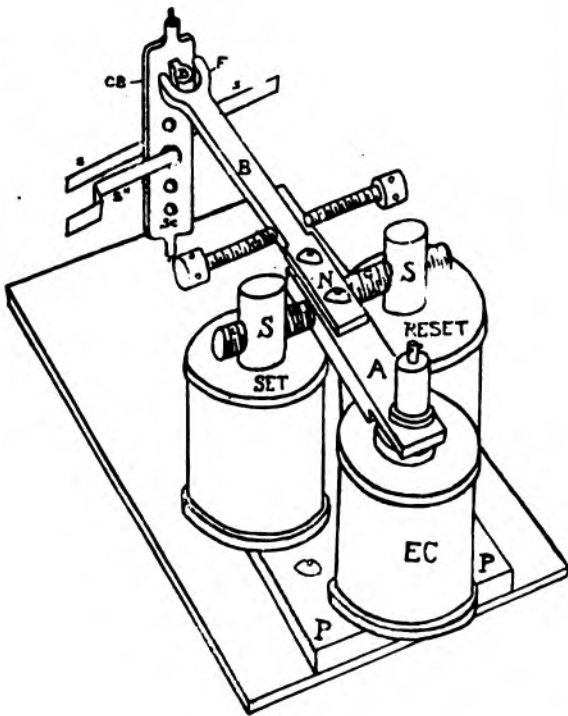


FIG. 48.—DISTRIBUTING RELAY—PERSPECTIVE VIEW.

shown in Fig. 48, where armature A is imbued with N magnetism, and the pole-pieces with S magnetism, the latter being conveyed to the pole-pieces by means of the iron plate P P.

In addition to the energizing coil, each distributing relay is provided with two other separate and independent windings, one known as a "set" coil and the other as a "reset" coil. Each of the set coils S<sup>1</sup>, S<sup>2</sup>, S<sup>3</sup>, S<sup>4</sup>, S<sup>5</sup> (Fig. 50), connects directly with its correspondingly numbered contact point on the sunflower, and is excited whenever the closure of the points coincides with the reception of a long signaling impulse, at which time the separator relay is also brought into action.

The "reset" coils (RS) represent the medium through which any, or all, of the distributing relays may be restored to their normal or zero posi-

tion after the work in the printer circuit has been duly accomplished. These coils receive current from the front contact of the sixth pulse relay at the termination of each series of line impulses.

As already intimated, there are thirty-two combinations possible with an alphabet in which the letters or characters are each made up of six pulses, the said pulses being restricted to two unit lengths, respectively, of dot and dash duration. Hence, with thirty-two printer magnets to

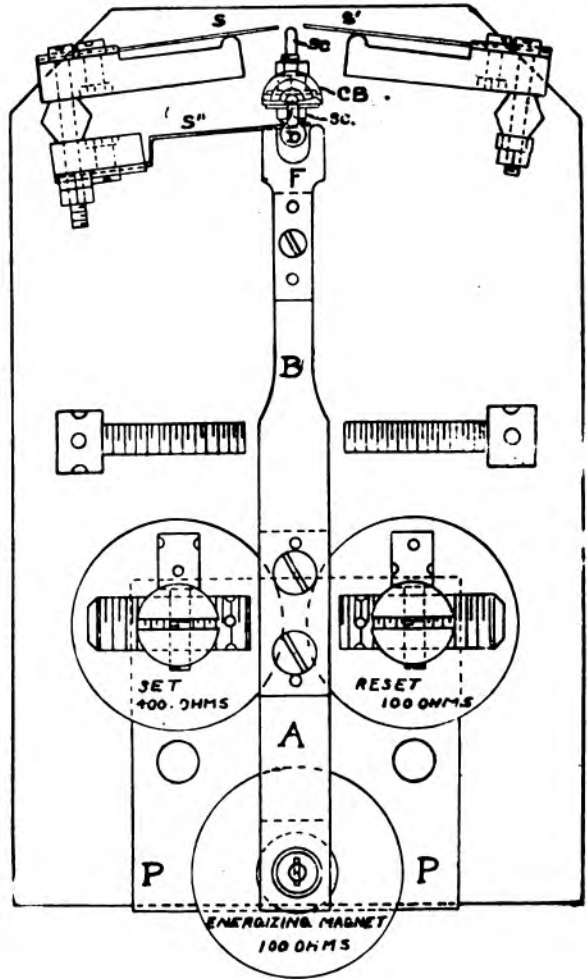


FIG. 49.—PLAN OF DISTRIBUTING RELAY.

be operated, it is obvious that a corresponding number of branch circuits leading thereto must be provided. This is effected through the instrumentality of the distributing relays, the particular function of which is to select the one path or branch in which the printer magnet representing any specific combination is placed. In order to accomplish this, No. 1 distributing relay is furnished with two contact springs, No. 2 relay with four springs, No. 3 with eight, No. 4 with sixteen, and No. 5 with thirty-two, the latter corresponding with the total number of working combinations, or branch circuits, represented in Fig. 50. The arrangement and operation of these con-

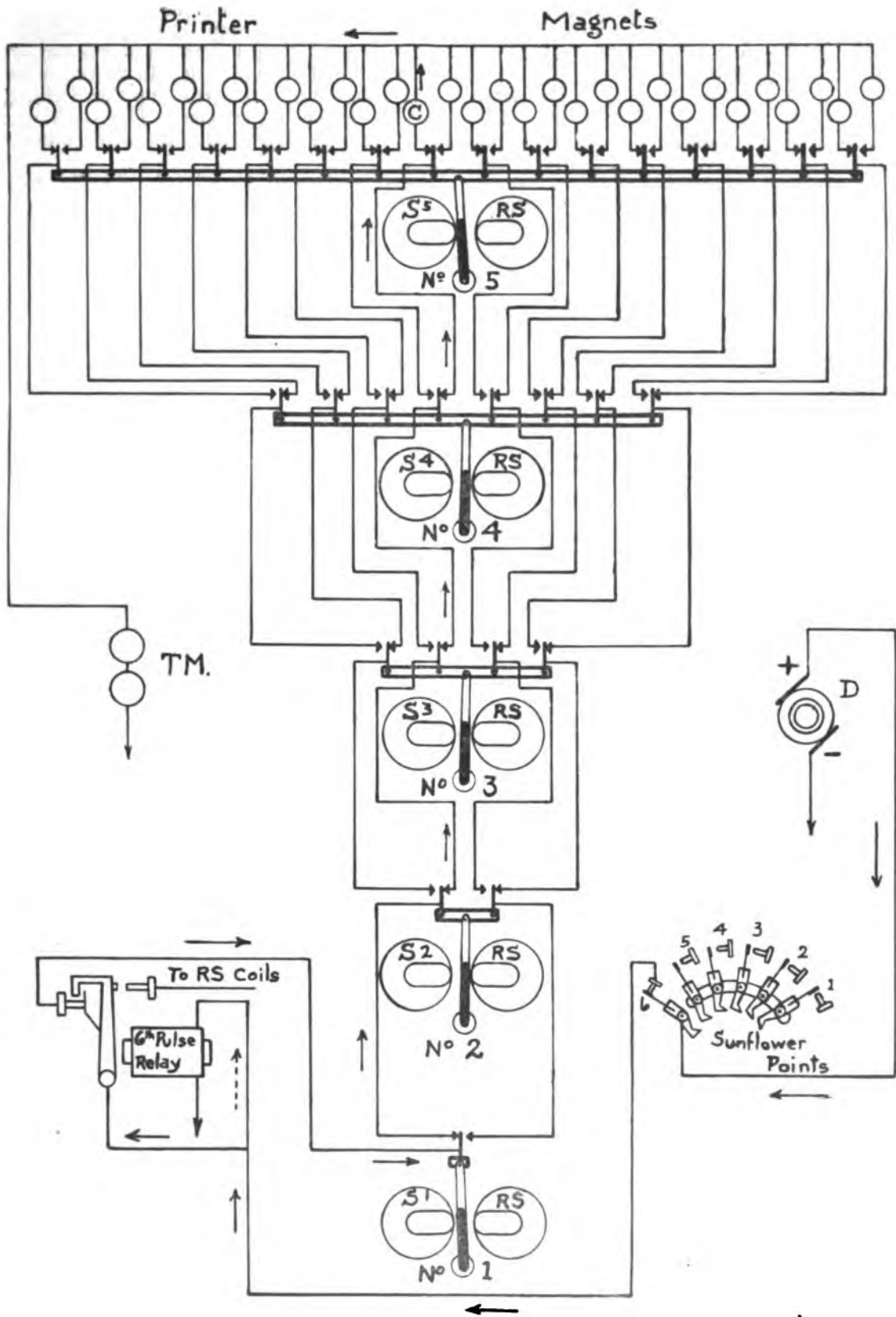


FIG. 50—PRINCIPLE OF DISTRIBUTING SYSTEM.

tact springs will be more clearly understood from the accompanying diagrams (Figs. 48 to 52). Referring to Figs. 48 and 49, it will be seen that armature A is attached by means of screws to a brass arm B having a fork F at its remote end. This fork engages a stud D, by means of which the commutator bar CB may be rocked back and forth and thus establish connection between the springs *s* and *s'* in one position of the armature and between springs *s'* and *s''* in the other armature position; the insulated screws SC complet-

combination always determines the particular distributing relay or group of relays that will be operated or "set" during the transmission of the first five impulses, which, it will be remembered, are alone concerned in setting up the circuit combination for such character. The sixth or last pulse is always long and utilized for other purposes.

Referring now to the printer code, Fig. 1 (June 16 issue), it will be observed that in the letter A, the first pulse is long and the rest short; con-



FIG. 51.—CROSS SECTION OF COMMUTATOR BAR.

ing the necessary junction between the two sets of springs. It will be observed by reference to Fig. 49 that springs *s''* bear upon and therefore

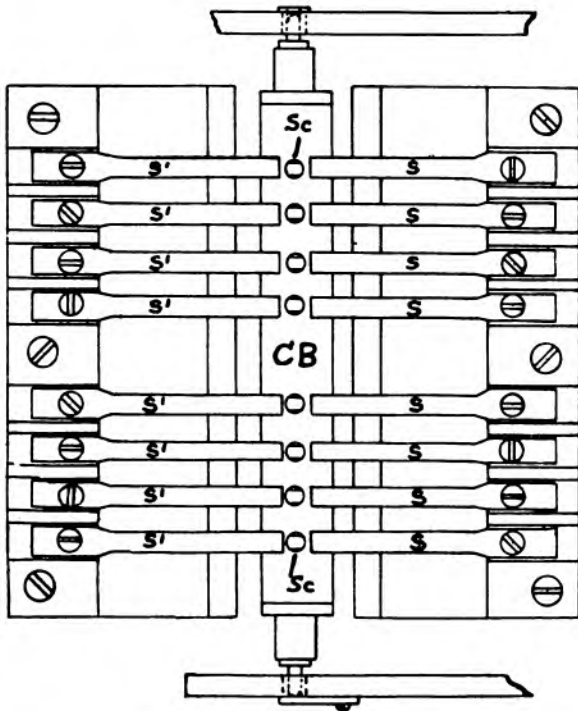


FIG. 52.—FRONT ELEVATION OF SPRING CONTACTS (VIEWED FROM BACK OF PRINTER TABLE.)

make continuous contact with the screws SC, which are insulated from each other, as clearly indicated in the cross sectional drawing, Fig. 51.

The ends of the springs on opposite sides of the commutator bar (a front elevation of which is shown in Fig. 52) should be about one thirty-second of an inch apart. The adjustment of the armatures and pole-pieces of the distributing relays should be as close as is consistent with the perfect making of contact with the springs on one side, and a proper breaking of contact with the springs on the other side.

The prolonged pulse or pulses in any character

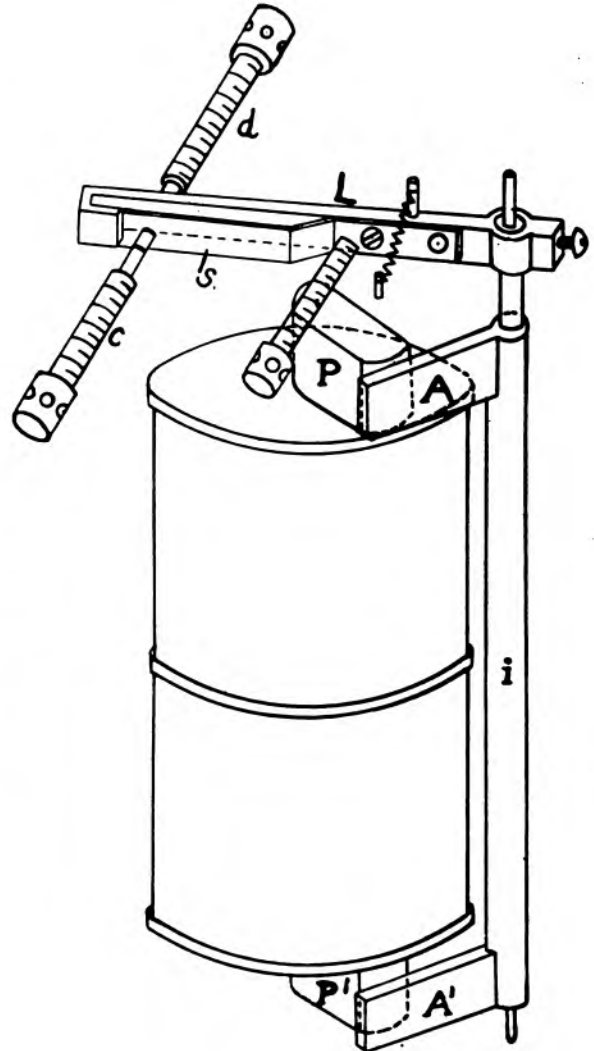


FIG. 53.—SIXTH PULSE RELAY.

sequently for that series of transmitted impulses, No. 1 distributing relay will be the only one actuated and brought to the "set" position, the rest of the relays remaining in the normal or "reset" position. The combination of long and short impulses representing the letter B would cause Nos. 2, 3, and 4 distributing relays to be set, since the second, third, and fourth impulses in that combination are of the prolonged variety.

For the letter C, the first and fifth impulses are prolonged, and their corresponding relays brought into the "set" position as shown in Fig. 50,

which clearly illustrates the principle of the distributing system. In that figure, the sixth or last pulse of the signaling series is assumed to have just arrived (Nos. 1 and 5 relays having been previously set), thereby closing the six sun-

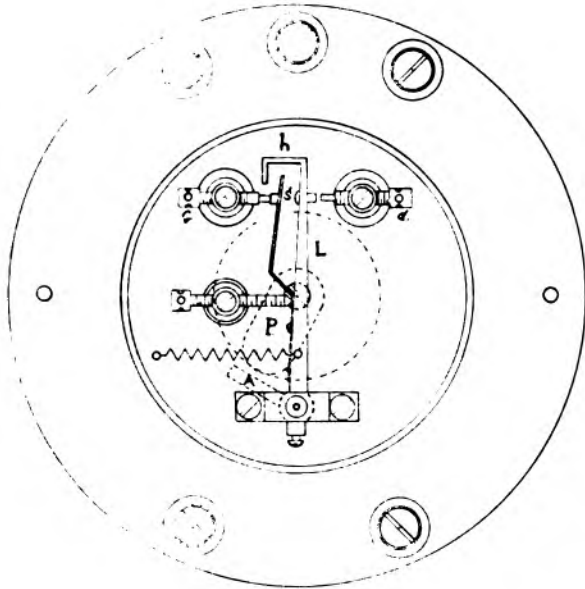


FIG. 54.—TOP VIEW OF SIXTH PULSE RELAY.

flower contact, and completing the circuit of the letter magnet C, as well as that of the sixth pulse relay. By following the direction of the continuous arrows starting from dynamo D, the particular route leading to and from the C magnet may be traced. In circuit with this magnet

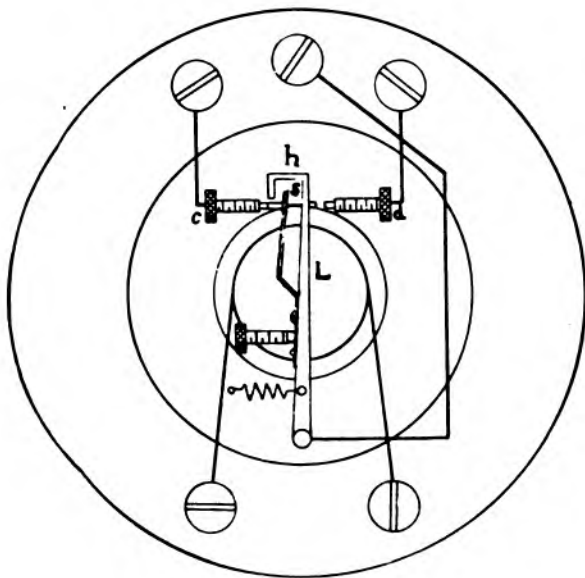


FIG. 55.—WINDING AND CONNECTIONS OF SIXTH PULSE RELAY.

(through the common return wire W) is the trip magnet, TM, which controls the apparatus used for effecting the printing and spacing of the letter selected by the distributing relays.

Meanwhile by the operation of the sixth pulse relay, that instrument has caused its armature to first break connection with its back stop, and then make connections with its front stop, and this latter action permits a current from dynamo D to be sent through the resetting sides of the distributing relays, thus restoring the armatures Nos. 1 and 5 to their normal positions in readiness for the next cycle of operations.

THE SIXTH PULSE RELAY.

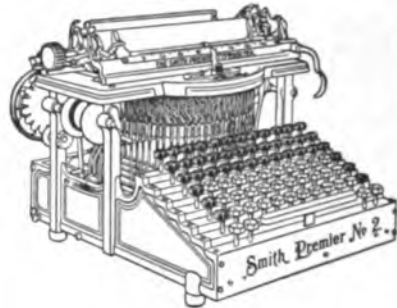
This relay—a perspective view of which is shown in Fig. 53—is a one-coil instrument of the neutral type and, like the separator relay, is provided with a “magnetic return” in the shape of an iron rod, i, which, by reducing the magnetic reluctance, increases the number of lines of force passing between the pole-pieces, P P' and the armature A A'. A plan of the relay is shown in Fig. 54, and its winding and local connections in Fig. 55. This relay—which is operated through the medium of the sixth or last pulse of the signaling series—really completes the task begun by the other five impulses, inasmuch as it sends current through the path already selected, and sets in motion the various parts of the printer mechanism which does the actual work of printing and spacing. It also returns to the zero or starting position such of the distributing relays as may have been previously set. It will be noticed that the armature, L, of this relay (Fig. 54) is constructed with a hook, h, on its remote end, which acts as a retainer for the contact spring, s. The tension applied to this spring by means of the adjusting contact screw, c, should be enough to allow a gap or air space of about three-thirty-seconds, or one-eighth of an inch between the spring and point of the hook in the normal position of the relay, as illustrated in Figs. 54 and 55. Care should also be taken that connection with the back stop, c, is completely broken before contact is made with the front stop, d; in which latter position there should exist a small air gap between the armatures A A' and pole-pieces P P', Fig. 53.

The object of using a spring contact device of the form, and in the manner just noted, is to create a time interval of sufficient duration to enable the current flowing through the printer circuit to fully perform its work of energizing, operating, and locking the various parts of the printer mechanism before it is switched into the “reset” coils of the distributing relays, for the purpose of re-establishing a neutral condition of the apparatus.

(To be continued.)

Mr. Oscar Moll, general manager of the Deutsch-Atlantische Telegraphengesellschaft, at Cologne, Germany, in a recent letter to the publisher of Telegraph Age, stated: “We consider your paper a very valuable addition to our other electrical periodicals, and find it contains all important matters relating to telegraphy and telephony.”

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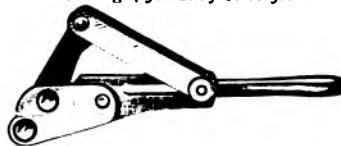
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JANUARY 16, 1909.

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 Telegraph and the Earthquake.

The great earthquake disaster in Italy, and more especially on the island of Sicily, ranking among the most severe visitations of like character the world has ever known, wrought great havoc to the telegraph, both in loss of life and in the wrecking of physical properties. At Messina all the telegraph officials and members of the staff were killed, and the landlines and cables were destroyed. During the several days required to restore telegraphic communication with the devastated section great anxiety was manifested throughout the entire world to ascertain the extent and result of the catastrophe.

Never before were such a flood of telegrams offered for transmission destined to Italy, asking for information regarding life and property. The telegraph and cable companies showed every disposition to lend all possible aid in forwarding messages, and met the emergency in a manner such as to call forth general commendation. The

difficulties attending the delivery of messages in Messina and elsewhere in Sicily have been enormous. To further facilitate the work a list of unclaimed messages is telegraphed to other towns, and every attempt is made to locate the addressee. The correct number of telegraphers and officials killed by the earthquake is not as yet ascertainable, but it is likely that it will reach fully two hundred.

### The Anomalous Position of the Canadian Postmaster General Who Favors Low Cable Rates and High Postage Rates.

The Hon. Rudolphe Lemieux, postmaster general of the Dominion of Canada, has been extensively quoted both at home and abroad, as an advocate of cheap cable rates. It is said of him that he even favors a state-owned cable over which words might be transmitted at a rate so low that, if not warranted to create a public scandal, would at least cause a public deficit, a shortage which the people at large, who never use the cable, might have the special privilege and exquisite pleasure of paying, by the sugar-coated method—a tax bill, to wit.

The perspective afforded of Mr. Lemieux, viewed from this distance, would seem to place that distinguished member of the Dominion cabinet in conflicting attitudes in reference to questions of great public utilities: so much so, indeed, as to raise the thought whether he possesses clear moral discernment respecting the subjects, or at least some of them, for which he undertakes to assume responsibility in his official acts. For, if on the other hand Mr. Lemieux regards his utterances concerning cheap ocean telegraphy, ideas picked up in another land, as evidences of enlightened statesmanship, how can he reconcile that proposition with the excessive postal rates he has been instrumental in imposing on newspapers published abroad and seeking admission into Canada, a law the harsh operation of which exerts a tendency not only to bar out journals published in the United States, but likewise to restrict the circulation of Canadian papers on this side of the border.

The United States Government is authority for the statement that Mr. Lemieux is responsible for the excessive increase exacted in postage charges on educational trade papers, such as Telegraph Age, going to Canadian subscribers. All publications of this character are required to pay a tax, or postage rate, of one cent for every four ounces of weight, thus practically increasing the subscription price on a periodical such as this from fifty to sixty cents per year. This manifestly is unjust, is contrary to the spirit of the age, and places a real hardship on many Canadian subscribers to this journal. The postmaster general of this country stands ready to restore the rate of postage governing second-class matter prevailing between the two countries prior to a date of nearly two years ago, an act, the adoption of which



would again place Canadian subscriptions on a par with those existent in Mexico, Cuba, the Philippines and our own country.

It is pertinent to inquire when views so diametric in principle appear to dominate the mind of an individual, whether their achievement is governed by sincerity of purpose and with a just regard for the best welfare of those of his countrymen affected thereby. Mr. Lemieux placed a heavy embargo on the distribution of educational literature in Canada when he increased the international postal rate in May, 1907.

### The Telegraph and the Interstate Commerce Commission.

The announcement has been made that Senator E. J. Burkett, of Nebraska, would early in the present session of Congress introduce a bill in the upper house to place the business of the telegraph and telephone companies of the country, so far as it may be amenable to interstate transactions, under the authority of the Interstate Commerce Commission, with a view of bringing those interests under federal control. This, it is said, is a move the Nebraskan has long contemplated. It is possible that his well-known feeling of antagonism to both of these great forms of public utilities, may cause him to offer a bill that in its measures providing for control may exceed what may be fairly considered the bounds of justice. The subject is a matter that should be considered in a spirit of moderation and fairness, with a full understanding of the broad equities that underlie and govern the situation. Attacks upon the telegraph which have unfortunately found expression in Congress disguised by the introduction of bills ostensibly to "regulate" that business, having been the means of revealing an animus of feeling at once pitiful, because trifling and disreputable in character, and which we are glad to say excited little or no sympathy in the minds of the committees to whose attention they were relegated.

More or less criticism of the telegraph emanating from Washington through the medium of certain newspaper correspondents and news syndicates, acting apparently in conjunction with certain Congressional members, and finding expression mainly in the lesser journals of the country, serves to keep alive whatever of antipathy there may exist in the public mind respecting the telegraph. Yet a reading of what appears, while nominally plausible to the average and careless general reader, who has no time, and very likely less inclination, to consider the subject beyond the time taken for its perusal, is so distinctly unfair and misleading in its trend, dealing but in generalities and showing such a lamentable ignorance of facts, of the telegraph business itself, as it actually exists and is conducted, as to stamp such utterances as but a betrayal of shallow ignorance, an outrage on decency and a travesty on truth.

The absurdity of such printed statements to the effect that the great telegraph companies are working together in a mutuality of interests, to the non-existence of competition, should be apparent; also that there is a growing demand for the taking over of the telegraph system of this country by the general government, thus emulating the practice observed in other countries (excepting Canada), where, it may be explained, the resultant working of the telegraph is not only far inferior to that of the United States, but in its cheap conduct—cheap considered from every point of view—creates a deficit which the nation so affected is compelled to make up by increased taxation. Such statements are distinctly without warrant and are not based on facts. Likewise any hints as to trouble with employes. They are untrue. Then comes the insinuation, rung with more or less change, that cable rates are excessive, the general subject of the cables, their working, etc., being injected with a lot of theoretical rubbish, at once indicative of the very dense ignorance displayed on the part of those who dabble with the question, its vital principles and technicalities, of which they appear to be utterly at a loss to comprehend.

The telegraph as a great carrier system has a vast and important mission to perform, the workings of which to-day are being conducted with intelligent thought and practical method, calculated to serve the highest purposes within its scope. In proof of this achievement offers the best testimony. Nowhere else in the world are such telegraphic results realized. The telegraph welcomes and will not oppose criticism when directed by capable and well-informed minds.

### Advancement from the Ranks.

Any one who scans the list of names of those in the telegraph service who received promotion in the several changes recorded in our issue of January 1, cannot but be impressed with the fact that all so advanced have received reward because of merit. We revert to this fact because it is so often asserted that only the specially favored have an opportunity for promotion, that the possession of wealth or influence is too often the governing power attending advancement. This is not true, and the absurdity of the statement should be apparent. More than that, the rule of *quid pro quo* is what counts not only in the telegraph, but in every other line of endeavor. The man who is fitted for the work, who can do things, obtains the recognition that sends him ahead and upward, whether he be senior or junior, long time or short time in the service.

Whatever may have been true in former years in regard to placing the sons of wealthy directors and stockholders in places demanding the exercise of technical skill, or in positions otherwise invested with responsibility, the fact remains that to-day, with rare, if any, exceptions, merit is alone considered in making promotions.

This generic idea finds especial emphasis in the further fact that every official in the service of both the Western Union and Postal telegraph companies began their several careers at the foot of the ladder, as messengers, check boys or clerks. It is also true that none of these officials with but a single exception, and in that case the individual is not a salaried officer, have gained preferment without the aid of a college course. This is not advanced as an argument against "higher education;" that would be folly; but to show that devotion to duty, conscientious effort, hard work, coupled with proper ambition, cannot keep a man down, if health remains. It is sometimes said that men fail because of lack of opportunity. There may be some truth in this under certain conditions, but the successful men of the world, of whatever degree, have themselves discovered and challenged opportunity. The officials of the telegraph are no exception, and the positions which they are occupying with so much credit entitle them to words only of praise.

#### **Governor Hughes and the Telegraph.**

Governor Hughes, of New York, in his new year message, had this to say respecting the telegraph:

I renew my recommendation that the public-service commissions law should be extended to telegraph and telephone companies and that they should be brought under appropriate regulation as to rates, service and other matters similar to that which has been provided for corporations at present subject to the law.

The New York Commercial, in commenting on this portion of the Governor's utterance, is moved to remark:

For what purpose? Is there any complaint anywhere in the city or the state as to telegraph or telephone rates or as to the telegraph or telephone service? The rush-hour Brooklyn Bridge "crush" gave us the public-service-commissions law. Has any sort of a "crush" or other incident happened to make it necessary for the State to "regulate" the telegraph and telephone business?

The Commercial speaks truly. Between would-be state intervention and possible Federal jurisdiction as demanded by some, it would seem, indeed, that the telegraph occupies the unfortunate position as being "between the devil and the deep sea."

#### **A Good Way to Begin the New Year.**

J. F. Slack, wire chief and manager of the Santa Fe system at Beaumont, Tex., in remitting his subscription the other day for another year to Telegraph Age, refers to this publication as the "best thing that ever happened for the telegraph fraternity." This is nice, and such an appreciative remark is valued. But it sets in motion a thought for reflection. If this very worthy sentiment might find an echoing expression down through the telegraphic ranks, thus giving initiative and impetus more generally to the flow of a corresponding number of two dollar bills addressed to this office, the "influence for good," which Mr. Slack very generously says abound in these columns, might be indefinitely extended, and the "outlanders" of the fraternity brought

more directly within the sway of the aforesaid impulses. A good way to accomplish so desirable an object would be if every satisfied subscriber to Telegraph Age when renewing his or her subscription, would at the same time induce some telegraph friend to also begin a subscription on their own account, thus insuring the sending of two remittances instead of one.

It may be remarked with due modesty that the conductors of this journal endeavor to produce a paper of sufficient merit to warrant such an all around effort. If the plan indicated might be carried out in detail during this year of 1909, of which we are but now on the threshold, we venture to believe that the phrase of "value received" might with propriety be assented to by both parties to the transaction. So confident an assertion so far as we are concerned, is based in part on the fact that Mr. Slack, who has been a subscriber since 1883, the first year of the publication of the paper, ascribes much of the success he has attained in his profession, to the teachings of this journal, and incidentally to the books he has been induced to purchase and study, an acquirement attributable to its agency. He cites such volumes as Meadowcroft's A B C of Electricity, Maver and Davis' Quadruplex, Thom and Jones, and lastly Jones' Diagrams, all of which, he avers, have aided him in reaching the successful solution of numerous problems that have confronted him in the pursuit of his business. It will be seen that the influence, direct and indirect, of Telegraph Age, on the mind of Mr. Slack has been one of beneficence. If this be true in one case, it might fairly be expected to work that way in another. If, therefore, our friends will act on our suggestion respecting the getting of the "other fellow" to subscribe, who can estimate the amount of good that would probably follow in the ranks of the telegraph fraternity?

We rise to remark that our cashier stands ready and anxious to sign and mail receipts to all who may favor us with a subscription to Telegraph Age for 1909.

The January 1 issue of Telegraph Age known as the directory number, inasmuch as it contained a complete list of and detail of information relative to the several telegraph companies, land, wireless and cable of North America, the signal service of the United States army, and of company and association interests closely allied to the telegraph, all compiled under official authority, has met with very general approval, the reference value of the matter furnished being recognized for its uniqueness and intrinsic worth. It is a pleasure to record the fact that numerous readers of this journal have written to express their thanks and satisfaction for the great issue many declaring it to be the most interesting telegraph paper ever published, possessing a worth that will be lasting. Copies of this directory number can be furnished at twenty-five cents apiece, and will be sent to any address on receipt of price. Address the publisher.

### The Care and Maintenance of Storage Batteries.

If the operator in charge of storage batteries, says F. A. Warfield, will always remember that his batteries will do so much in a given time and no more; that they must be used and treated as carefully as an engine and generator; that any attempt to make them do more than the company which furnished them guaranteed will only involve failure, dissatisfaction and expense, he will have mastered the substance of the best set of instructions for their care. A potential of 2.15 volts per cell is required to start the charge, and the author has usually obtained the best results by charging at fifteen per cent. above the normal rate, maintaining this rate until the voltage reaches approximately 2.5 per cell. At this point the current should be reduced to the normal rate and the charge continued until the voltage stops rising. When charged in this way the voltage will rise rapidly from 2.15 to 2.25 during the first hour, then slowly until 2.45 volts per cell is reached, then it jumps to nearly the maximum value, at which point it remains practically constant, giving off gas freely at the positive and negative plates, while the solution remains perfectly clear. Under ordinary operating conditions a battery may be considered fully charged when the voltage reaches a constant value, but at least once a week this method of determining the state of charge should not be relied upon. There are three ways of determining when a battery is fully charged: When the voltage reaches a constant value; by the color of the plates, and by the specific gravity of the electrolyte reaching a maximum constant value. It is very important that the battery be fully charged, but it is just as important that it be not overcharged, and to prevent this the specific gravity of the individual cells should be taken at least once a week with a hydrometer as a check upon the voltage readings. Usually a charge twenty per cent. in excess of the normal discharge is required. And about once in two weeks an overcharge should be given. This is done by charging normally until the full charge has been given; then the current should be dropped to one-half the normal rate and continued for three or four hours. While doing this the specific gravity will be found to rise for an hour or more after the voltage has become practically constant and the overcharging should be continued until the specific gravity itself becomes constant. If, in case of an emergency, it becomes necessary to charge more quickly than usual, the charge may be started at twice the normal rate and continued until the battery commences to gas and the voltage reaches 2.6 per cell. At this point the electrolyte will have a milky appearance and the battery will be gasing freely. The current should then be reduced to one and a half times the normal rate and the charge continued until the voltage reaches 2.6 again, when the charging current should again be lowered. When a battery is used spasmodically or is kept floating on the line

it is a good plan to discharge it at least once every two weeks and then overcharge. The temperature of the cells should never be allowed to go above 100 degrees Fahrenheit, the temperature of the cells near the middle of the battery being watched to prevent this. The best results are obtained when charging with the temperature between seventy and ninety degrees. The electrolyte should be maintained at least one inch over the tops of the plates and the specific gravity should be between 1,200 and 1,225 when fully charged. The following rules should be observed: Never discharge a battery below 1.75 volts; never adjust the specific gravity by adding acid until the cause of the low specific gravity is known; never allow the acid to get below the standard level; always maintain the acid at the standard specific gravity; never let the battery stand in a discharged condition; at frequent and regular intervals give the battery a good overcharge at a low rate; keep the battery and all connections clean; keep all connections tight; remedy all trouble immediately, and use only pure water and pure acid for the electrolyte.—Electric Journal, Pittsburg.

The life of Lord Kelvin is full of inspiration to the telegrapher, whether of land or cable. The latest volume giving an account of his scientific life, recently off the press, written by Andrew Gray, professor of natural history in the University of Glasgow, Scotland, a former pupil of and assistant to Lord Kelvin, and therefore well equipped for his task, affords a most attractive gift for a Christmas remembrance. For it presents a point of view of that noted scientist, concentrated within the limits stated, of a nature such as to render it valuable to the many who were accustomed to look up to Lord Kelvin as a great leader in the world of science. The activities of Lord Kelvin, even up to the time immediately prior to his death, which occurred on December 16, 1907, were prodigious, and the unfolding and development of his life and character along the lines of scientific thought, study and experiment, leading to discovery unceasingly pursued; the reaching of profound attainments in electrical and other research, including the telegraph, more especially in its application expressed in submarine working, in which connection he invented the mirror galvanometer and the siphon recorder—all may be traced in this delightful volume with pleasure and profit. This book, which is well printed on good paper, contains 316 pages, several illustrations, a number of explanatory drawings, and is fully indexed. It will be sent to any address, carrying charges prepaid, on receipt of price, \$1.25, by J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

There is much for telegraph operators to learn respecting their calling which can be readily obtained by reading *Telegraph Age*—\$2 a year.

### The Revocation of Patents Not Worked in England.

It is now a matter of common knowledge that under the Patent Act of 1907, the controller has power (subject to appeal to the courts) to revoke a patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom. The controller has power to revoke unless the patentee, or other person having the interest of the patentee, can prove to his satisfaction that the patent is worked in the United Kingdom, or give satisfactory reasons why it is not so worked. The facts of the case may be very briefly explained by an example. A Belgian firm acquired two English patents of 1900 for the manufacture of a particular kind of tile. They set up a factory in their own country. It was conceded that they did not allow the process to be worked over here, although it was admitted that a sixth part of their total manufacture was imported into England. Various reasons for not working in the United Kingdom were put forward before the controller. It was alleged that the supply was already equal to the demand; that the product could be more easily turned out in Belgium; that unless the applicant for revocation could show that manufacture of the tiles would be commenced in England, there was no ground to revoke. It was also asserted that as the party applying for revocation had no interest—he not intending to work himself—the controller ought to refuse to revoke the patents. These arguments did not make much impression. In a long written judgment, which can be purchased at the Patent Office, the controller explained his reasons for revoking these patents. He said: "Parliament decided to leave to the tribunal dealing with each case to determine, after hearing the facts and arguments, whether or not the patentee could give satisfactory reasons for his inaction. It is obvious that in determining this question, regard must be had not only to the interests of the patentee, but also to those of the public; and that the mere fact that it would be more profitable or convenient to a patentee to manufacture abroad than in this country cannot be regarded as a satisfactory reason for not taking the necessary steps for introducing the manufacture into this country. Otherwise, no advantage would be gained in any State of the Union (i.e., in the States forming the International Union for the Protection of Industrial Property) by legislation under which patents can be revoked for non-working; because a patentee of his own accord, and without any legislative pressure, will naturally be disposed to manufacture where it is most profitable and convenient for him to do so." Dealing with the suggestion that the issue of advertisements for persons likely to take licenses was sufficient evidence of an attempt or desire to work the patent in this country, he said: "It seems to me impossible to hold that a patentee

can relieve himself from the duty of manufacturing in this country by the mere insertion at any time of a few advertisements, and the sending round to manufacturers of a few circulars to which no replies are received. The advertisements and offers in this case were, I may say, of the vaguest description; they gave no intimation of the terms on which the owners of the patents were prepared to treat, beyond the statement that such terms would be reasonable." The learned controller's remarks with regard to the object of the legislation are also of interest. He said: "I have always regarded the object of the section as being to put a check on the practice, which was alleged to prevail very extensively, of taking out and maintaining patents in this country, not with any intention of working them here, but with the object of preventing the patented articles from being manufactured here, and from being imported by any other parties than the patentees. If, on the evidence which has been submitted in this case, the two patents in question may not be revoked, I find it very difficult to imagine any case in which a patent can be revoked under the section." Eventually he made an order revoking the two patents forthwith, and condemning the licensees in the sum of forty-five guineas for costs.—English Electrical Review.

### The Storage Battery.

For many years the efforts of all designers of Planté plates for storage batteries, says the Electrical World, have been toward increasing the active area, and therefore the minuteness of subdivision of the base lead, which forms both the material from which the active oxides are produced and the conducting support on which they are carried. Improvements in scoring and grooving machinery, in casting thin leaden webs under pressure, and lead squirting through dies, were continually made, and the resulting electrodes became more and more subdivided, with a consequent increase in exposed area, and therefore of capacity, for a plate of given weight and dimensions. Under continuous service, however, it became evident that positive electrodes of this character had short lives, owing to the gradual but inevitable loss of peroxide and its automatic replacement from the underlying lead support. Slowly manufacturers have had forced on them the understanding that the life of a positive plate of the Planté type is a direct function of the thickness of the base lead, and within the past year two of the larger manufacturing companies have modified their positive plates by increasing the thickness of the leaden webs, thereby greatly increasing the durability of the plates, as well as their weight and cost, and decreasing the capacity per square foot of active surface.

The articles under the standing head of "Some Points on Electricity," published regularly in TELEGRAPH AGE, are filled with practical information for the up-to-date operator. Send for a sample copy.

### The January First Issue of Telegraph Age.

If you have not seen a copy of the January 1 edition of *Telegraph Age*, denominated the "directory" number, it will repay you to send twenty-five cents (special price) for the same. It is a great issue, filled with valuable matter of varied information, appealing at once to the needs and interest of all in any way associated with the telegraph.

It contains over 100 pages, embracing 16 pages of index for 1908, covering every item published that year, a history of the telegraph in itself; six pages descriptive of modern telegraph apparatus, with illustrations, including a discussion by W. H. Jones of repeaters from an elementary point of view; a presentation by J. F. Skirrow, associate electrical engineer of the Postal company, of the quadruplex with Smith neutral relay; and the fourteenth installment of William Finn's fine article of three pages, fully illustrated, describing Barclay's printing telegraph system. Then there are the executive office happenings of the Postal and Western Union telegraph companies, noting important official changes that went into effect on January 1, following which comes a three-page article by George G. Ward, vice-president and general manager of the Commercial Cable Company, on the cable situation, an official answer to recent discussions in reference to cable management and tolls, a comprehensive statement bound to attract wide attention.

There are two pages of editorial, following which are thirty-three pages devoted to a directory, compiled under official direction, of the land, submarine and wireless telegraph companies; the United States Signal Service, together with railroad, municipal and other associations of a character closely allied to the telegraph, preceding each of which there is a large full-page engraving of the chief executive officer. These include Colonel R. C. Clowry, of the Western Union; E. J. Nally, Postal; George Gray Ward, Commercial Cable Company; James Kent, Canadian Pacific; Isaac McMichael, Great North Western; S. M. English, Postal of Texas; H. A. Tuttle, North American; Brigadier General James Allen, head of the United States Signal Corps; Major W. A. J. O'Meara, head of the English telegraphs, and others.

The directory matter, now assembled in its entirety for the first time, affords extremely valuable information, infinite in detail, which should be in the possession of every one interested in the great field of the telegraph. The fact that the publication includes a list of all executive officers and of important offices, in most cases giving their managing heads, of all companies in the United States and Canada, has proved to be a very effective and popular feature.

The sketches appearing under the title of the "Military Telegrapher in the Civil War," which have become of such thrilling historical interest, finds continuation in this number, being No. XI in the series, to the extent of nearly two

pages. "Wireless Signaling Through Space," by Clifford D. Babcock, an expert in wireless telegraphy, discusses that subject in an article over three pages in length, in a distinctly original and attractive manner, quite out of the ordinary, conveying information that all desire to know. The new method of train despatching by telephone also receives full consideration. There is also an abundant amount of interesting miscellany.

Altogether the January 1 issue of *Telegraph Age* is well worth your careful reading, and its value as a reference number will increase during the passage of the year. It will be sent to you on receipt of price, twenty-five cents.

Address J. B. Taltavall, *Telegraph Age*, 253 Broadway, New York, remitting in stamps, or by post office or express money order.

Those who wish to enter their names as subscribers, beginning with this initial new year number, can do so at the regular price of subscription, namely, \$2.00.

### Telegraphers' Cramp in England.

A Blue-book of the evidence taken before the Departmental Committee of the Post Office, England, on compensation for industrial diseases, has the following:

Dr. J. Sinclair, second medical officer at the General Post Office, stated before the committee that this mysterious complaint is an occupation neurosis, or fatigue spasm, one of a group of functional disorders characterized by muscular spasm, tremor and weakness. The occupations in which the affection was found were for the most part complicated acts brought to perfection by education and practice, and telegraphy was an example of such an occupation. The complaint might be said to date from the introduction of the Morse instrument, which, operated mainly by the first and second fingers on the knob of a key and the thumb underneath it. The work of a sending operator on these instruments must be characterized by neatness, precision, and perfect rhythm, and accuracy of spacing of the greatest importance. Telegraphers' cramp is resulted from prolonged employment of the special movements called for in the manipulation of the key, and the effect of the ailment was the production of jerkiness and illegibility in signaling and disability for duty limited purely to the particular movements involved. The symptoms could not be easily diagnosed in the early stage; it was symptomatic then, but when once there was a disability in signaling power the disease could be recognized at once. The disease was specific to the employment, because a man must be an expert telegrapher before he could use the instrument. About 2.75 per cent. of the total staff of 18,000 employed in telegraphy, in England, were affected with the disease, which, in Dr. Sinclair's opinion, is not curable when once established.

### Extensive Overland Wireless Service Promised for 1909.

The eastern operating department of the United Wireless Telegraph Company announces the placing of an order for 250 complete sets of wireless instruments, all of which are soon to be installed at stations to be established in cities east of the Mississippi River. This, it is said, is the largest order ever placed for wireless apparatus, and to manufacture, erect and put the stations into operation will require an expenditure exceeding \$500,000. The majority of the stations will be of only one or two kilowatt capacity, with a range of from 100 to 300 miles, but some, which are intended for long distance service, will be of from 5 to 20 kilowatts, to transmit wireless messages, under all conditions of weather, for a range of from 500 to 2,000 miles over-land and from 1,000 to 3,000 over the water.

The United Wireless Telegraph Company's Manufacturing Department embraces three complete factories, two of which are located in Jersey City, N. J., and the other in Seattle, Wash., have a combined capacity of over \$1,000,000 worth of wireless apparatus per year. The larger part of the entire output of these factories has heretofore been needed in filling orders from various governments and for the United company's marine department. It is probable, however, that with an extension of this factory equipment, which will be made in the near future, the 250 sets will be completed and the new stations be ready for operation during the current year.

The company proposes to erect stations not only in the states east of the Mississippi River, but also in the western states from the Pacific Coast eastward, until they complete an intercommunicating wireless system covering all important commercial, mining and manufacturing centers throughout the entire United States. Inasmuch as nearly all of such cities are connected with many smaller places by local telephone systems, it is expected that the United Wireless Telegraph Company will be in a position, by the end of 1909, to receive and deliver messages at several thousand points where the wire companies now maintain offices.

The operating department of the company is now organizing its forces to begin the selection of locations for these new stations. Contracts and leases will be entered into and the advance work completed, ready for the installation of the apparatus, as rapidly as suitable sites can be secured and satisfactory arrangements made. Many of the larger cities in the territory east of the Mississippi River will probably be embraced in this extensive wireless telegraph system.—The Aerogram.

### A Long Circuit to Cover a Short Distance.

Charles H. Jett, night chief operator of the Postal Telegraph-Cable Company, at Denver, Colo., sends us the following:

"Knowing you take a deep interest in all that pertains to the telegraph, I send you a statement regarding what probably is the longest telegraph circuit ever worked to cover a short distance.

"During the recent floods in Montana all railroad communication between Butte and Missoula, Mont., was disturbed for a period of several weeks. The Postal Telegraph-Cable Company, and in fact all other telegraph and railroad interests, lost all wires between these points, a distance of one hundred and twenty-six miles. One night during this interruption Butte reported a long newspaper special for Missoula, one hundred and twenty-six miles away. George Palmer, the Postal late night chief at Chicago, accordingly made up the following circuit:

"Butte was brought east via Salt Lake to Denver, thence east to Omaha, to Des Moines, to Chicago, where the circuit was turned southwest to St. Louis, thence to Kansas City, across Kansas to La Junta, Colo., north again to Denver, on a common side; back again to La Junta on polar side of the same wire, on south via Albuquerque, N. M., and Williams, Arizona, Mojave, Calif., and north to San Francisco, where it was switched through to Seattle, Wash., where Spokane was put on the circuit; Spokane looped Missoula, Mont., on, giving Butte, Mont., a through circuit to Missoula, Mont., 126 miles west of that point.

"This circuit covered a distance of 7,000 miles, passing through fifteen states and territories, embracing fourteen repeater sets, working through two hundred miles of common side Denver to La Junta, Colo. The entire circuit was direct points, except the common side Denver to La Junta, and the loop, Spokane to Missoula, Mont. Denver was sending to Chicago on this circuit while Butte was sending to Missoula, thus doubling a duplex 7,000 miles in length with a 200-mile common side in it.

"This circuit was working within just three minutes after Butte called for Missoula. This quick work was accomplished through the fact that Butte had a Chicago wire; Chicago had a Seattle wire, via Denver and San Francisco. All that was necessary was for Chicago to direct point his Butte to Seattle circuit, putting Butte to Seattle via Chicago and Denver and Frisco. Ask Seattle to put Spokane on, who quickly looped on Missoula."

The practical side of the telegraph is discussed in every issue of Telegraph Age in a manner to interest and aid every individual operator in the service. Why not secure the benefits of such information by subscribing for the paper—\$2 a year.

"Pocket Edition of Diagrams," etc., by Willis H. Jones, electrical editor of Telegraph Age, embodies more practical information concerning the telegraph than any book or series of books hitherto published. See advertisement.



### The Telegraph in New Zealand.

During 1907-8 the telegraphic system of New Zealand increased by 1,132 kilometers of line and 3,724 kilometers of wire to 15,401 kilometers of line and 47,244 kilometers of wire. Besides this, there were 651 kilometers of submarine cable. One hundred and sixty-seven new telegraph offices were opened during the year, and three were closed, making the total number of offices 1,611, of which 1,331 are in telephonic communication. The ordinary traffic shows a substantial increase over 1906-7. There were 6,958,279 private and press telegrams and 84,644 Government messages, making a total for the year of 7,042,923 telegrams—an increase of 646,591 over the preceding year. Of the total, 452,536 were press messages. Traffic exchanged over the Pacific cable amounted to 77,537 ordinary and 477 press telegrams to Australia and 24,953 ordinary and 38 press messages to other countries. The figures for the Eastern Extension route were, to Australia, 10,711, and to other countries 4,258 telegrams. Dealing with traffic to New Zealand, 17,134 international telegrams were received via the Pacific Cable as well as 52,696 from Australia, while 11,020 were transmitted through the Eastern Extension from places outside Australia and 23,273 from Australia. These figures show that the Pacific cable is holding its own in a satisfactory manner. The revenue amounted to £227,398, or an increase over 1906-7 of £20,691; 73,763 telegraph money orders were sent during the year dealing with sums amounting to a total of £3,688; 389 private wires were in existence, against 351 in the year before, and £2,182 was received on this account. The report also mentions that inland, intercolonial and international messages sent to registered addresses not entered in the books have, nevertheless, been delivered. A new cipher code was introduced, whereby a great saving in the number of words on account of meteorological telegrams was effected. On January, 1908, regulations came into operation permitting the delivery of telegrams by telephone. Payment for such service can be made by an annual subscription of £1 or 3d. for every three minutes.

### Japan-China Telegraph Interests.

Consul John H. Snodgrass writes from Kobe, Japan, that for three years past there have been negotiations passing between China and Japan on account of the peculiar conditions in relation to telegraph lines near the Asiatic coast line, following the Russo-Japanese war. It is understood that an agreement has been reached upon the following lines: First, the submarine telegraph cable between Kwantung Province and Chefoo shall be divided between the two countries, the section from Kwantung Province to a point seven and a half miles from the shore at Chefoo being held by Japan, and the section beyond that point by China; second, China shall construct a telegraph line from the landing point

of the submarine cable to the Japanese post-office at Chefoo, and that the Japanese post-office at Chefoo shall deal with messages in Japanese kana characters for the convenience of Japanese; third, that those telegraph lines constructed by Japan in Manchuria during the Russo-Japanese war remaining outside the railway boundary shall be purchased by China; but even after the purchase of such lines a Japanese staff shall, for the convenience of Japanese residents in the open cities in Manchuria, be authorized to deal in Manchuria with messages in Japanese under a special arrangement. Minor regulations are to be arranged later on the same basis.

### The Phonic Telegraph in Connection With Telephones.

Major A. D. Ramdohr describes in a Berlin electrical journal, a combination of telegraph sounder and telephone, forming simple and reliable portable stations, intended for military field practice and similar purposes, and permitting the use of lines for either telegraphy or telephony. He has developed a novel sounder, of the "buzzer" type, in which the vibration of the armature is effected entirely by electromagnetic force, and not partly by the force of a spring, as in ordinary sounders and automatic interrupters. An armature consisting of two iron discs, and a contact rod, which rigidly connects them, vibrates in an axial direction in an electromagnetic system formed by the co-axially arranged electromagnets. The rods make an intermittent contact with the spring. The apparatus will operate in any position, is very sensitive, and the frequency of interruption or note emitted by it may be conveniently varied. The telegraph sounder is enclosed in the handle of the telephone.—The Electrical Review.

### A North Sea Fish Story.

According to a German technical paper a new use has been found for the telephone, which the London Electrical Review, while republishing the item, takes pains to assure its readers that it declines to assume any responsibility for its correctness. The paragraph reads: "A sensitive microphone is enclosed in a water-tight case formed of sheet steel, and lowered into the sea. Well insulated wires connect the microphone with the receiving station on board ship. It has been observed that each kind of fish exerts a different influence on the microphone, so that the fishermen on board are apprised not only of the approach of a shoal of fish, but also of the kind of fish composing it."

"The Practical Management of Dynamos and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

## The Military Telegrapher in the Civil War.

### PART XII.

The following, embracing portions of letters addressed to Colonel William R. Plum, the historian of the United States Military Telegraph Corps, and never before published, afford further interesting contributions to a subject concerning the patriotic activities of telegraphers in the military service of the government during the Civil War, that never wearies in recital.

Writing under date of October 30, 1878, at San Francisco., Calif., O. B. Vincent modestly says:

"My career in the military telegraph service was so uneventful that I can recall nothing worth recording. My regiment, the 148th Ohio, joined the army of General B. F. Butler near Bermuda Hundred, Va., about the middle of June, 1864. After remaining at the front about a week, it was sent back to Bermuda Hundred on guard duty, immediately after which I, together with W. H. Wilson, of the same regiment, was detailed on telegraph service and sent to open an office at a point on the James River, known as Jones' Neck, where General Foster's brigade at that time lay. My office was on the right bank of the river and the brigade on the left bank, a pontoon bridge being thrown across the water at that point. The name of 'Neck' was very appropriate, as a strip of land not more than fifty yards wide separated the river from an immense swamp. Just below the pontoon bridge a Confederate gunboat was anchored in which the enemy had a battery trained, and amused themselves nearly every day by throwing a few shells in our direction. From my tent I could plainly see the smoke from their guns, and it was quite interesting to watch the shells, some falling in the river, some on the 'neck,' and others in the swamp; some bursting high in air, scattering fragments far and wide, others not bursting at all. It is probable it would have been more interesting, if not exactly more amusing, if the shells had fallen near enough to give a spice of danger to the situation. I understood after I left that the gunboat moved further up the river, with the result that the shells began falling so thick around the office tent that W. S. Logue, the operator who relieved me, had to retire from his exposed position. Nothing of the kind happened, however, while I was there, which was only two or three weeks, when, my health failing, I was transferred to Bermuda Hundred to assist Horace N. Snow in the telegraph office at that point. It being merely a commissary depot, nothing exciting was likely to occur.

"Our office was in a church and close beside it was a log building that the darkies used for their religious services. Every Sunday night they would gather there for class meeting, I should judge, or perhaps prayer meeting. Some brother would relate his experience, or offer up a prayer,

with the utmost zeal and earnestness, then a hymn would be sung, each individual maintaining his own tune and time, but each thoroughly in earnest, producing on the whole a not very unmelodious noise. Listening to these negroes was the only amusement we had. During my stay at this place a barge load of ammunition exploded at City Point which I happened to see, being outside the office and looking in that direction at the time. One morning early I was awakened by a furious cannonading in the direction of Petersburg. It seemed to be an almost continuous roar of heavy guns. I afterwards learned it was on the occasion of General U. S. Grant exploding his mine before Petersburg when he was repulsed with such heavy loss. When my regiment was ordered home I was returned to my company, and was mustered out and paid at Marietta, Ohio, September 16, 1864, by C. C. Brown, paymaster U. S. A. Thus endeth my experience in the military telegraph service which, you see, is exceedingly uneventful. Let me say, however, that Richard O'Brien was chief operator for General Butler. W. K. Applebaugh, now a prominent telegrapher in New York, was with the same division. I cannot now call to mind the names of any of the other operators.

"I received soldier's pay only for the entire time I was out. I applied to headquarters at Washington for increased pay while in the telegraph service, but was informed that as I had already been paid as a soldier I could receive nothing for the other service unless what I had already received was refunded. I did not know where to find the paymaster who had paid me and as I was quite young and inexperienced and did not know what steps to take, allowed the matter to rest, as the amount could not be very large at the best."

From Palatine Bridge, N. Y., on June 10, 1878, H. P. Jones wrote as follows:

"My military telegraph experience is somewhat limited, for I was located at but one point during my connection with the United States Military Telegraph service. The lapse of time has effaced from memory many incidents connected therewith. In the year 1862, at that time being in commercial telegraph employ, I made application to General Anson Stager, whose headquarters were at Washington, for service, and was ordered to report at the capital, an order that was countermanded to Philadelphia. At the latter point I was given charge of the War Department (D I) circuit, where I remained during the whole time of my service, leaving there, as near as I can remember, in 1864.

"Most of the incidents connected with that circuit will no doubt be given by the 'D I' men. Robert Cunningham, Edward Rosewater, A. W. Orton, W. H. Young, and others. Let me relate the following, however, which you may think worthy of mention, for it shows 'hat little matters even did not escape the notice of 'Father Abe' in the midst of the great conflict. You will

remember the massacres committed by the Indians in the Northwest, and the subsequent capture of a large number of the redskins. Major General John Pope (I think) commanded with headquarters at St. Paul, Minn., and reported proceedings in full by wire. The message was an immense affair covering, as I remember, a hundred sheets, giving the full name and title of every Indian, some of the names occupying a line and a half. The huge document was handled in fine style by Mr. Rosewater at Washington and handed to President Lincoln. In a few minutes the following reply was on its way to General Pope: 'General John Pope, St. Paul: Hereafter forward such communications by mail. Sig., A. Lincoln.' Mr. Lincoln had espied the check and the cost of the message, which, being large, had probably astonished him, and brought out the terse reply. General Pope was anxious for a general hanging, and shortly afterwards the Indians were hung."

Bennett R. Bates, in 1878, was superintendent of the American District Telegraph Company at Oakland, Calif. Stating that he was the last person employed in the old "D I" office, he writes under date of August 24, 1878:

"I entered the telegraph service at the age of fourteen as messenger or office boy in the spring of 1865. I learned to telegraph in a short time, and was soon made an operator, as well as a cipher operator, and in the latter capacity was once sent on special service down to Savannah, Ga., on account of some negro insurrection.

"At the time of my entry into the War Department there were assembled in that office General Thomas T. Eckert, General Anson Stager, A. B. Chandler, D. H. Bates, Charles A. Tinker, G. W. Baldwin, W. E. Kettles, J. H. Dwight, M. P. Graham, S. H. Beckwith, F. Stewart and a host of others. These all left one by one, until finally the United States Military Telegraph was embodied in but one person, and that was myself; and the office was moved from a commodious room to a landing at the head of the stairs, where I believe it was first opened by Colonel Thomas Scott in 1861.

"About this time, 1869, the office was turned over to the Western Union Telegraph Company, and the United States Military Telegraphs was a thing of the past. My brother, David Homer Bates, now general superintendent of the Atlantic and Pacific Telegraph Company, at New York, who was one of the original 'four' operators of the military telegraph, and who remained in the service until after the close of the war, can doubtless give some good and reliable information to you in collecting the material for your book."

Telegraph Age is the leading journal of its class in the world, and should be in the hands of every progressive operator; \$2 a year.

### Measurements of Wave Lengths in Radio-Telegraphy.

An extract from the writings of J. A. Fleming, printed in London Electricity, says: "An important measurement is the measurement of the wave length of the waves emitted by an antenna, or the wave lengths being received by an antenna. In all cases of wave motion there is a relation between the velocity of the wave  $V$ , its frequency  $n$ , and wave length  $l$ , expressed by the equation  $V = n \times l$ . The velocity of the electro-magnetic waves being three hundred million meters per second, or very nearly 1,000 million feet per second, it follows that the wave length is at once obtained by dividing this last number by the frequency. Hence, if the frequency of the oscillations in an antenna is determined, we have the wave length of the emitted waves. If, then, we can determine the oscillation constant of the antenna, or of the circuit which is radiating, we have at once the following rules:

"Wave length in feet =  $195.56 \times$  oscillation constant.

"Wave length in meters =  $59.6 \times$  oscillation constant.

"Frequency in millionths of a second is  $5.033 \div$  oscillation constant."

### Radio-Telegraphy.

A description of the first wireless telegraph station erected for the English Government at Bolt Head, South Devon, as mentioned in our previous issue, is as follows:

This station will furnish facilities for communication with ships at sea, under the provisions of the International Radiotelegraphic Convention. Most of the apparatus installed is of the latest Marconi pattern. When working, both the transmitting and receiving circuits are connected to the antenna, and the same operator can receive while transmitting. This has been rendered possible by the use of a small spark-gap inserted in the antenna, across which the receiving apparatus is connected. During transmission, the current surges bridge this gap, which is then practically non-existing. Means are provided for automatically short-circuiting the telephone when contact is made in the transmitting circuit. Another novel feature is the provision of variable couplings in the high-frequency oscillation transformers for the purpose of enabling sharper waves to be produced. The receiving apparatus includes the latest pattern of the Marconi multiple tuner. A mast, 160 feet high, supports an umbrella-type antenna of stranded copper wire.

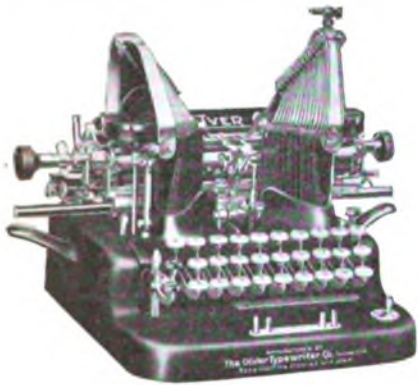
Townsend Walcott, engineer of the United States Signal Corps, and William Maver, Jr., electrical engineer and author, of New York, lectured on wireless telegraphy and telephony before the Signal Corps students at their school at Fort Wood, New York Harbor, on January 12.

# Seventeen Cents a Day

**Buys the Oliver Typewriter  
Whose Splendid Merit Has Made It**

## Supreme In the Telegraph Service

Please read the headline over again. Then its tremendous significance will dawn upon you. An Oliver Typewriter—the standard visible writer—the \$100 machine—the most highly perfected typewriter on the market. *Yours for Seventeen cents a day!*



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This certainly places a premium on pennies! It recognizes *honesty* as a *commercial asset*. Simply save the small change that now slips through your fingers—and own the magnificent New Model No. 5.

The   
**OLIVER**  
Typewriter

### The Standard Visible Writer

Never was a greater incentive to *save* set before the telegraph operators of America. Nor ever was a more impressive object lesson evolved to prove the purchasing power of pennies. The present tendency is to think in *big figures*. To lose sight of the *100 cents* that go to make up the dollar. To forget the *purchasing power* that is pent up in pennies, nickels and dimes.

Our “Seventeen-cents-a-day” selling plan turns this power to worthy purpose.

The Oliver Typewriter Company feels safe in putting this new plan into effect because it banks on your *business honor*. Our confidence in *you* is born of our satisfactory dealings with *thousands* of telegraph operators in all parts of the world.

So we offer the Oliver Typewriter for a small cash payment *and trust you for all the rest*.

And we are just as glad to sell a machine for Seventeen cents a day as to have the cash with the order.

The Oliver is popular with operators because of its *100 per cent efficiency*. It's a sturdy machine with record speed that *writes in an undertone*.

The Oliver Typewriter turns out more work—of better quality and greater variety—than any other writing machine. Simplicity, strength, ease of operation and visibility are the corner stones of its towering supremacy.

**Can you spend Seventeen cents a day to better advantage than in the purchase of this wonderful machine?**

Write for Special Easy Payment Proposition or see the nearest Oliver Agent.

**The Oliver Typewriter Company, 104 Oliver Typewriter Bldg., Chicago**

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## INSULATED WIRES AND CABLES



**K**ERITE insulation is a homogeneous combination of crude Kerite with the finest Para rubber. Kerite preserves the rubber and has unequalled life and durability. This has been proved by the actual test of fifty years.

Initial tests determine if an insulated wire will do the work for which it is intended; but initial tests can not determine if it will do that work years hence. Kerite has back of it an unequalled record of half a century of successful service under the most adverse conditions.

Kerite insulation does not deteriorate, but improves with age.

**K**ERITE wires and cables installed half a century ago are in service to-day. The wonderful durability of Kerite insures the highest efficiency, safety and economy, and is a guarantee of the best and most successful results.

The property of Kerite in resisting deteriorating influences and the qualities which render it so indestructible are facts which should be carefully considered where an insulated wire is used.

Take advantage of the experience of others and insure your service with Kerite.

**For Fifty Years the Standard of Excellence**

**AERIAL—UNDERGROUND—SUBMARINE**

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Incorporated by W. R. Brixey  
**SOLE MANUFACTURERS**

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### The Railroad.

Mr. H. O. Rugh, chief engineer of the Sandwich Electric Company, Sandwich, Ill., was a recent visitor in New York, coming on business connected with his company.

Mr. J. B. Fisher, superintendent of telegraph of the Pennsylvania Railroad, Philadelphia, has been elected vice-president of the Association of Railway Telegraph Superintendents by the executive committee, to fill the vacancy caused by the resignation of G. W. Dailey, of the Chicago and North Western Railway, Chicago, who retired from the association because of transfer to another department of the railroad service, and and therefore is no longer in touch with telegraph interests.

Mr. W. C. Brown, who was a few days ago elected president of the New York Central and Hudson River Railroad Company, the Vanderbilt system, delights to refer to the fact that he began his business career as a telegraph operator on a Western railroad, at a remuneration of \$35 per month. Mr. Brown now receives a princely salary, and he is declared to be one of the brainiest officials in the railroad service.

### The Famous Gun-Cap Battery Presented to the Smithsonian Institution.

The gun-cap battery which was recently exhibited at the Electrical Show, Madison Square Garden, New York, loaned for the purpose by Henry H. Ward, a forty-niner of the telegraph, and a resident of East Orange, N. J., has been presented by that gentleman to the Smithsonian Institution, Washington, D. C., where hereafter it will be on permanent exhibition. It will be remembered that this tiny battery in 1866 operated the Atlantic cable, several messages being transmitted from Newfoundland to Ireland with this battery in circuit. Letters testifying to its genuineness, written by those in charge of the cable station at the time it was so used, accompany the exhibit. The battery came into the possession of Mr. Ward some time in the sixties, since which time it has on several occasions been placed on public exhibition, always attracting much attention.

In several instances lately steamers going into Boston harbor have reported that the ship compasses when nearing that port have showed material deviation. Following the statement that the compass of the British steamer Satsuma which arrived December 15, showed material deviation on the run from Highland light to the lightship, came the report that the compass of the steamer Chelton, reaching Boston on the day following from Central American ports, indicated a deviation of about two miles covering the distance named. The reports are perplexing shipping interests. The theory has been advanced, but without much faith, that something of a metallic nature on shore may have put the compasses out

of adjustment, and the opinion is also given that the wireless station equipment on Cape Cod may have had something to do with it.

### Penny Telegrams in England.

The English Postmaster General, replying to Parliamentary interrogations, states that he is not prepared to adopt a suggestion of "penny post-telegrams," that is, telegrams sent over the wires to fall into the next delivery by postmen on reaching their destination, at, say, ten words for one penny and a halfpenny for each additional word. The Postmaster General evidently concludes that the deficit of the telegraphs in England is large enough without adding to the burdens of the tax payer by adopting such ridiculously low rates for telegrams as those indicated.

In order to overcome the tendency on the part of the telephone companies to draw upon the personnel of the telegraph to recruit its ranks with expert telegraph men to operate the growing leased wire service of the telephone, to the detriment of regular telephone operators who, because of their lack of telegraphic knowledge, cannot receive promotion to these desirable positions, a number of telephone employes at Salt Lake City, in the line of promotion in the operating and mechanical departments of the local company, have started in to learn the Morse code. For this purpose a class embracing twenty-five ambitious telephoners has been organized, and has secured the services of a well-known telegrapher as their instructor. It is expected that when proficiency has been reached the local telephone management will not find it necessary to go outside of their own people to find wire chiefs.

### Business Notice.

Mr. J. J. Estabrook, for a number of years associated with the Engineering Specialty Company, formerly of New York, but more latterly of Stamford, Conn., of which he was one of the charter members, holding the office of vice-president and secretary, resigned recently from that concern, his retirement taking effect on January 1. Mr. Estabrook is now engaged on his own account in practically the same line of business as that which has previously engaged his attention, having offices in the Havemeyer Building, 26 Cortlandt street, corner of Church. He offers a full line of standard and special motors, motor generators, etc., especially adapted to telegraph and telephone requirements, and is amply prepared to fill all orders promptly in these special fields, in which he enjoys a wide and favorable acquaintance. His long experience in this particular kind of work, covering a period of fifteen years, a portion of the time as a manufacturer, qualifies him as an expert in the business in which he is engaged.

Subscribe for Telegraph Age, \$2.00 per year.



### Leona Lemon, Division Superintendent, New York, of the Postal Telegraph-Cable Company.

Leona Lemon, who was promoted from the position of superintendent at Philadelphia of the Postal Telegraph-Cable Company to that of division superintendent with headquarters at New York, advances a man who throughout his telegraphic career has shown a high order of ability. Mr. Lemon was born on a farm near Mifflin, Juniata County, Pa., June 9, 1867. In the summer of 1881, when fourteen years of age, he entered the telegraph service on the middle division of the Pennsylvania Railroad, between Harrisburg and Altoona, Pa. From this beginning his subsequent career has been a varied and active one. He early acquired the art of telegraphing, and



LEONA LEMON,  
Division Superintendent, Postal Telegraph-Cable Company,  
New York.

like everything else Mr. Lemon has since done, this duty he performed well, for he was actuated by a conscientious desire to excel, his aim being to make a success of himself. From an operator in railroad employ the transition to the commercial service was a natural one. At Trenton, N. J., he became a Western Union operator, afterward as manager of the same interests at Mifflin, near his old home. Since that time his alternate occupations as operator and manager, first of one company, and then of another, in widely different parts of the country, interspersed by returns to railway telegraphing; were many, steadily gaining in practical experience and rising in responsibility of position occupied. Returning from the West, he became manager for the Postal company at Altoona, Pa., from which he was advanced to the charge of the more important office in Baltimore, in which city he also served as superintendent of the fire and police telegraph. His record at Baltimore so far determined the character of the man that his appointment as superintendent, with headquarters at Pittsburg, was a natural sequence. From the latter point to Philadelphia was a further move in the line of promotion, and now his coming to New York records still another advance.

### The Edison Storage Battery.

Thomas A. Edison says he has brought his storage battery to a high state of perfection, and that its use is calculated to revolutionize surface car traffic. In an interview he says:

"I have been working on the storage battery for months with the idea of avoiding the heavy investment for plant which goes with each venture of the kind nowadays. A generating station, which must remain practically idle most of the night, is naturally a drain on the resources of any company, and after I have demonstrated the commercial practicability of my storage battery as applied to surface lines, I have no doubt that future investments will confine themselves to the battery system.

"I have made no changes in the battery, which I practically perfected years ago. The elements are the same, nickel with an alkali reaction, but I have made those improvements which are bound to follow steady experimentation till now I am convinced that I have the battery needed.

"I am satisfied that we could put a car in service to-day that would run a whole day without recharging, but there will be no practical test for a couple of months, when we will put a car on the Third Avenue line in New York."

### Postal Telegraph Employees' Association.

The annual election of the Postal Telegraph Employees' Association has taken place. The following directors for the year 1909 were elected:

Eastern Division—First district, C. A. Richardson, Boston; Second district, J. F. Coogan, Newark, N. J.; New York City, J. J. Cochrane; Third district, J. A. McNichol, Philadelphia; Fourth district, Robt. J. Little, Rochester, N. Y.; Fifth district, A. W. Rinehart, Pittsburg.

Western Division—First district, M. E. Cozens, Chicago; Chicago city offices, George Smallbone; Second district, B. J. Ross, Cleveland, O.; Third district, W. S. Daniel, St. Louis; Fourth district, Peter J. Becker, Detroit, Mich.; Fifth district, B. F. Rommell, Kansas City, Mo.; Sixth district, D. McNicol, Salt Lake City, Utah; Seventh district, Jerome B. Coggins, Denver, Colo.

Southern Division—First district, C. T. Sydnor, Richmond, Va.; Second district, A. M. Beatty, Atlanta, Ga.; Third district, T. D. Jackson, Birmingham, Ala.; Fourth district, J. F. Wilson, Memphis, Tenn.

Pacific Division—First district, T. H. Berry, San Francisco, Cal.; Second district, J. J. Dunne, Seattle, Wash.; Third district, E. K. Backus, Los Angeles, Cal.

These directors have elected the following officers: Stevenson B. Haig, president, New York; Alfred Bassett, vice-president, Chicago; Thomas E. Fleming, secretary, New York.

Executive Committee—John J. Cochrane, New York; John A. McNichol, Philadelphia; Chas. A. Richardson, Boston; F. N. Roberts, Chicago;

Frank Arnberger, San Francisco; A. M. Beatty, Atlanta.

The percentage of salary allowed members of from one to five years' service with the company, on account of incapacity, has been increased, and a change has been made in the limit of period during which benefits are payable during the first three years of service. The schedule of death benefits remains as at present.

The schedule now stands as follows, and will be in force until October 31, 1909:

Length of continuous service; years.	Percentage of salary at time of incapacity payable during incapacity. Per cent.	Limit of period during which benefits are payable.
1	12	6 months
2	15	18 "
3	17	30 "
4	18	4 years
5	19	5 "
6	20	6 "
7	22	7 "
8	24	8 "
9	26	9 "
10	28	10 "
11	30	11 "
12	32	12 "
13	34	13 "
14	36	14 "
15	38	15 "
16	40	16 "
17	42	17 "
18	44	18 "
19	46	19 "
20	48	20 "
21		
22	50	20 "
23		
24		
25 and over..	50	for life

**John Fitzpatrick Becomes Western Union Superintendent at Cleveland.**

The appointment of John Fitzpatrick, assistant superintendent of the Western Union Telegraph Company at Chicago, to the post of superintendent at Cleveland, O., made vacant by the resignation of C. Corbett, advances a man who in all the years he has been associated with the service has uniformly proved his worth.

Mr. Fitzpatrick was born in Ireland in 1868, hence is now in his forty-first year. The years of his boyhood and youth were passed in England, and when he reached the age of nineteen he came to this country. Going to Chicago almost immediately he secured a place as check boy with the Western Union Telegraph Company. This was in 1887. Of a studious disposition, ambitious, of a courteous manner, and paying strict attention to his duties, he employed all of his spare time in learning stenography. This acquirement gave him his opportunity, for he soon afterward received the appointment as stenographer to W. J. Lloyd, who at that time

was chief operator. Young Fitzpatrick showed intelligence and exhibited care and method in all that he did, and further promotion awaited him in being transferred to the office of Superintendent F. H. Tubbs. By 1899 he had worked his way upward to the position of chief clerk. In this capacity his native ability for executive work found widening opportunities, and he gained



JOHN FITZPATRICK,  
Superintendent, Western Union Telegraph Company, Cleveland, O.

much valuable experience. In the spring of 1904 his reward came in the appointment as assistant superintendent, from which, after nearly five years' service, he now goes as superintendent to Cleveland.

**Atlantic City Has New Western Union Office.**

The new office of the Western Union Telegraph Company, at Atlantic City, N. J., which opened for business on January 1, is situated at Atlantic and Tennessee avenues, that city. In all of its appointments this office meets modern requirements. The front portion is finished attractively in oak, with convenient provision for patrons, and the operating room, fully double the size of that of the former office, has a full installation of up-to-date apparatus. An apartment at the rear of the office has been set aside as a private room for the exclusive use of newspaper correspondents, while the messenger service occupies another room, still another being devoted to the storage of bicycles. The improvements, which have involved an expenditure of between \$8,000 and \$10,000, have been carried out under the immediate direction of Manager George W. Deetz, whose efficient business methods as the local head of the company's interests, receives high praise from the press of Atlantic City.

Both the Western Union Telegraph Company and the Postal Telegraph-Cable Company have instructed their managers throughout the country to accept messages free relating to the transfer of money to the fund in aid of the Italian sufferers growing out of the recent earthquake.

### The First Automatic Repeater.

[A letter from James J. Clark, the inventor of the Clark repeater, and at present a resident of Barcroft, Va., brings up an interesting bit of history in connection with the early development of automatic repeaters. This letter was submitted to George F. Milliken, of Boston, the inventor of the Milliken repeater. Mr. Clark's communication, as well as that of Mr. Milliken, will be read with interest.—Editor.]

I have been reading with interest your articles on repeaters published recently in *Telegraph Age*. In the article in the November 16 issue you say: "Among the first practical automatic repeaters, etc., was that known as the Milliken repeater."

Let me say that the first practical automatic repeater was the Clark repeater, the invention of the writer. This invention was patented July 24, 1860, and was used on the Baltimore and Ohio Railroad telegraph line (that company also previous to that date worked the Western Union wires) at Grafton and Cumberland during the Civil War, and was also in use by the Atlantic and Ohio Telegraph Company at Philadelphia.

In the first article on repeaters published in *Telegraph Age*, November 1, you say: "The younger members of the telegraph profession during the early stage of their pursuit of electrical knowledge are undoubtedly retarded in making progress by failing first to seek out that practical part in a piece of electrical apparatus upon which operation of the latter chiefly depends. As a rule it will be found that this identical part performs the same kind of work in nearly every type of apparatus constructed for a similar purpose."

And further, you say, December 1: "In every case, however, if one wishes to learn the action of any particular pattern or make of repeater quickly, let him first direct his attention to the holding magnet and ascertain how it is controlled."

This holding magnet or extra local magnet is a principal feature of my repeater. One of the claims in my patent covers the use of this extra magnet for the purpose of holding one side of a repeater silent while the other side is doing its repeating. I was the first to produce a repeater of this kind; that is, one side remaining silent while the other did its work.

I sold this patent to the United States Telegraph Company, and of course when that company was merged into the Western Union it became their property. The Western Union Company, through Colonel Lefferts, were negotiating with me for the purchase of my patent and held my patent papers over a year. They paid me \$100 for the use of the invention at each of the three cities of Grafton, Cumberland and Philadelphia, and I think one or two other cities. They purchased my instruments and paid \$100 for

their use, but for some reason failed to purchase the patent.

Mr. Willson, vice-president of the United States Telegraph Company, heard of this and came to me and made an offer to buy. I then went to see Colonel Lefferts and had a talk with him, and told him I would wait ten days longer for an answer respecting the purchase of my patent, and if within that limit of time I received no favorable answer, I would sell to the United States Company. In this discussion I said something at which Colonel Lefferts took offence, and not hearing from him I sold the patent to the United States company.

I offer these details to let you know about how the matter stood.

The Milliken repeater was not in existence at that time and I don't suppose Mr. Milliken took out any patent, as I had patented the principal feature of his repeater.

J. J. C.

P. S.—I may say further that the Western Union Telegraph Company afterwards sent me word that it would pay me \$1,000 without any further discussion and would then fix up the balance afterwards. My price was \$5,000. I sent them word I would not do it then, as the United States company had it under consideration, but if they did not buy would sell to them.

#### WHAT GEORGE F. MILLIKEN HAS TO SAY.

Referring to the communication from Mr. James J. Clark in regard to articles on repeaters by Willis H. Jones, as published in *Telegraph Age*, and more especially to the article contained in issue of November 16, the following statement may be of interest:

In the early sixties General Marshall Lefferts, engineer and general manager of the American Telegraph Company (later merged with the Western Union Telegraph Company), sent to the Boston office of that company, at various times, several newly invented automatic repeaters for trial, with instructions to report results. Among these were the Clark and the Hicks (George B.), both of which gave satisfactory results when the circuits were in good condition, but failed to work satisfactorily in bad weather with any considerable amount of escape on the wires. In fact, my recollection is that they were of no use unless the circuits on each side were in such condition as would have probably enabled transmission direct without the intervention of the repeater.

Both of these repeaters used the holding magnet as a means of preventing false breaks from the second, or receiving side, although not used in precisely the same manner. The principle involved in such use, however, was the same, and included a fatal defect which will be discussed hereinafter. Notwithstanding this similarity of holding devices, Mr. Hicks is understood to have sold his patent (presumably issued after the Clark patent?) to the American Telegraph Company, or its successor, the Western Union.

Although I have no desire to detract from the credit due to Mr. Clark as the first to use the holding magnet, and judging solely from my own experience in connection therewith, false breaks are not prevented by the holding magnet in either the Clark or Hicks repeater in actual practice; that is to say, such breaks are not prevented unless the lines are so free from escapes that high adjustments of the repeater relays are not required, in which case the repeaters themselves might not be necessary. Although workable under favorable conditions, I do not consider either of them practical for every day use in all weathers, and do not therefore class them as "among the first practical automatic repeaters" (as Mr. Jones also failed to do in his article of November 16), and the reasons for which opinion I will endeavor to make plain.

The relay armature levers of both repeaters carry dead weights in the form of the extra magnet armatures, which feature is objectionable on general principles; but by far the more serious defect lies in the fact that the holding magnets are not effective when the holding service is most desired. This fault is due to the use of a single armature lever and necessarily a single retractile force for both the relay magnet and holding magnet on each side of the repeater.

Every telegrapher of course knows that in the ordinary sending over a circuit having more or less escape he is obliged, in order to get breaks, to adjust his own relay up to a point where its armature lever will close the sounder circuit imperfectly and sometimes not at all on quick dots. They also know that this is due to the retardation or lag caused by the comparatively high tension of the relay spring. This lag is not met in either of the repeaters under discussion, as will be seen by the following explanation of operation, so far as this point is concerned:

In transmission through the repeater (either Clark or Hicks) with the relay of the second side properly adjusted to receive breaks from the distant receiving operator over a circuit having bad escapes, and the armature lever of which relay is supposed to be held closed, either by its own magnet or the holding magnet, the relay magnet does not become sufficiently charged on closures, to hold its armature in position before the closing of the extra magnet circuit by the sounder lever on the first side causes the removal of the special holding force. Under such circumstances, there is nothing to prevent the armature lever from falling back and remaining in that position until the relay magnet has acquired sufficient power to restore it. In the meantime the relay has opened the first circuit and made a false break.

It has been generally understood so far as the action of repeaters of this type is concerned, that the ability of the relay magnet on the second side to hold its armature in position before the special holding force is removed, is dependent upon the arrangement of the sounder contacts. These contacts are so arranged that the main cir-

cuit on the second side of the repeater is closed at the U spring contact by the sounder lever on the opposite side before the holding force is removed by the same sounder lever closing the extra local circuit at the anvil contact, so that either the special holding device, or the relay magnet itself, may keep the relay armature lever on the second side closed continuously during transmission from the first circuit by means of this lap-over.

The Milliken repeater also uses a magnetic holding device for the relay armature, but in a different manner from that described, and involving a different principle, by which the retardation of magnetic effect caused by the necessarily high adjustment of the relay on the second side is met and counteracted by a correspondingly high adjustment of the armature lever of the holding magnet. This lever makes physical contact with the relay armature lever, and holds it closed until the extra magnet shall have acquired sufficient magnetism to overcome its opposing spiral spring, which is adjusted at such high tension as will cause the necessary retardation in releasing the relay armature, and which would otherwise be unduly released by reason of its own high tension. This is the "principal feature" of the Milliken repeater, and which of course is not covered in the Clark patent. Incidentally the relay armature levers are free from extra weights, and the relays are constructed and operated in every respect as in any ordinary relay. The difference in time of closing the main circuit and that of the extra local for the purpose of holding the relay armature of the second circuit continuously closed, is but a small factor in the operation of the Milliken repeater, as the following illustration will show.

On one occasion as an experiment and preliminary to transmission of matter between Halifax and New York with a repeater at Boston, and I think also at St. John, N. B., I reversed the sounder contact connections on each side of the Boston repeater; that is, I connected the main lines through the anvil contact points, and the extra magnet wires through the U spring contact points, thus allowing the extra magnet circuit to be closed to remove the holding force on the second side, before the closing of the main circuit to allow the relay magnet itself to hold its armature lever. This arrangement of contacts was clearly in favor of false breaks, other things being equal. The result, however, demonstrated that a proper adjustment of the extra magnet retractile springs easily overcame the disadvantage of the rearrangement of contacts, and the two offices were allowed to complete business before changing their contact connections back to their proper screw posts.

Referring briefly to automatic repeaters in general, the "Farmer and Woodman" repeater, invented in the fifties, and previous to any of those discussed herein, was in its use absolutely free from false breaks such as are liable to occur in



the use of the holding magnet. It was of the simplest construction, consisting only of two sounders, each equipped with a spring contact for breaking the circuit on the opposite side after the locking of the opposite sounder lever, and each operating mechanically a light hook which the sounder armature lever in opening thrust under the lever of the opposite sounder to hold it closed until released. This hook was not released, however, by the closing again of the first sounder, it being held by the pressure of the second sounder lever until the closing of the relay on the second side caused its removal; it was then drawn from under by a light spiral spring.

The fact that the relay armature lever on the second side must be closed at the instant of breaking by the distant receiving operator, and to reverse the direction of transmission, made such breaks oftentimes difficult of accomplishment, and which were generally effected by rattling the key a second or two. A line break, however, sometimes left the sending operator still "pounding brass" until becoming suspicious of the ability of the receiving operator to receive so much matter without a break, he would hold up and investigate, only to find that he had been trying to send by "wireless."

This repeater was, however, easily managed and notwithstanding this defect in its operation was successfully employed in all weathers for an extended period, and I think deserves a place "among the first practical automatic repeaters."

#### The Future for Wooden Poles and Ties.

The manager of a southern timber company, in a recent interview with a representative of the *Electrical World*, said that the enormous and steadily increasing demand for wooden poles and ties has exhausted the northeastern forests of cedar and chestnut, and also the scant supply of southern cedar or juniper. The chestnut that is left east of the Mississippi River is jealously guarded for local consumption by the large railroads along which it stands, who have locked it up by excessive freight rates.

"The future supply of ties and poles," he said, "must come from the southern forest, and over seventy-five per cent. of it now comes from there. The far-seeing have for over fifteen years been experimenting in the use of other woods less durable than cedar and much cheaper, and which can be produced in practically unlimited quantities for many years. Of these southern woods, southern yellow hard pine, because of its hardness, pitch and rosin, is the choice of all steam railroads and of many standard electric railways for ties and octagonal poles, especially of the heart quality, which brings the highest price, as being the most durable under all conditions.

"The 'Sound Square Edge' or sap ties and poles rot at the ground surface if they are alternately exposed to wet and dry; but if they are set deep and well covered so they constantly remain moist their life is over doubled.

"Sawed octagonal poles are very popular as a

substitute for iron poles in city work and cost about one-fifth as much. It is found that their lives are greatly increased by protecting them at the ground level by a slight concrete casing at small cost.

"Many engineers and inspectors make the great mistake of rejecting poles that have scarred butts though such poles are the very best, as the scars are where the tree had been tapped for turpentine, the effect being to turn the butt into a conglomerate of rosin and fiber. Such butts will not rot for one hundred years or more; true, they are unshapely, and often appear unsound, but these defects are covered up.

"The cypress round pole is the future round pole. To make up for lack of strength, it is specified about one inch larger at the top than chestnut or cedar, the butts averaging smaller and the taper being more gradual. Cypress is very porous and when used in a cold climate great care should be taken to house and seal the tops thoroughly; the poles will absorb moisture like a sponge, and after freezing, become very brittle. As for durability, it almost rivals cedar. There is a very large supply of cypress in the South, and is now becoming almost universally used. Cypress has given good satisfaction when treated as recommended."

#### The Miniature Sounder at the Carnegie "73" Dinner.

The miniature telegraph sounder presented to each of the guests at the "73" dinner tendered recently by telegraphers to Mr. Carnegie, in New York, in honor of his seventy-third birthday, aroused much enthusiasm. The device was regarded as an eminently fitting souvenir of an occasion which drew together in the spirit of *auld lang syne* so many distinguished members of the craft, past and present, especially so as it was a perfect piece of mechanism and fully capable of performing the work required of a like instrument of normal size. The little affair, which is beautifully finished, was highly prized by the recipients at the dinner as being emblematic of the profession. Indeed, such was the interest shown that numerous inquiries have since reached *Telegraph Age* requesting to know if it was possible to procure duplicates of the same.

In recognition of the sentiment that has prompted these inquiries, the utility of the device itself, and its appropriateness as a holiday gift to and by a telegrapher, *Telegraph Age* has made arrangements by which it can fill all orders for the same. The key alone, the smallest ever manufactured and which is the same as the one presented at the memorial reunion of the Old Time and Military Telegraphers in New York in 1905, will be sent in a box to any address, carrying charges prepaid, on receipt of \$1.50; the sounder at \$2.50, or both at \$4.00. Address J. B. Tallavall, *Telegraph Age*, 253 Broadway, New York. An advertisement of this key and sounder appears elsewhere in this issue.

**LETTERS FROM OUR AGENTS.****PHILADELPHIA, POSTAL.**

The membership of this office tenders congratulations to Mr. Leona Lemon on his promotion to the division superintendency at New York, and wish him lots of success in the future. We are sorry to lose Mr. Lemon, but are gratified over his promotion. Mr. C. E. Bagley, who succeeds Mr. Lemon as superintendent, is not a stranger to the majority of the office force, and we also congratulate him on his promotion and wish him much success in his new capacity.

Miss A. R. Tansey, who has been temporarily disabled on account of trouble with her eyes, has returned to duty, much improved.

**LOS ANGELES, CAL., POSTAL.**

Superintendent Charles L. Lewis spent a few days at Goldfield and other Nevada points, recently, overseeing the opening of the company's new offices in that state. The Postal now has a San Francisco duplex and a Los Angeles duplex to Goldfield and single wires to several other Nevada points.

Recent resignations include G. C. Terry, H. L. Anderson and Harry Temby. The former is now with the Salt Lake Railroad in this city, and the two last named are with local broker firms.

Recent additions to the force are Harvey Howe and H. J. Thompson. Both gentlemen were formerly with the Western Union here.

C. C. Hollenbeck, formerly of this office but more recently of Globe, Ariz., has been appointed manager of the Central avenue office, this city.

**BRIDGEPORT, CONN., NOTES.**

Operator Seymour, formerly from the Springfield, Mass., office, is now night manager of the Postal here, while S. H. Flint is the efficient manager, with Harry Hawkins as assistant and Miss Hodge as clerk.

Miss Blanche Hodge, who has made her home here and substituting at the different offices, is now manager of the Western Union at Poughkeepsie, N. Y.

In the local Western Union office the force is listed as follows: T. J. Farrell, manager, with C. W. Saleskie as chief, and assistant operators, W. M. Sullivan and Miss M. M. Neylin, while J. J. Gaffney is the "owl."

Louis Decker, formerly of Danbury, Conn., is the operator in the broker office of T. L. Watson.

Rev. John F. Willis, for years a summer office operator in New York, has been a visitor here during the holidays. Father Willis as a boy lived in Brooklyn, and was an alumnus of St. Bonaventure Seminary, New York. He is now assistant at St. Stephen's R. C. Church, South Oil City, Pa.

Mrs. Jennie Holian, nee Nolan, formerly with the Postal at the Atlantic Hotel, this city, is making her home at Sheffield, Mass., where her husband is the station agent. Mr. Holian was formerly a third trick dispatcher at New Haven.

The private wire at "Eaton Cole," which firm has been absorbed by the great iron company of "Crane," of Chicago, is leased from the American Telephone and Telegraph Company. Miss Anna A. Nolan, formerly with the New York, New Haven and Hartford Railroad Company (Berkshire), has charge of the Bridgeport key and also the Western Union and Postal loops; while on the New York side, Miss Katherine Graham, of the main office of the Postal, New York City, is located at the Crane office on Cherry street.

Miss Mary Farrell, who has had charge of the Postal interests at the Curtis Hotel, Lenox, Mass., during the summer, has been transferred to Newburyport, Mass.

**NEW YORK, WESTERN UNION.**

Miss Faulkner, manager of the Lenox, Mass., office, was a recent visitor.

Miss Julia F. Egan, who had charge for many years of the branch office at the general Post Office, this city, died suddenly at her home in Brooklyn, on December 7 last, of heart failure.

William T. Rogers, general wire chief, was married on December 15 to Mrs. M. Chamberlain, of Brooklyn.

Another marriage was that of Mr. Joseph C. Suk, of this office, on December 26, to Miss Gertrude M. Schwickard, of this city.

**OTHER NEW YORK NEWS.**

Mrs. Finn, wife of William Finn, of the electrical engineer's office of the Western Union Telegraph Company, New York, accompanied by Mrs. H. E. Robson, wife of the assistant manager of the 20 Broad Street office, of the Postal Telegraph-Cable Company, are visiting at their old homes in Newcastle-on-Tyne, England, where they spent the holidays and where, and also in London, they expect to remain another month before returning to this country.

Mr. W. A. Houghtaling, of the Rowland Telegraphic Company, Baltimore, Md., an old-time telegrapher, is in New York on business connected with the service of his company.

Mr. R. J. Bloxham, for many years previous to 1903, manager of the Western Union Telegraph Company at Baltimore, Md., now identified with the Automatic Fire Alarm service of that city, was a recent New York visitor.

**Railroaders' and Telegraphers' Aid Society.**

The pamphlet containing the proceedings of the twenty-third annual meeting of the Railroaders' and Telegraphers' Aid Society, held at Cleveland, O., on December 8, recently published, shows that society to be in a flourishing condition. It has a membership of 162, and has to its credit \$1,395.53 deposited in bank, a net sum after the payment of all accounts due. The officers for 1900, are: F. E. Rudenauer, president; G. K. Ingersoll, first vice-president; A. J. Black, second vice-president; N. G. Underwood, secretary; J. H. Cox, treasurer.



### The Electrical Aid Society of Philadelphia.

The twenty-first annual meeting of the Electrical Aid Society of the city of Philadelphia was held Monday evening, January 11, when the following officers for the year 1909 were elected: Andrew S. Weir, president; William R. Harmstad, vice-president; W. E. Van Arsdale, recording secretary; Robert C. Murray, financial secretary; H. W. Hetzel, treasurer; executive committee, Frank E. Maize, George J. Wells, Anna R. Foster, Harry McFadden; trustees, George J. Wells, H. O. Leahy, R. H. Conway.

The number of members on December 31, 1908, was 720. The receipts for the year were \$4,426.43, the disbursements being as follows: Sick benefits, \$2,524; death benefits, \$700; expenses, \$869.85; total, \$4,093.85; the total amount of cash on hand and in investments being \$5,761.09.

The meeting was followed by a banquet and dancing.

### General Mention.

Manager A. H. Stewart of the Nashville, Tenn., office, of the Western Union Telegraph Company, was presented by the receiving and delivery forces, on Christmas eve, with a gold-headed umbrella as a token of the esteem in which he is held by the employes of his office. The presentation address was made by William Bloomstein, cashier.

Mr. Joseph P. Laney, a well-known operator, for many years located at Augusta, Ga., and for the past three years a resident of Dallas, Tex., has established a school of telegraphy in the latter city, which will be known as the Dallas Commercial College of Telegraphy. Mr. Laney, who will have personal charge of the school, has the endorsement of the telegraph fraternity of Dallas, where he is well and favorably known.

The best evidence of the rapid development of wireless telegraphy will be found in the statement that upwards of 2,000 telegraph operators are now permanently employed in the operation of wireless telegraph stations on shore and on steamers. The number of operators so employed is being added to monthly. It is confidently predicted that within ten years this new branch of the service will furnish employment to over 10,000 telegraphers.

Mr. David Lynch, cable expert on the United States Cable steamer "Burnside," whose rendezvous is at Seattle, Wash., and Arthur Sullivan, a cable expert operator on the all-British Pacific cable at Bamfield, B. C., met accidentally on December 5, at Seattle. It developed in the course of conversation that Mr. Lynch worked one of the Atlantic cables of the Anglo-American Telegraph Company at Valentia, Ireland, with Mr. Sullivan, who was located at the other end of the wire at Heart's Content, N. F. This was twenty-five years ago, and although they had an intimate wire acquaintance growing out of an exchange of business for upwards of five years, the

two men had drifted apart and naturally lost track of each other until the chance meeting referred to. Mr. Lynch before entering the government service, six years ago, was chief operator in the cable room of the Western Union Telegraph Company, 16 Broad street, New York.

No operator should fail to read **TELEGRAPH AGE** regularly. It will pay him to do so.

**The Serial Building Loan and Savings Institution**, 195 Broadway, New York, anticipating a record year in its business, it earnestly solicits the further support of telegraphers in order that all may receive resultant benefits that frugality and careful husbandry of savings will insure. Financially strong, its management commended by the banking department of the state of New York, the Serial invites correspondence.

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

**Patents—Charles Selden, Jr.**, Patent Attorney, 1342 New York Ave., Washington, D. C. Specialties: Electrical Inventions and Railroad Appliances. Advisory Associate, Charles Selden, Supt. Telegraph B. & O. R. R. and Western Union Telegraph Cos.

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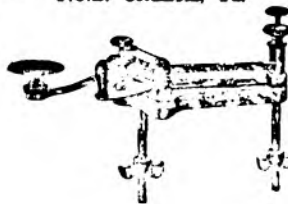
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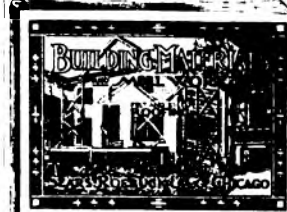
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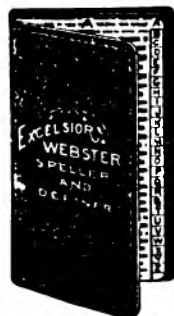
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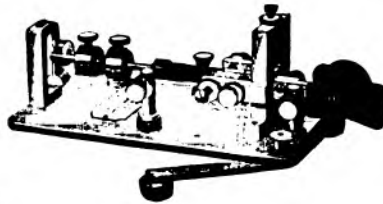
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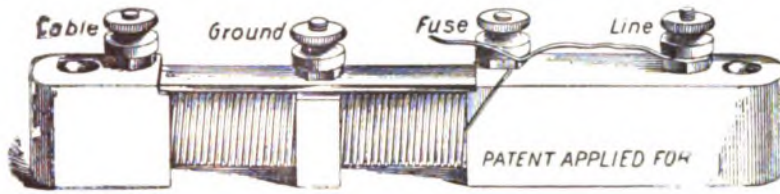


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