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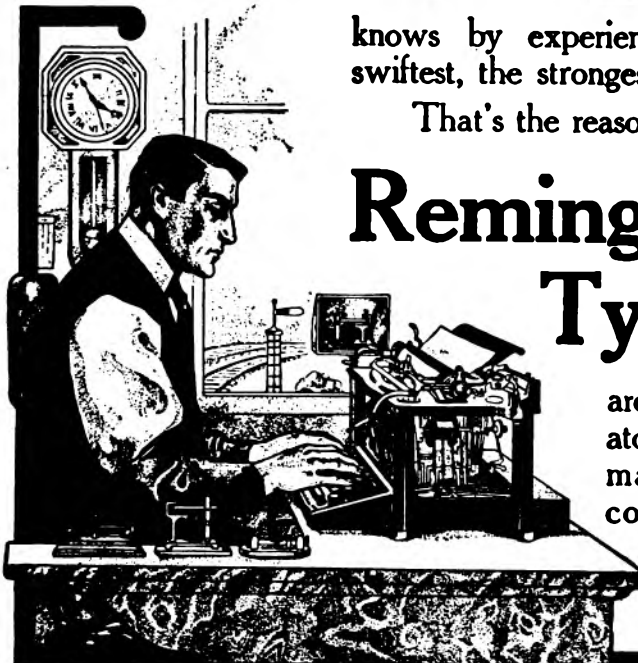
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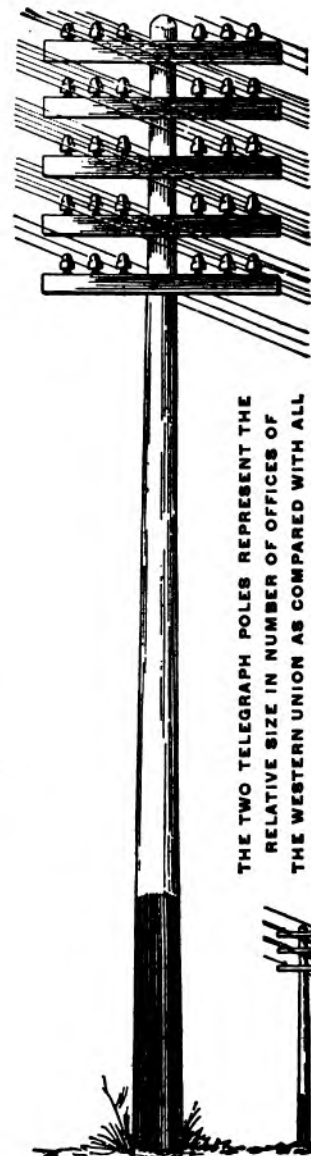
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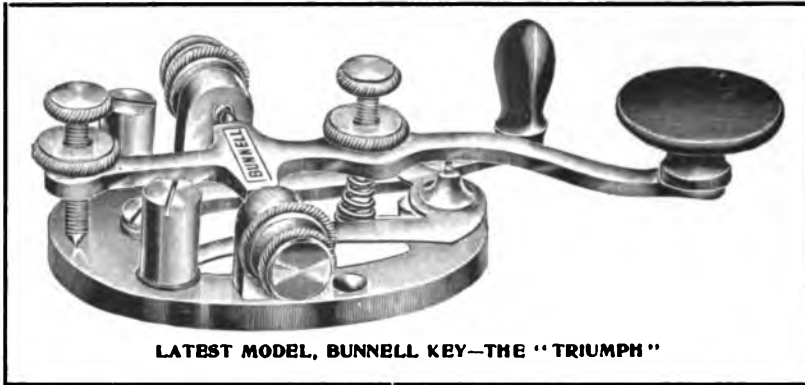
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TELEGRAPH AGE

No. 19.

NEW YORK, OCTOBER 1, 1908.

Twenty-fifth Year.

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SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

Questions from a Correspondent.

Among the many interesting questions asked by different correspondents the following letter contains one that is somewhat out of the general line of inquiry:

"On several occasions I have noticed that after obtaining a good balance on a duplex circuit that if it was not used for a period of ten or fifteen minutes the balance would apparently be somewhat off the moment the operators attempted to work it. At first I naturally concluded that the change was due to alterations in the conditions of the weather and made the necessary compensation therefor only to discover that a third balance was then required, and in nearly every case the last balance was approximately the same as the first so far as the rheostat indications went. I will state further that this occurred on days when the weather was merely damp and cloudy and not at all changeable. Because of the constancy of the weather conditions I tried the experiment of requesting the operators to start up "double" and see if by that means the balance would not right itself within a short period. In nearly every instance I found that on this particular wire it would.

"Now, everyone to whom I have related this ex-

perience says in effect that I'm dreaming, or that it was merely a coincidence. I therefore take the liberty of asking through *Telegraph Age* if I am alone in that experience, and if not, to request an explanation of the manner in which the operation of the circuit after a period of rest apparently rights the balance.

"One of my friends thought that possibly the relay was made temporarily "lop-sided" magnetically through a change in the resistance of one coil of the relay due to a higher temperature than its companion, as might be the case when the polarities in the line opposed continually for some length of time and current flowed through the artificial line coil only. Is there anything in this?"

We can assure the correspondent that he was not dreaming. Under certain conditions a duplex will show indications of being more or less out of balance after a period of idleness owing to the different conductivity affect positive and negative currents of electricity respectively create in a leaky conductor.

It is a well known fact that one of these currents through the electrolytic action which takes place tends to heal bad joints by coating the latter with a film of conducting medium and in this way reduces the resistance of the circuit at all such points. On the other hand the opposite polarity of current produces just the opposite effect, namely, it tends to eat away such film that may exist at bad joints and thus increases the line resistance. It is therefore obvious that on leaky circuits of the kind mentioned serious alterations in the line conductor may take place regardless of weather conditions. No doubt this phenomenon explains the necessity for so many balances being taken on some circuits when the condition of the weather is apparently favorable.

In the case stated by our correspondent it is apparent that after his first balance the keys were left in such a position during the period of idleness stated that a constant sustained current of an opposite polarity than originally flowed through the leaky line long enough to affect the resistance, and consequently throw the balance off slightly. Then after the circuit was worked duplex for an equal or longer period, the effect of the opposite polarity of current undid some of the work its companion alone had accomplished and in this way restored, partially at least, the original conditions.

If the reader will go to the switch board and after connecting an ammeter in the circuit of any leaky wire of this kind, and after noting the value of current obtained by, say, a positive battery,

substitute a negative battery of like electromotive force, he will find that although the current value will be approximately the same at first, the needle will gradually move further up or down the scale, according to the polarity influencing it, until after a reasonable period the final value of the current will be either much more or much less than the first measure indicated.

Referring to the possibility of a relay becoming lop-sided through alterations in the resistance of the respective coils due to unequal temperature, and thus accounting for the alteration in the balance, we will state that there is nothing in the suggestion. In the first place no difference in temperature that a relay would withstand could alter the resistance of either coil in a harmful manner. Even were an alteration of a few ohms possible the difference would not change the total resistance of the circuit sufficiently to alter the line current one per cent. and we would still have the same number of convolutions of wire in the spool. A lop-sided relay is usually one having a few of its "turns" crossed out. It is the "equal number of turns" in the two spools, respectively, that counts, more than that of the actual resistance. As a matter of fact there are few differentially wound relays that possess exactly the same number of ohms in each coil. The specifications demand that they be magnetically identical and owing to the non uniformity of the coil wire and manner of winding a given number of convolutions may possess a few more ohms resistance in one coil than the same number in its companion spool.

Finally there could be no such thing as the line spool being free of current while current from the home battery heated the artificial line spool only as intimated by the correspondent. Each spool contains half of each coil, namely, the main and the artificial line, and the two being wound in parallel of course lie side by side in each spool, so that any current that would heat one coil would obviously keep the temperature of its side partner up to a high degree through radiation alone notwithstanding no current was passing through such coil.

Recent Telegraph Patents.

A patent, No. 895,374, for a means for perforating slips for telegraphic signaling and other purposes, has been taken out by Maximillian Kotyra, of Paris, France. Three punches are operated by three electromagnets controlled by keys. Each key when depressed brings into operation the appropriate combination of electro-magnetic devices to operate the combination of punches corresponding.

A patent, No. 897,669, for an insulator, has been granted to Frank J. Siegwart, of Pittsburg, Pa. A biting groove is formed on the outside and across the face of the insulator.

The following patent has expired:

Patent No. 458,585, for telegraphy, held by D. Kunhardt, Aachen, Germany.

Patent No. 459,013, for a telegraphic transmitting apparatus, held by M. Martin, of Malden, Mass.

Patent No. 459,448, for a telegraphic apparatus, held by W. E. Sloan, J. E. Hughes and O. S. Reed, of Chicago, Ill.

Business Notice.

The Central Electric Company are now distributing an extremely interesting treatise on the manufacture of the new silico vanadium steel alloy for use in transformer cores. This publication is fully illustrated, showing the method of manufacture from the actual mining of the ore, its progress through the steel mills and to the transformer itself. The publication will be found of value and interest to all those interested in the use of alternating current transformers. Anyone not receiving and desiring to possess a copy should write to the company for the same.

The Sandwich Selector.

The advertisement of the Sandwich Electric Company's selector will be noticed elsewhere in this issue. This instrument has proven a most efficient calling device for train despatching, and is an exceedingly simple form of selector, operating on the step-by-step principle, with all the working parts in full view at all times. It is speedy, as the average call can be made in three seconds, and is built strong enough to withstand any usage required of it. All contact points are made of platinum, assuring a certainty of a good battery connection to the bell. The flexibility of the selector is demonstrated more and more every day, as no new condition apparently has come up that it will not meet. In commercial work, also, this instrument can be used without any change whatever in its construction, and without the use of extra batteries at the sub-stations, and each sub-station will be enabled to call any other station. Any number of stations can be called by the despatcher, either singly, consecutively or collectively, and one or two bells can be rung at each station at the will of the despatcher. The despatcher's calling device occupies a space of but four by six inches, a saving of room that will be appreciated. Moreover, these selectors can be operated on any kind of line, either single wire or metallic, telephone or telegraph.

The Sandwich Electric Company is constantly enlarging its field of operations, fresh installations of the device being made on additional lines of railroads, while present equipments are being increased. The company makes an attractive proposition, inasmuch as it offers to install at its own expense a division for any road, the acceptance of which to be subject to approval. A new coil used in connection with their telegraphes has lately been devised which enables extraordinary results to be obtained from quadruplex wires, yet interfering in no way whatever with the balancing of the line. Descriptions more fully outlined will be furnished on request.

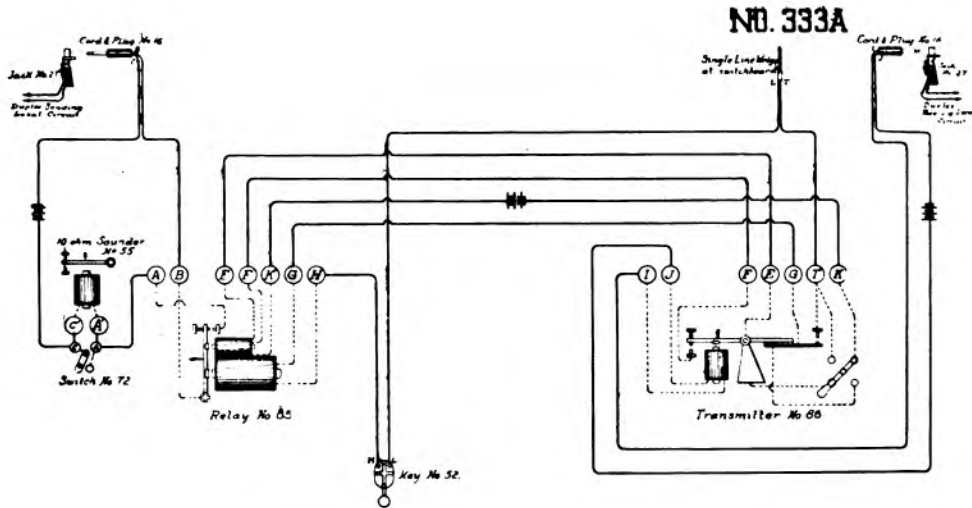
Postal Telegraphic Apparatus.

[Under this head there will frequently appear in Telegraph Age an illustration and descriptive account of some feature of the equipment of the Postal Telegraph-Cable Company, prepared by John F. Skirrow, associate electrical engineer of the company.]

The accompanying diagram shows the method of connecting up a Weiny half repeater to a duplex or one side of a quadruplex, where battery locals are used. Where such sets are installed it is customary to place the half repeater set upon a Morse table so that it may be used as a Morse set at the repeating office if desired. Additional local battery is placed in the local circuits of the half repeater to insure solid signaling. The con-

current variations are recorded magnetically on a steel wire, as in the Poulson telegraphone. This magnetic record can then be stored away for any desired length of time, and can be employed to reproduce the current variation in a suitable circuit when required.

The speed at which the magnetic picture on the steel wire can be transmitted is considerably greater than that at which it can be impressed on the wire in the first case, and is only limited by the inertia of the receiving instrument. The latter consists essentially of a sensitive galvanometer, the deflections of which are magnified by a lever arrangement. The galvanometer actu-



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nections between the Morse and multiplex sets are made at the switchboard by wedges and jacks as shown.

The Senlecq-Tival Method of Photo-Telegraphy.

A new method of transmitting photographs to a distance has been recently introduced by M. Senlecq and Tival. It is distinguished from the existing methods of Korn, Carbonelle and Belin by the fact that the actual transmission is only a matter of a few seconds instead of taking thirty or more minutes. This is an important improvement, in view of the congested state of most trunk lines. The high speed is attained in this case by first converting the actual photographic picture into a magnetic picture at leisure without using the line at all, and then transmitting the magnetic picture along the line when convenient and at a very high speed.

In this way the procedure is similar to that of the Wheatstone high-speed telegraph with its perforated paper strip. The Senlecq-Tival process starts with a bichromate gelatine photograph. This is impregnated with a metallic powder, in a way which is at present kept secret, until the variations of light and shade in the picture correspond with variations in electric resistance of the conducting surface of the picture. The variable resistance is made to cause the current from a constant-pressure local battery to vary. These

ates a small (1 sq. mm.) very thin film screen, which is shaded off from complete opacity to complete transparency by a micro-photographic process. In this way the light falling on a rotating disk from a Nernst lamp is varied in intensity in accordance with the deflection of the galvanometer. The disk is perforated with holes lying on a spiral. If the disk in the receiving station rotates synchronously with the telephone drum in the transmitting station, it is easy to see that the variations in illumination finally received on a photographic plate will correspond with those in the original photograph. It is not known whether any actual working results have as yet been obtained by this process.

If it were possible to still further reduce the time of transmission to, say, one-tenth of a second, it would be possible, owing to persistence of vision, to dispense with the photographic fixing of the received picture, and to view the picture direct on the screen, while it was being produced by the rapidly moving spot.—London Electrical Review.

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.

The Barclay Printing Telegraph System.

BY WILLIAM FINN.
(Part VIII.)

THE TRANSMITTER—CONTINUED.

The proper adjustment of the transmitter is a matter of great importance in connection with the operation of the printer system. Faulty transmitters may cause the received signals either to "line," "drop out," "clip" and "split" dashes, or to produce "false dots;" and as such defects may also be developed by imperfect adjustments of the receiver or recording instrument, it is no easy matter at times to fully determine to which of the various causes to be hereafter named the irregularities may be due.

The punched tape now gives little or no trouble, for with the advent of the new perforating machine already described, the "out of gauge" slip has practically disappeared, and with it one of the most prolific sources of impairment to automatic

center, and (7) too prolonged a contact on plus or open pole.

"Clipped dashes" generally result from the spacing needle S being too long, or when lever L is adjusted to move too far to the left of the jockey roller's axis. "False dots" will be produced by collets C and C' being too close to the level, L, causing a "break" between the rocking beam pins p and p' and the levers A and A', thereby imparting a jerky movement to the vertical lever, L, when it ought to be at rest. The transmitter may be tested on "short circuit" for any of the faults mentioned by reversing the position of the switches S and S' (Fig. 27), which arrangement, it will be seen, destroys the previously established condition of "equilibrium" and forces the transmitter currents through the artificial side of the system only. The opening of the condenser circuits (C, C', C'') at S' is necessary to obviate "bias" which would otherwise manifest itself upon the galvanometer under these conditions.

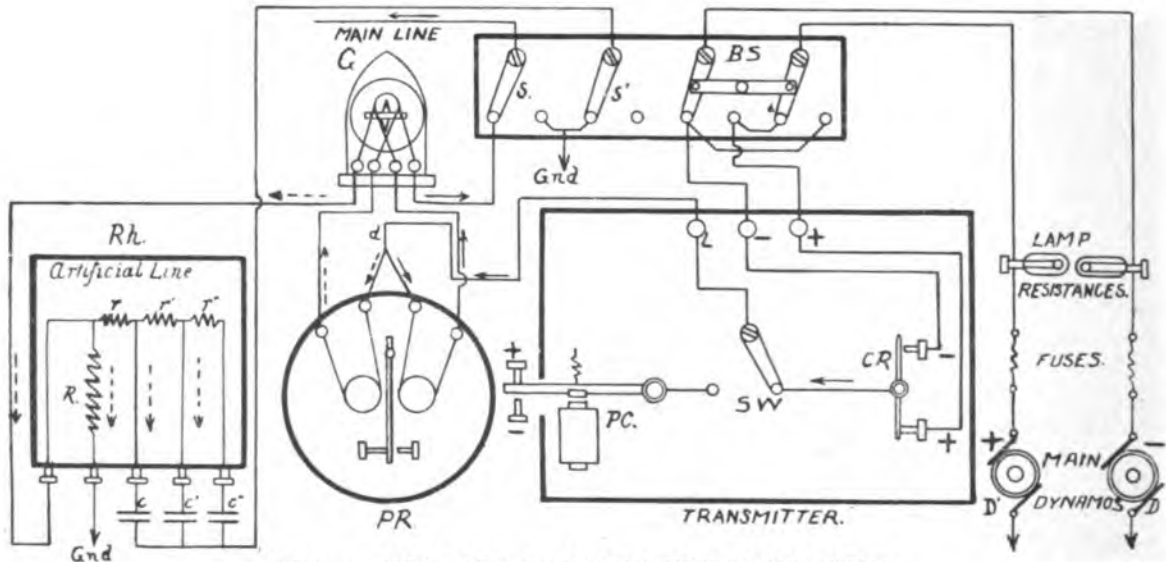


FIG. 27.—MAIN AND ARTIFICIAL LINE CONNECTIONS.

working that heretofore attended the operation of such systems. In the case of an imperfectly regulated transmitter the received signals may "line" if, (1) the tension of the spiral spring e' (Fig. 21)* on the marking needle, M, be too feeble; or, (2) should the vertical bar, L, be out of line with the center of the axis of the jockey roller J; or, (3) when there is too much tension on the jockey spring; or, (4) if the contacts be unduly prolonged on the negative (or marking) pole, as well as from (5) dirty contact points.

Signals will "drop out" as a result of the following causes: (1) The upright needles, M and S (Fig. 21) adjusted too far to the left, or too closely in line with each other; (2) upright needles too short; (3) dirty points on closed or negative pole; (4) too much play between the contact points; (5) improper adjustment of jockey spring; (6) lever L too much to the left of jockey roller's

The main and artificial line connections for a terminal set of automatic duplex apparatus as arranged in the printer system are shown theoretically in Fig. 27. The difference between this arrangement and that of any ordinary duplex set consists in matters of detail only, the same general principles being involved in the working of both systems. The automatic portion of the apparatus is shown to the right of the transmitter, and consists of a current reverser (CR) that is mechanically controlled by the punched paper; while PC represents a pole changer constructed on the same principle, but whose operation is effected in the ordinary way by means of an electro-magnet and key, inserted in a local circuit. These two pole-changers are connected with the main line in such manner as to enable each one to separately transmit its own particular class of signals, when the switch SW is properly placed for the purpose of doing so.

* See September 1 issue of Telegraph Age.

In the position illustrated in the drawing, a current from the plus pole of dynamo D^1 is represented as passing to line from the automatic side of the transmitter, its course through the apparatus being indicated by the continuous arrows, while the dotted ones represent the direction taken by that portion of the current which passes into the artificial circuit at the dividing point d . The latter circuit contains one each of the differential coils of polar relay, PR, and galvanometer, G, in addition to the resistance R in Rh, whose range is made sufficiently great to meet all the practical requirements of ordinary lines, and whose coils are nicely graduated with the view of enabling a good "ohmic" balance to be secured. A complete balance, however, cannot be fully established until the main and artificial lines are exactly alike both as regards their resistance and electrostatic capacity, this condition of equilibrium being indicated by the galvanometer, which remains perfectly insensible to the outgoing currents when these conditions are fully satisfied.

There is very little difficulty in finding a value in the rheostat Rh which shall practically represent the equivalent of the line resistance; but it is not so easy—especially on long and poorly insulated wires—to secure and maintain that condition of "static" equality between the main and artificial lines, which is so very essential to first-class working at rapid rates of speed. While the difficulties to be contended with are sometimes inherent in the wire itself as a result of its nature and surroundings, etc., they also arise from the fact that the galvanometer indications cannot always be relied upon as a guide in balancing the instrument, being more or less insensible to slight static irregularities that frequently affect the incoming signals. On this account the character or quality of the signals as noted upon the recording slip, will better serve the purpose and more clearly indicate the direction in which to secure the desired regulation. It will be observed that a series of condensers, C, C' and C'', and a corresponding number of retarding coils, r, r' and r'', are inserted in the circuit of the artificial line as a provision for securing as nearly as possible electro-static conditions in the artificial line corresponding with those present, or liable to arise in the main line.

When a current of electricity is first sent into a wire, a portion of the electricity becomes condensed on its surface by an inductive action that is progressive along the entire length of the circuit. When the battery contact is broken and the line is put to ground, the charge thus accumulated is set free, and becomes partially discharged through the wire as a "return current" in the direction of the sending station. If the conductor be very long, it will be obvious that a sensible period of time will be occupied in fully charging the successive portions of the wire, and that the "static" currents will encounter more or less resistance that will retard their rate of flow. Not only, then, must the conditions in the artificial circuit be made to agree with those on the main line so far as their respective "capacities" are concerned, but the

time involved during the process of charging or discharging the main circuit must have a corresponding value during the similar operations in the artificial circuit, otherwise an inequality will exist that will manifest itself upon the galvanometer in the nature of a "kick," or more generally by the mutilation or distortion of the received signals.

Now the resistance R in rheostat Rh affords a means of producing the necessary equation so far as the simple "ohmic" resistance of the line is concerned; the condensers C, C' and C'', furnish the required amount of electro-static capacity to compensate for the electro-static induction on the main line; while the resistances, r, r' and r'', are introduced in the condenser circuits with the view of regulating the rate at which the various condensers charge and discharge through the artificial circuit, so as to correspond with the time occupied, or retardation encountered by the static currents which flow through the main line wire. By such means it is possible to artificially reproduce in the one circuit the various natural conditions existing in the other. The difficulty of so doing, however, generally increases with the speed of signaling, for a balance which may be sufficiently good for all practical purposes at low speeds, will oftentimes be found to be more or less imperfect, and to exercise a disquieting effect upon the received signals at high speeds. Hence the desirability of directing special efforts to the matter of static compensation on fast-working circuits, and of anticipating as far as possible the conditions most likely to be met with, so that the several equations may be fully secured with the least loss of time during the act of "taking a balance."

It will be well to understand in this connection, then, that the static accumulation in a line wire is usually greater at points near the sending office than at places more remote; and for this reason the series of condensers in the artificial circuit ought to be so graduated that the first of the series (C) should possess a condensing surface larger than that of the second (C'), which in turn should be of greater capacity than the last of the series (C''), whose position is at the greatest electrical distance from the source of power. On the other hand, the amount of resistance interposed in the inductive path of each condenser should be arranged in the reverse order, so as to allow the first condenser to discharge through only a comparatively small resistance (r); the second condenser through a larger amount (r' + r), and the third of the series through the maximum resistance (r'' + r' + r).

This disposition of the artificial retarding coils will generally be found to accord well with the amount of retardation ordinarily encountered by the static currents on the main line during their passage from one point to another over the various sections of the conductor. A very different kind of compensation would, however, be required in case the main line happened to be "patched" near the sending station with a long section of

wire of much smaller gauge. With such an undesirable combination (which should never be made on printer circuits except in cases of emergency), the static flow on the main line would take place with less facility through the substituted section of wire, which, on account of its high resistance, would force more of the "static" to escape at, or near, the distant ground. On this account it would probably be found necessary as a compensation to reduce the number of sheets in the first condenser (C), and possibly also in the second condenser (C'), and to increase their retarding resistances r and r' .

A bad patch at the distant end of the wire would for opposite reasons call for more than the normal capacity, and perhaps less than the usual resistance on the part of the respective condensers and their retarding coils. For, as the "return current" would in this case flow more freely in the direction of the home station, an increase of condenser capacity would be needed on the artificial side to neutralize the greater effects of the main line discharge upon the home apparatus.

In view of what has been said, it will be obvious that had the patches at either end of the circuit been made with a wire of much higher conductivity than the regular conductor, the effects of the static discharges would have had to be neutralized by methods the reverse of those just described, inasmuch as the "static," like other currents, generally favors the paths offering the least resistance to their flow.

(To be continued.)

Personal.

Ali Galib Bey has been named director-general of posts and telegraphs of Turkey.

Baron Shimpei Goto has been named minister of communications of Japan, replacing Vicomte Masayasu Hotta, retired.

Mrs. Dunning, wife of J. E. Dunning, of Paterson, N. J., the well-known old-time telegrapher, suffered a stroke of paralysis on Sunday, September 13.

Mr. C. L. Bleakley, chief of the telegraph and telephone service, Panama Railroad, formerly at Colon, and now located at Culebra, in the canal zone, is in New York on his annual vacation.

Mr. W. E. Gilmore, who was formerly so prominently identified with Edison manufacturing interests, has just returned from Europe with his family, after a trip thither in search of rest and health. His plans for the future have not been announced.

Cavaliere Alberto Faranda, director of telephones and telegraphs in Rome, acting under the instructions of the Italian Minister of Posts, Telegraphs and Telephones, is in this country for the purpose of studying the best American telephone and telegraph methods.

Mr. John A. Sutherland, of Newark, N. J., a

well-known forty-niner of the telegraph, was married on September 17, to Mrs. A. E. Chamberlain, of Englewood, N. J., and who herself is a former telegrapher, both being members of the Old Time Telegraphers' and Historical Association, and frequent attendants at the annual reunions.

Mr. P. J. Feeney, of Bangor, Me., accompanied by his wife, was a New York visitor last week and spent several days calling on numerous friends. Mr. Feeney was en route home from Niagara Falls, where he attended the reunion of the Old Time Telegraphers' and Historical Association, of which he is a member and a constant attendant at the reunions.

Mr. Frank B. Knight, of Dallas, Texas, a former well-known telegrapher and now special agent of the Southwestern Telegraph and Telephone Company, at the Texas address, was a recent New York visitor, while en route to the reunion of the Society of the United States Military Telegraph Corps, of which he is a member, at Niagara Falls, making his brief sojourn in the metropolis the opportunity to call upon numerous old friends.

Mr. Harvey P. Dwight, the venerable president of the Great North Western Telegraph Company of Canada, at Toronto, Ont., eighty years of age, and still hale and hearty, is one of the most valued readers of *Telegraph Age*. In renewing his subscription the other day he takes occasion to write: "I congratulate you once again in publishing such a useful journal of telegraph news. It would be difficult to suggest any change for the better in your management of the paper. Long may it prosper!"

A few days ago Frank C. Mason, former superintendent of the police telegraph in the Borough of Brooklyn, entertained a party of friends, gentlemen and ladies, including a number of telegraphers, at a clambake served in a grove on the premises of his country home, Glen Alex Farm, Washington Mills, N. Y. It was a unique and highly successful affair, even though given at a point far inland rather than at the ocean shore, in sight and smell of the salt water, where such repasts are usually supposed to occur.

Mr. J. F. Shorey, the well-known former telegrapher, who went to Portland, Ore., from New York in 1902, is now successfully engaged in business in that city, a number of different interests occupying his attention. He is president of the City Messenger Delivery Company, working in connection with the Postal Telegraph-Cable Company; president of the National Live Stock Insurance Association, besides being actively engaged in foreign exports. He is at present in New York, coming east on business connected with his Pacific Coast affairs.

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Western Union Telegraph Company.

EXECUTIVE OFFICES.

Colonel R. C. Clowry, president and general manager of the company, accompanied by his private secretary, F. J. Scherrer; Vice-President J. B. Van Every, General Superintendent Belvidere Brooks, and District Superintendent E. M. Mulford, attended the Niagara Falls reunion of the Old Time Telegraphers' and Historical Association and on their return stopped over at Rochester and Syracuse, visiting those places in the interests of the service.

Mr. Leonard Cox, traveling auditor of the company, has returned from his trip to Europe, whither he went on business connected with the service.

A large number of railroad telegraph superintendents were business visitors at the office of Vice-president G. W. E. Atkins during the past few days, among whom were noticed E. H. Millington, of the Michigan Central Railroad, Detroit; William Kline, of the Lake Shore and Michigan Southern Railroad, Toledo, O.; F. M. Brown, of the Pittsburg and Lake Erie, Pittsburg, Pa.; A. B. Taylor, of the New York Central Railroad, New York, and S. S. Colton, superintendent of the Rutland Railroad, Rutland, Vt.

Mr. W. W. Umsted, manager of the Omaha, Neb., office, and agent for the Telegraphers' Mutual Benefit Association at that point, has made an enviable record by securing twenty-eight applications for membership from the Omaha district, the result of a single canvass.

Mr. C. F. Annett, recently in charge of the office of the Western Union Telegraph Company at New Haven, Conn., who went West to assume direction of the same interests at Goldfield, Nev., has retired from the telegraph service to engage in the real estate business at Nampa, Idaho.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Edward J. Nally, vice-president and general manager of the company, who was in Chicago and St. Louis last week, on business connected with the service, will return to New York by the way of Atlanta, reaching his office on October 3.

Mr. Charles P. Bruch, third vice-president, who has spent the summer at Glen Cove, Long Island, going to and from business every day, has returned to his city home for the winter.

Colonel A. B. Chandler, chairman of the board of directors, who during the summer has made several trips between his country residence at Randolph, Vermont, where he is spending the season, and this city, sufficient to keep him in touch with business interests, will probably remain at his New England home until the middle of the month.

Mr. E. S. Butterfield, cashier of the company, and treasurer of the Serial Building Loan and Savings Institution, has returned to his office

after a vacation, much improved in health.

Mr. S. B. Haig, superintendent of traffic, is absent from his office on vacation.

RESIGNATIONS AND APPOINTMENTS.

Mr. Charles F. Fox, superintendent of the eighth district of the western division, at Des Moines, Iowa, has resigned, the same to take effect about January 1.

Mr. W. E. Harrington, of the auditor's office, New York, has been appointed chief clerk to Superintendent G. W. Ribble, at Richmond, Va., vice George W. Phillips, promoted to be manager at Raleigh, N. C., where he relieves W. J. Crews, retired, on account of failing health.

Mr. F. H. Hollenbeck, of vice-president C. C. Adams' office, has accepted the position of cashier of the Indianapolis, Ind., office of the company.

F. J. Mahon, Canadian Pacific Inspector at Montreal.

F. J. Mahon, of Montreal, inspector of the eastern division of the Canadian Pacific Railway



F. J. MAHON,
Inspector, Canadian Pacific Railway Company's Telegraph,
Montreal, Que.

Company's Telegraph, is a native of the city in which he resides, the date of his birth being September 18, 1865. He was one of the earliest of beginners in the telegraph, for he was but seven years of age when he entered its ranks. When nine years old he found employment with the Grand Trunk Railway at Coteau. So young a worker was deserving of success. Yet it was wise for him to quit work for a little while and devote time to his education, so from 1876 to 1881, he attended the Commercial Academy in Montreal. At sixteen he passed with honors the Canadian Government Civil Service Qualifying (or higher grade) examination. He then entered the service of the Canadian Atlantic Railway, leaving that company in 1886 to enter the employ of the Canadian Pacific telegraph, when that company began its commercial telegraph business. Since that time his progress has been rapid, a bright mind and fine personality aiding him in his upward march. He has filled the advanced positions of

night chief at Montreal, chief operator at St. John, N. B.; manager at Quebec, chief operator at Montreal, the appointment to his present position of inspector of the eastern division occurring in August last.

J. F. N. Caisse, Canadian Pacific Chief Operator at Montreal.

J. F. N. Caisse, chief operator of the Canadian Pacific Railway Company's Telegraph at Montreal, was born at Lachine, Que., in 1862. At the age of twenty he became an operator in the employ of the Great North Western Telegraph Company, at Montreal. Five years later, in 1887, he entered his present service, beginning as an operator. In



J. F. N. CAISSE,
Chief Operator, Canadian Pacific Railway Company's
Telegraph, Montreal, Que.

1897 he received promotion to the position of assistant chief operator, from which, in 1899, he was advanced to that of night chief operator. In 1903 he became wire chief, and in this current year of 1908, received further elevation to the office of chief operator, succeeding F. J. Mahon, made inspector. Mr. Caisse is a careful and painstaking telegrapher, and has given to his profession much study and thought.

The Cable.

Mr. George G. Ward, vice-president and general manager of the Commercial Cable Company, New York, accompanied by Mrs. Ward, arrived in New York, Friday, September 25, from Europe, on the steamer Baltic.

Mr. A. Cunningham, of the Commercial Cable Company's staff, at Hazel Hill, N. S., who was married on September 9 to Miss Louise Gerrard, daughter of Superintendent F. B. Gerrard, at that point, is visiting in New York with his bride.

Mr. Robert L. McCann, for twenty-six years in the service of the Mexican Cable Company, and twenty years manager of the Galveston, Texas, office of the company, has been appointed general manager of the Mexican Telegraph Company and the Central and South American Cable Company, with headquarters in New York. Mr.

Alfred T. Webster, who entered the service with Mr. McCann, and who has been assistant manager of the Galveston office for many years, has been promoted to its managership.

Cable communication was interrupted September 28 with:

Venezuela	Jan. 12, 1906
Madura Island (Dutch East Indies)	Feb. 3, 1908
Lanzarote (Canaries)	May 18, 1908

Messages go by steamer from Las Palmas.

Macao	Aug. 29, 1908
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Messages can be mailed from Hongkong.

We are in receipt from Mr. Oscar Moll, general manager of the Deutsch-Atlantische Telegraphengesellschaft, Cologne, Germany, of a series of post-cards, illustrative of cable-laying incidents, showing the Agamemnon and the Great Eastern, notable for their connection with the first Atlantic cable, and different views of the German cable steamer Stephan, engaged in laying German cables of a later period. A view of the waterfront at Emden, the great cable port of Germany, is included in the set of six pictures.

The new German cable company mentioned in this column September 16, will be known as the German-South American Telegraph Company, Limited, and will have its headquarters at Cologne. The intention is to lay and operate submarine cables from Germany via Teneriffe or Liberia to Brazil and to the German colonies in West and Southwest Africa. Subsidies, which the German government has consented to grant, will ensure the payment of interest and sinking fund on the bonds to be issued by the company, as well as a sufficient rate of interest on the share capital. It will be remembered that Messrs. Felton and Guillaume, in May of 1907, obtained a concession from the Spanish government to land a cable at Teneriffe on condition that it stretched direct from Emden to that island without touching at any intermediate point. This reservation was apparently made to safeguard the interests of the British companies whose cables land on Spanish territory, and although it involved the laying of a much heavier type and greater length of cable than was anticipated by the German company, the condition was accepted. In 1902 it was rumored that Germany was planning the laying of cables from the Azores to Dutch Guiana in order to be free of dependence on English wires in time of war. In view of the Dutch-German joint cable enterprise in the Far East this scheme was looked upon as probable. The Western Telegraph Company laid a cable from St. Vincent to Fayal in 1906, thus enabling their traffic to be despatched more expeditiously to America. It has been stipulated that two-thirds of the board of directors must be of German nationality and must reside in Germany. The electrical manufacturing firm of Felton and Guillaume, who originally obtained the concession and passed it on to the new company, will supply and lay the new cable. Negotiations are in progress with the Brazilian government with regard to laying the first cable.

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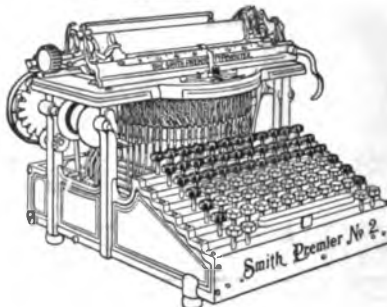
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OCTOBER 1, 1908.

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

Further Considerations of Importance.

We have received from a correspondent the following letter, to which we invite attention, particularly of young operators, and we request also that our remarks which succeed it, be carefully read:

I was an interested reader of your editorial reply in the September 16 issue, to the letter of a correspondent, under the title of "An Important Question Considered." Of course, theoretically I accept much of what you say to be true, but differ with you when you state that every operator has it in his power to better his condition within the limits of the telegraph service. That I don't believe. If it were so there would not be enough places "higher up" to go around. I can't see wherein the telegraph, with its insufficient pay, offers any attractions to men who are ambitious. I consider myself at thirty years of age, a pretty fair operator, but there is no promotion in sight that I can make out, and that being the case I may ask, "What's the use?"

The sympathies of TELEGRAPH AGE have ever been, and are, with the men at the key, of which our correspondent subscribes himself as one. And it is on account of this sympathy, broad and deep, inherent because born of association, ripened by the friendships of years, and heightened by personal knowledge of conditions that environ not alone operators themselves, but affecting every department of the service, that in its ardent wish to see the standard of the personnel advanced, this paper has rung the changes in its advocacy of the need of personal effort and study on the part of telegraphers, especially young men, in order to equip themselves for and correlatively to ensure advancement in life. We have said repeatedly, and for years, that if individuals would conscientiously follow this advice, the reward of promotion would surely come to them. This is no fantastic remark. It has been illustrated in the lives of thousands. History proves it. The records of the service prove it. It is a truism easily verified. The statement as repeated here is not uttered in a perfunctory way or in a light vein. Industry in any vocation, in whatever is undertaken, application, the formation of studious and correct habits, resulting in the ability to do things, thus meeting the demands of employing interests as they exist to-day, will eventually land any man, we don't care who he may be, in advance of where he now is.

The great trouble, however, is that so many men are content with being mediocre. They would like position and emolument, and dream dreams of its acquisition, but exercise no really practical effort to reach the goal. If they were to be charged with being lazy the imputation would probably be indignantly resented. Yet if they would carefully and with honest purpose analyze their own character, we think that the easy life, the unwillingness to assume responsibility, the proneness to pass around and evade duty instead of zealously tackling, overcoming and mastering difficulties—the problems that continually confront one, would be admitted. The pinch comes when exertion is necessary. It must be admitted that if we are not willing to exert ourselves, not once or twice only, but persistently, failure must inevitably be the result. And that is just exactly the trouble with so many who complain of their condition in life. The telegraph holds no monopoly in this respect.

The telegraph service may not be all that is ideal; that phase of the subject we are not discussing; but so long as it lasts it will continue to hold a prominent place as a great industrial field of employment, and plenty of men will so acknowledge it by accepting what it has to offer, many from choice, some, perhaps, because of accident. But whatever the reason there they are, that is their employment; positions held from which a living is derived, positions which were sought and occupied with a full understanding of their limitations and possibilities. We think it ungracious, therefore, to find fault with what has been deliberately chosen.

The compensation of an operator is not large; attractive perhaps to the youth, but no longer

inviting to the man of mature years. Yet the amount of wage is the going rate, and was not accepted, probably, without due consideration. It may or may not be all that the telegraph can afford to pay. That, also, is not the question under review. The question is that, having agreed to certain conditions, it is one's duty to accept the impositions attached thereto. If the individual be made out of the right stuff he will not grumble, even if not satisfied. If believing that he can and ought to do better, and the telegraph business is to his liking, he will pull himself together and with manly grit and earnest endeavor set himself to work out from this lower to a higher place. He must prove his ability.

We say to our correspondent that the ambitious man, whether in the telegraph or out of it, can, if he will, advance his fortunes. Don't entertain the idea for one moment that there is not waiting for you, and for all who will, a place somewhere in the telegraph service above your present position at the key if there be shown the capacity to fill it. Individual ability is the crying need of to-day. Ask anyone in authority in any field of endeavor and ponder over the answer you will receive. Go with your query to men like Colonel Clowry, the president and general manager of the Western Union Telegraph Company; to Mr. Nally, vice-president and general manager of the Postal Telegraph-Cable Company; to Mr. English, the general manager of the Postal Telegraph-Cable Company of Texas, practical, self-made men, each of them, men of wide acquaintance, large experience, and broad sympathies, and get their answer. They will tell you of the extreme difficulty experienced in finding men to fill the multitudinous places of responsibility within the gift of the telegraph.

Another thing: don't rest satisfied with being a "pretty fair operator." Become the best. "What's the use?" you ask. Because your manhood is at stake, it is undergoing trial; your future is held in the balance. If you have intelligence, sufficient health, proper force of character, your future so far as worldly advancement in some degree is concerned, is absolutely in your own keeping. If promotion does not come just when you think it ought to, don't be foolish enough to ever again say, "What's the use?" Be patient. Watch, and wait and work. If your opportunity, for any reason, does not come in the telegraph service, you may grasp it in some other line of employment. It should not be forgotten that the telegraph has graduated some of the ablest and most successful executive men of the nation. It embodies to-day in its wide-reaching service a splendid industrial working force, and from out of its lowest ranks a future staff of responsible telegraph workers must eventually be evolved. No one, then, should disparage his position, whatever it may be. In so doing he is discounting himself; he is casting moral obliquity upon himself. Rather should a practical education be derived from his occupation. It can be

made the stepping-stone to something higher and better, whether in the telegraph or otherwise.

As we have often pointed out, this is becoming more and more a technical age. The man best equipped with knowledge becomes a power, a desirable factor in the order of business economy, and goes to the top; superficial perception keeps him down.

We urge with all the earnestness of which we are capable, that operators, particularly young men with life before them, give these thoughts heed. All effort entails work; successful effort implies the exercise of mental force. Strive for ethical ideals.

Telegraphers or Writers Cramp.

A correspondent writing to the *Telegraph Chronicle*, of England, respecting telegraphers or writers cramp, a trouble more prevalent, by the way, among telegraph operators in Great Britain than in this country, comes to the conclusion that the "cramp" is not a disease, nor is it, he says, a nervous disorder. Rather it is, he goes on to state, "an affliction, the primary causes being insufficient training—incorrect style, and the sacrifice of accuracy to speed. Contributory causes are bad quality, hard pencils, manifolding, etc. I think a large number of clerks signally fail to discover how to send with the least effort, consequently they abuse the muscles of the forearm, with the result that the elasticity of youth is prematurely superseded by the whipcord of old age.

"With proper training it is possible for learners to acquire a style by which the power to send is evenly distributed from the fingers to the shoulder, never allowing the muscles of the forearm to be rigid. It is not necessary to grasp the key in order to send fifty messages an hour. The arm should be kept almost horizontal from the fingers, second joint to the elbow, with the first joint holding the key lightly.

"The strain to make a good copy with the present soft, cindery pencils, together with incorrect style, poor carbon paper and thick top copy is, I submit largely responsible for the increase in the number of cases of 'cramp' in the service. Of course, the youth who rushes, for self-glorification, to endeavor to get off seventy or eighty messages an hour receives his reward when prematurely placed hors de combat."

The question having arisen as to the probable number of colored operators employed in the telegraph service in America, it may be stated with approximate accuracy that upwards of fifty are thus engaged in the United States and Canada, distributed in both the commercial and railroad services.

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.

The Meeting of the Old-Time Telegraphers' and Historical Association and of the Society of the United States Military Telegraph Corps.

The twenty-seventh annual reunion of the Old Time Telegraphers' and Historical Association, and the Society of the United States Military Telegraph Corps, held at Niagara Falls, N. Y., with headquarters at the Cataract-International Hotels, on Wednesday, Thursday and Friday, September 16, 17 and 18, will be remembered as one possessing peculiar and exceptional interest, inasmuch as



ELGIN B. SAYLOR, PITTSBURG.
President-Elect, Old Time Telegraphers' and Historical Association.

the nearly two hundred persons present embraced so large a number distinguished in the profession which they represented—so many who had participated in the actual scenes of the Civil War, incident to the employment of the telegraph therein. It was a reunion of old timers in the truest sense, and as such had imparted to it an atmosphere of delightful comradeship not often experienced, and which will live long in memory. The annals of the joint organizations have been notably enriched by this meeting. Much had been accomplished by the various committees appointed for the occasion looking to the reception and having in view the comfort and pleasure of the visitors during the three days of the reunion. How well all plans were carried out was reflected in the abundant expression of thanks for attentions bestowed and favors conferred. Harvey D. Reynolds, president of the old timers' association, proved himself to be an admirable "host in chief," and exhibited qualities of executive abilities that won for him unqualified approval. With fine weather, in the meeting of old friends, and in the carrying out of a programme of entertainment, enacted without drawback or flaw of any kind, the attendants at the reunion had cause only for rejoicing. It was a fine affair.

The business meeting of the Society of United

States Military Telegraph Corps was held at the Cataract hotel at eleven o'clock on the morning of Wednesday, September 16, Colonel William B. Wilson, president, occupying the chair. After the reading of the reports of the president, and of the secretary and treasurer, the secretary, Mr. D. H. Bates, who furnished a printed copy of the constitution and by-laws containing all amendments made since 1882 down to the present time, all of which were adopted, the attention of the society was directed to the business of a miscellaneous character before it. Mr. J. H. Robinson, of Washington, in referring to the deeds of the military telegraphers performed during the Civil War, paid a warm tribute to their intelligence, their valor, their patriotism, and the value of their services rendered. He quoted the words of General Locke of the Army of the Potomac, who said of the military telegraphers, that he "used them in saving the lives of thousands of his men, halted in line of battle, while the telegraph operator, who was familiar with electric explosives, was sent ahead to discover and explode the numerous torpedoes that frequently were buried in camps evacuated by the enemy." He related the



CHARLES E. BAGLEY, PITTSBURG.
Vice-President-Elect, Old Time Telegraphers' and Historical Association.

pathetic incident of the bright young operator, D. B. Lathrop, who was blown up by the exploding of a Confederate torpedo at Yorktown.

It was resolved that all persons eligible to membership may be elected to life membership by the payment of fifty dollars, in which case the payment of annual dues will not be required.

In behalf of Colonel Robert C. Clowry, president of the Western Union Telegraph Company, and a member of the executive committee, who did not reach the reunion until the succeeding day, the secretary read the following resolution, which was adopted:

Whereas, The wise philosophy and broad philanthropy of our comrade Andrew Carnegie, never found

a more significant expression than when on December 16, 1907, he voluntarily made provision to meet the wants of the aged and needy members of our corps, and

Whereas, His bounty has brought unexpected comfort to some of our members on their death beds and to others whose declining years have been attended by more or less physical suffering. Therefore, be it

Resolved, That the Society of the United States Military Telegraph Corps, of which Andrew Carnegie was one of the founders, at its twenty-seventh annual



WILLIAM J. CAMP, MONTREAL, QUE.

Vice-President-Elect, Old Time Telegraphers' and Historical Association.

reunion, records its high appreciation of him not only as a comrade but as a man whom the whole world recognizes as a leader among the higher types of men.

Another resolution which in its adoption was ordered to be prepared in such manner that all the members could sign it, and forward to Mr. Pettit, to whom it related, read as follows:

Resolved, That the voluntary resignation of James E. Pettit as secretary and treasurer of this society, after twenty-six years of faithful, unselfish and devoted service on his part, has been received with deep regret, and in accepting it the society tenders him this expression of high appreciation and regard and the warmest love of all members; may he live long and continue in the future as in the past, a type of that manhood which constitutes true brotherhood and humanity.

The following telegram was sent to Theodore Roosevelt, President of the United States, signed by William Bender Wilson, president, and David Homer Bates, secretary:

The surviving members of the United States Military Telegraph Corps which served in the Civil War, now in annual reunion at Niagara Falls, recognizing and highly appreciating your great services to our beloved country, and regretting your inability to be present with them, greet you with admiration, loyalty and love.

To this message the following reply was received from William Loeb, Jr., secretary to the President:

The President thanks you for your messages, and

in return sends his greetings and best wishes for the United States Military Telegraph Corps.

To Andrew Carnegie, at Skibo Castle, Scotland, a message was sent as follows:

Survivors United States Military Telegraph Corps Civil War, in annual reunion at Niagara Falls, send loving greetings to their first chief. All hail Columbia and Scotia!

To General Thomas T. Eckert, this message was sent:

The surviving members of the United States Military Telegraph Corps, of which you were so long the distinguished head, are now in annual reunion at Niagara Falls, and in grateful remembrance affectionately greet you.

To the Hon. Cyrus Sulloway, Manchester, N. H., member of Congress, a telegram reading as follows, was transmitted:

The surviving members of the United States Military Telegraph Corps, which during the Civil War developed a high standard of soldiery and demonstrated to the armies of the world that Morse telegraphy was an invaluable arm of military service to operations in the field, are in annual reunion at Niagara Falls and, appreciating your services to the country, both as soldier and statesman, wish you a long and happy life and hope that at the next session of Congress you may see your way clear to aid in having done for them the justice they have so long been pleading, and to



FRANKLIN J. SCHERRER, NEW YORK.

Secretary-Elect, Old Time Telegraphers' and Historical Association.

which they are entitled by their standing and acts in that Grand Army of the Republic which conquered secession and established a great nation.

Additional telegrams were dispatched to United States Senator N. B. Scott, Wheeling, W. Va.; United States Senator Boise Penrose, Philadelphia; Hon. Joseph G. Cannon, Speaker of the House of Representatives, and Hon. William Lorimer, member of Congress from Chicago.

A letter was read from Melville E. Stone, general manager of The Associated Press, New York, expressing regret at his inability to be present.

In the election of officers for the ensuing year, with former president William R. Plum, of Lombard, Ill., in the chair, William B. Wilson, of Phila-

delphia, was continued as president; David Homer Bates, of New York, secretary and treasurer; William L. Ives, of New York, and Charles A. Tinker, of Brooklyn, N. Y., vice-presidents.

The chair reappointed the executive committee, and also the committee on Congressional action. General Thomas T. Eckert and Colonel Robert C. Clowry were elected honorary members of the society.

Mr. A. H. Bliss, of Chicago, presented the president and secretary each with a tin cup, such as was used at a little dinner recently given in Chicago.

The wires, as is customary at like occasions, of both the Western Union and Postal telegraph companies, were placed at the free disposal of the military telegraphers.

The business meeting of the Old Time Telegraphers' and Historical Association, following that of the military telegraphers, convened in the Cataract Hotel, at two o'clock on Wednesday afternoon, September 16. Harvey D. Reynolds, the president, called the meeting to order and introduced Franklin D. McKenna, corporation counsel of the City of Niagara Falls, who, speaking in place of the Mayor, who was out of town, welcomed the visitors to the city, tendering them its freedom. William J. Dealy, of New York, spoke in reply.

President Reynolds then addressed the association. He referred to its former meeting at Niagara Falls, occurring as far back as 1882, then went on to speak of the wonderful development and the vast applied uses of electricity at that point, the initial spot from which a wide reach of surrounding country derived its power. He referred feelingly to the death of former president William Hamilton Young, and of Secretary John Brant, reading extracts from obituary notices of both that appeared in TELEGRAPH AGE. His remarks were well received.

M. J. O'Leary, of New York, who was appointed to act as secretary pro tem, read the report of the secretary and treasurer.

Letters were read from Colonel R. C. Clowry, president and general manager of the Western Union Telegraph Company; E. J. Nally, vice-president and general manager of the Postal Telegraph-Cable Company; from James Kent, general manager of the Canadian Pacific Railway Company's Telegraph, and I. McMichael, general manager of the Great North Western Telegraph Company, tendering to members the free use of the wires of their respective companies, during the meeting of the reunion.

Clarence H. Mackay, president of the Postal Telegraph-Cable Company, New York, sent the following letter to President Reynolds, which was read:

Thank you very much for your invitation to attend the convention of the Old Time Telegraphers and Historical Association, to be held at Niagara Falls, September 16 to 18. I am a little afraid that my duties here will tie me down and prevent me from attending. I assure you that it would give me great pleasure to see you all and meet with you. I think these conventions are splendid things. They bring

us all together once a year for social and friendly intercourse, which otherwise would not be possible in this busy every-day whirl of business life. If I am unable to attend I hope you will extend to the members, many of whom I know and value as friends, my very best wishes for a happy and successful meeting.

Letters were also read from E. J. Nally and C. C. Adams, vice-presidents, and Colonel Albert B. Chandler, chairman of the board of directors, of the Postal Telegraph-Cable Company, expressing regrets at their inability to be present.

George C. Maynard, assistant curator of the department of technology, Smithsonian Institution, Washington, and a former president of the association, sent this characteristic dispatch:

Out of a busy, active, hard working day, full of vigor and spirit, I send cordial greetings to all you superannuated decrepit old fellows, who are only able to enjoy quiet picnics with the girls.

In the nomination for officers the following were named: E. B. Saylor, president, and C. E. Bagley, first vice-president, of Pittsburg; W. J. Camp, second vice-president, Montreal, Que., and M. H. Kerner, secretary, New York. Mr. Kerner withdrew his name as secretary, and that of Frank J. Scherrer, of New York, was substituted therefor. The ticket as then altered, was duly elected. On motion the salary of the secretary was reduced from \$600 to \$250 a year. Pittsburg was selected as the place of meeting in 1909, at a date yet to be determined upon by the executive committee.

The hold-over members of the executive committee are: Harvey D. Reynolds, of Buffalo; John C. Barclay and Charles C. Adams, of New York, and U. J. Fry of Milwaukee; the other five members to be appointed by President-elect Saylor.

Motion was made and carried that the secretary of the association prepare suitable minutes to be incorporated in its permanent records in memory of the late John Brant, the former secretary. The motion was supported by the remarks of Colonel William B. Wilson and William L. Ives, president and vice-president, respectively, of the Military Telegraph Corps, who dwelt with much tenderness, speaking in terms of endearment on the life and character of John Brant as exemplified in his relations to the association and to its individual membership.

On the adjournment of this meeting at four o'clock in the afternoon, the entire delegation started out on a tour of sight-seeing, beginning the itinerary that had been arranged for their entertainment. The first thing done was to proceed to the plant of the Shredded Wheat Company. This vast establishment was carefully inspected, the visitor being conducted to every part of the property, and the process of manufacture explained, the examination proving to be highly instructive and of decided interest. Before taking their departure a "demonstration" luncheon was served to the guests. The day concluded with a reception held in the ballroom of the Cataract Hotel. Music enlivened the occasion, and the large attendance throughout the hours of the evening attested to the pleasure felt by those present.

In accordance with a prearranged plan, every detail of which had been carefully ordered, a delightful programme was carried out on Thursday, September 17, which in its execution consumed the entire day and evening, crowding the hours full with pleasurable events. At nine o'clock in the morning, the excursionists assembled to accept an invitation for an extended trip over the route of the Niagara Gorge Belt Line, an electric line of railway, extending on both sides of the Niagara River, from the falls to a point near its opening into Lake Ontario. The river scenery along this road was especially fine, and as private cars were provided in which to convey the guests, enabling numerous stops to be made at the principal points of interest, the trip was rendered an exceptionally enjoyable one. This was terminated on the Canadian side at the Brock monument, a tall shaft at a point commanding an extended view. This monument was erected to the memory of Lieutenant General Sir Isaac Brock, a brave British officer who fell at the battle of Queenston, October 13, 1812. At this point a lunch was partaken of under the trees, the same being furnished by Messrs. Suesse and Powell. This refreshment concluded, a further stop of half an hour or more was had for purposes of rest and social recreation. A group was noticed which embraced numerous well-known personages of the telegraph, who, yielding to the influences of the hour, disported themselves with the joyous good nature and abandon of youth and with familiarity of address, which resolved itself in one instance on the part of an old veteran into "Bob" Clowry when made in greeting the chief executive officer of the Western Union Telegraph Company, for it was plain "Bob" in the long ago. Others observed in the group besides Colonel Clowry, were J. B. Van Every, vice-president; Belvidere Brooks, general eastern superintendent, and E. M. Mulford, district superintendent, all of New York, who represented the Western Union executive offices; Harvey D. Reynolds, district superintendent of the Postal Telegraph-Cable Company at Buffalo, who may be said to have stood for the executive offices of his company; I. McMichael, of Toronto, vice-president and general manager of the Great North Western Telegraph Company; W. J. Camp, of Montreal, electrical engineer, and P. W. Snider, of St. John, N. B., superintendent at that point of the Canadian Pacific Railway Company's Telegraph, represented their respective interests on this occasion. Included also in this circle were a number of forty-niners of the telegraph, among them W. G. Brownson, of Toledo, O.; Nathaniel Hucker, of Buffalo, and J. A. Townsend, of Yonkers, N. Y. Then there were George M. Dugan, of Tip Top, Ky., formerly and for many years superintendent of telegraph of the Illinois Central Railroad system; George T. Williams, at one time superintendent of the Western Union Telegraph Company, at Cincinnati, O., and later superintendent of telegraph of the Nickle Plate system, now living in retirement at Cleveland, O.; David Homer Bates,

and Charles A. Tinker, both of New York, the two members present of the noted "sacred three." The incident of this accidental coming together was noticeable and afforded a pleasing episode in a trip that abounded with agreeable features. The hearty commingling of these men afforded new proofs of the spirit that binds comradeship.

The party of excursionists proceeded down the river by steamer to the lake, stopping at the town of Niagara, thence returning by boat to Lewiston, on the United States side, where special cars awaited the coming of the travelers, the trip was made to Niagara Falls.

In the evening occurred the banquet at the International Hotel, of which a full account is herewith subsequently given.

Of course the Falls of Niagara alone constitutes an object of interest sufficient to rivet and hold the undisturbed attention of visitors without reference to anything else that may be worthy of attention. But the committee of arrangements were alert to bestow every consideration of attention upon their guests, so it was that at half past ten the next morning, Friday, September 18, many large automobiles were in readiness to take the delegates sightseeing to the many points of interest that abound at Niagara and vicinity. Accordingly they were rapidly taken about from place to place, visits being made notably to Goat Island, Three Sister Islands, and the State Reservation, an extensive and beautiful park. This consumed the morning hours. In the afternoon a visit to the famous electrical power plant was made. This inspection closed the round of sight seeing and marked the end of the reunion of 1908, which will take its place as one of the most successful and intrinsically delightful in all of the long series. It served to renew and cement many acquaintances begun, some of them at the time of the Civil War, and even preceding that date. Members said good-bye each to the other with reluctance, with a warm grasp of the hand and frequently with moistened eyes, for who could tell when they should meet again!

This account would not be complete without paying tribute to the efficiency and good will displayed by the local committee of Niagara Falls, consisting of W. J. Martan and Mr. and Mrs. F. S. Lewis, who rendered material assistance to the Buffalo committees in carrying out the established programme. Mr. Martan is manager of the Postal Telegraph-Cable Company, and Mr. Lewis is manager of the Western Union Telegraph Company, at Niagara Falls.

Others of whom particular mention should be made for their zeal in contributing to the pleasure of guests, were the following from Buffalo: Messrs. L. M. More, G. A. Burnett and W. A. Sawyer; Mesdames H. D. Reynolds, W. L. Stowe, L. M. More, and G. A. Burnett, and Miss Carrie D. Reynolds.

A double quartette made up from the Guido Chorus of Buffalo, added much to the enjoyment of the reunion by their very acceptable singing.

The banquet on the evening of Thursday, September 17, at the International Hotel, was a notable affair. About two hundred persons sat down to numerous small tables which were grouped about the room. After the coffee had been served the speechmaking began, Harvey D. Reynolds, the retiring president of the Old Time Telegraphers' and Historical Association, introducing Colonel William R. Plum, of Lombard, Ill., the historian of the military telegraphers, who acted as toastmaster. In his opening address he referred to the early history of the Old Time Telegraphers' Association, citing its first meeting at Cincinnati twenty-eight years ago, of its meeting the next year at Niagara Falls when the then newly-organized Society of United States Military Telegraph Corps met with it in joint assembly, a practice that has since been maintained. The death of President Garfield caused the regular meeting of that year to be postponed, as was also that of last year, deferred on account of the striking proclivities of some of the telegraph operators.

It is said, once a telegrapher, always a telegrapher. This idea is illustrated in Mr. Plum's case, who said: "I like to go into a telegraph office and listen to the sound of the instrument, for though I have not telegraphed to speak of for forty years, I believe I can read by sound as well as ever. While there was a time when I thought I knew about all there was to be learned in connection with the telegraph, I find as the years grow upon me I know almost nothing. Only a short time ago I was introduced to Mr. J. C. Barclay, in New York, who has invented an instrument that bids fair to do away in a large measure with the telegraph click. And sometimes I imagine that other improvements will follow until eventually the manipulation of the key will no longer be required in message sending." In concluding his remarks in facetious vein he introduced Mr. William J. Dealy, of New York.

Mr. Dealy, who was one of the best known of military telegraphers serving the army in the field during the Civil War, and who is now the superintendent of the Commercial News Department of the Western Union Telegraph Company, New York, said in part:

"There is nothing in history that offers a fitting comparison to the military telegraph corps in the important part it played during the war for the Union in the years between 1861 and 1865. The telegraph was then in its infancy. It had been in existence only seventeen years, but the impetus to its development given by the boys on those army lines, has made it a giant factor for all time in shaping the history of the world's progress. Would that I might—that I could—describe the scenes of those years that are still so vivid to me. I recall one fellow, while the bullets were being fired at him, who coolly dug them out with a jack knife from where they lodged and put them in his pockets, preserving them as mementoes. You remember that incident. Parker Spring, the Washington

operator, telegraphing from a balloon, made charts of the enemies' camps, numbers and positions. Remember, that was forty-seven years ago. J. Hervey Nichols, now of Denver, occupying an exposed position midway between contending armies, perched aloft on a cracker box in order to reach the wires, filled it with the music of his Morse utterly fearless of danger, another instance of devotion to duty and of personal bravery. And then there were the "sacred three," deciphering cryptograms, thereby saving from destruction by fire the city of New York and the ships at sea from being shattered by explosion; we also remember A. H. Bliss, of Chicago, suggesting and advocating plans insuring victory, growing out of his knowledge of the situation; equally clear in our mind is the army general who, in ignoring the wise admonishment, was captured with his entire brigade. All these military telegraphers mentioned were boys at the time, boys in their teens.

"There was another who had passed into his twenties; never satisfied unless on the firing line, eager bravely to advance it, engaging in the fiercest battles—he, too, a boy, yet a man. Colonel Robert C. Clowry gained his military rank and title, not in the office, but on the field of battle.

"Sons of the corps, treasure these truths and be inspired by them. Let me mention still another. When the peace commissioners were at Hampton Roads, I went out in the night from Fortress Monroe to personally deliver on a steamer to Hon. Edwin M. Stanton, Secretary of War, a message which I had received and deciphered for him. After reading the message he placed one of his arms around me. He seemed to sway with emotion. His eyes were moist. His voice was filled with tenderness and affection. He held me as a father would hold a son, and using me as a medium, he paid to the intelligence and loyalty and the bravery and efficiency of the United States Military Telegraphers this sublime and monumental tribute: 'I look upon the telegraph as my right arm. I love you telegraph boys.'

"Remember, boys, sons of the corps, that no one member of that corps had a college education, nor were any of them favored, as you are now, with the advantages that are crowding upon you. Very few had little better than a short time at school of any kind. But they had zeal and enthusiasm; they had grit; they had character; they had ambition; they had patriotism, so intense that there are not words in any language that can describe or define it.

"Colonel Wilson said yesterday that some of the boys were getting old. There is no such thing as age among military telegraphers. There is no such thing as age among old timers. The very forces with which we are engaged keep us forever young.

James Merrihew, who was introduced as a gentleman who had "turned his attention to fishing

and with such pronounced success that he actually caught a sea gull on the fly," said:

"I think that an unfair advantage has been taken of me. It is well known that I am unable to address an audience. If Charles Tinker had not already told that sea gull story I would tell it. It is like all the stories I have ever had anything to do with, Tinker would insist on getting them off first, until I had to call him down, and say I would not stand for it any longer."

In introducing David Homer Bates, Mr. Plum said:

"There was a little room in the War Department office at Washington which is sometimes called the 'Holy of Holies.' Whether that is because of the rites that were performed there, or whether the title was bestowed upon it by the three or four young telegraphers who worked there, I leave to you to determine. One of the number was a young man, who within the last few months has made the military telegraph corps stronger than it had been for some time; he has injected new life into it; he has obtained sixty-five new members, and has done as he always does in whatever he undertakes—made thorough work of a good enterprise. Mr. Bates has given to the world a book, 'Lincoln in the Telegraph Office,' that will be helpful to anyone and everyone desiring a further acquaintance with that grand character of the Civil War, Abraham Lincoln, and he has furnished details and data that no subsequent historian of the country can afford to omit. It was a tremendous responsibility that was put upon these young men in that office. There came to them, day by day, night by night, hour by hour, yes, minute by minute, secrets of the armies of the United States, secrets of a million or more men. I am glad that two of these war-time telegraphers are with us to-night. First we will hear from Mr. Bates."

Mr. Bates spoke as follows: "It has given me a vast amount of pleasure to have come to this reunion. I have been able to meet members of the military telegraph corps yesterday and to-day whom I have never seen before, and others who for forty years I had not laid eyes on. You who are younger than I can imagine what a great deal that has been to me. Reference has been made by your toastmaster to the fact that I had the honor and the pleasure of knowing Abraham Lincoln, as did also my comrade for over forty years, Charles A. Tinker, also with us to-night. We saw Mr. Lincoln, as most of you already know, nearly every day during the four years of the war. Our president, Colonel W. B. Wilson, holds a commission as colonel from the state of Pennsylvania. He is a colonel for life, which is more than may be said, I think, of any other military officer, so far, at least, as I know. Colonel Wilson came to Washington the week after Richard O'Brien and I arrived, and he and I had frequent opportunities of meeting Mr. Lincoln. As Colonel Plum has said, I told some of the incidents of my meeting with Mr. Lincoln during the war, in

a book which I wrote. I never supposed I would be an author. It was beyond my highest conceptions, but it did seem, after forty years or more had elapsed, that the things I and others of my corps knew, ought to be put on record, and I am very glad that I did it.

"Your next reunion has been appointed for Pittsburg, where I received my early common school education, ten years before I learned telegraphing. Andrew Carnegie, then fourteen or fifteen years of age, became a messenger boy at Third and Wood streets, in Pittsburg. Ever since that time he has been a great friend of the telegraph operators. As you know, his telegram from Washington, after Fort Sumter had been fired upon, in April, 1861, was the occasion of bringing Richard O'Brien, David Strouse, Samuel M. Brown and myself together, and a week later, William B. Wilson, all of whom were prepared to serve for the war. These gentlemen were the nucleus of the United States Military Telegraph Corps, although our friend Dealy was captured as a telegraph operator a week or two before that time. He was not, however, paid by the government, and therefore was not strictly in the military telegraph service until a few months later. Ever since that time Mr. Carnegie has taken a particular interest in the military telegraphers.

For over forty years our society has been knocking at the doors of Congress for the purpose of having an act passed which would recognize our body as an integral part of the United States Army. After thirty years had elapsed a Democratic Congress passed an act, authorizing the Secretary of War to issue to military telegraphers who had served over ninety days during the war, or to their descendants, in case of death, a certificate of honorable service. Most of us have obtained such certificates, and I need not tell you that they are highly prized. Some of you, however, who are here to-night have not yet received them. I certainly hope those who have failed to apply for this concrete evidence of their army telegraph service will not allow any further time to elapse before they do so. Possibly they may lack in sentimental regard for such a voucher, but I am sure my children and their children will place a high estimate of value on such a certificate in future years.

"A year or two ago at a dinner given in New York City, at which quite a number who are here to-night were present, Andrew Carnegie, William R. Plum, Colonel R. C. Clowry and General Thomas T. Eckert being guests of honor, we had a very remarkable meeting of military telegraphers. One outcome of that meeting was the granting by Mr. Carnegie last December of a pension of \$144 per year, the same as a private soldier of the United States Army, to all needy military telegraphers. As I say, we have been asking Congress to give us recognition. The act of 1807, approved by Grover Cleveland, gave us a certificate of honorable service, but especially provided

that no pension should follow. We still think we will get that in time, but Mr. Carnegie in the meantime has come forward and has taken the place of the government, and has granted this pension to needy military telegraphers. Sixty-five of them have already received their pension. One of them died two weeks after it came; another died within twenty-four hours. I leave it to any of you to imagine the comfort that came to those homes of the two who passed away, and the other sixty-three who are yet spared, by the receipt by them of that check for \$144 from Mr. Carnegie. All of these beneficiaries have made due acknowledgement, and if I could read to you some of their letters I am sure the tears would flow from your eyes. Some of them are extremely pathetic. I made a few brief quotations from some of these letters and sent them over to Mr. Carnegie, and told him I did not believe he could know the comfort and blessing that he had given these old men and their dependent families. What do you think he wrote back? He wrote to me, 'I never realized before how much more blessed it is to give than to receive.'

"I received a letter to-day from James E. Pettit which I should have had yesterday, and I will read it to you, as follows:

"It is with the greatest regret I am unable to meet you and the boys at Niagara Falls. My continued physical disability and the poor health of my daughter continue to produce this condition. My heart and soul are with you and all the comrades at this joyous occasion, and my hope and wishes are for a happy reunion.

"Yours very truly, God bless you all, and kindly remember me to all my friends."

Mr. L. B. McFarlane, of Montreal, who was the next speaker called upon, said:

"I think the worthy toastmaster is taking another advantage. He knows I cannot make a speech and should have let me off, therefore I will say but a few words, and make way for others. Of one thing I am very glad and that is that our friends to-day took us over to Canada. But I want you to understand that what you saw across the border is not in any true sense representative of Canada. Some of you were in Montreal six years ago and there saw something—caught a view, so to speak, of something that stood exponential of Canada at that time. That city is more especially typical to-day of our great and growing Dominion, and we want you to come and see us again.

"Now, as to annexing Canada to the United States, I think we are annexing you. It is not generally known that there are as many Canadians in the United States as in Canada. We are intermarrying, and consequently are becoming better known to each other; and I think we can live, and are living, maintaining separate establishments, for both are doing wonderfully well. Canada has only just begun to really expand. We have just opened up a great north country, where there is opened up a great north country, where there is

room enough for the surplus population of the United States.

"The toastmaster has referred to-night to the first meeting of the old timers. It may be of interest to some to know that twenty-eight years ago I was present in this hall at the first convention of another organization which had been formed, and that was the Telephone Association. They had their convention in 1880, and it was our pleasure at that time to send congratulations to the Old Time Telegraphers at their first meeting in Cincinnati."

Mr. Charles A. Tinker, who with Mr. Bates, also a member of the "sacred three," spoke as follows:

"I must say that the chairman has taken an undue advantage of me in two respects. He never winked to me that he was going to call upon me, and he is telling little things in public told him in the confidence of privacy. I am not given to speaking any more than Mr. Merrihew is, but I certainly think it a privilege and a pleasure to express to you all the enjoyment that I have experienced at this meeting. I feel with Mr. Bates that this coming together revives memories of old times, and that it is a satisfaction to meet; thus, for our number is growing small.

"I want to speak now a little irregularly about Mr. Bates, for your chairman has mentioned some of my early connections with the United States Military Telegraph Corps. The chairman, as I say, has taken advantage of a little confidence I placed in him in telling my experiences in the War Department office on the first day. Colonel Wilson was then head of the office and manager, and Mr. Bates was operator, and I strolled in there and applied for work. I was catechised and examined by Colonel J. R. Gilmore, and finally told to go to work. He put me down at the Baltimore and Ohio railway wire, which I thought was all right, but when I found I had to do the work with pen and ink and a printed blank, where I had been doing work with soft paper and a pencil, you can imagine the embarrassment I immediately felt, and at the end of the day I was all broken up. I thought I had some patriotism and some ambition, but all such impulses had gone out of me that night. Mr. Bates and Mr. Wilson, with their kindness of heart, got around me that evening. They wanted help. And so they got me to agree to sleep over night on the proposition. I lay and thought, and wondered where and how I could get into the military telegraph, for that was what I was after. I had been hearing about the operators in Chicago who had gone to the front, one of whom had written wanting me to join McClellan; he wrote how he was getting \$100 per month, and three rations per day; that it did not cost anything to live, and that he was laying up the entire \$100 received. But I finally went back next morning to try if I could make it go with pen and ink; went resolutely to work and stuck to it. I was somewhat disappointed in the salary. I found that the salary there at Washington was \$60 per month, while

it cost \$40 to board in a modest boarding-house across the street.

"Later I was assigned to duty in the field, finally bringing up at General McClellan's headquarters, and was one of the eight operators selected to go forward from Alexandria. These included C. W. Jaques, D. B. Lathrop, H. L. Smith, J. H. Emerick, and others, whom I don't now recall. Of the number Mr. Jaques and myself are alone living. We were to be transported by steamer, and two weeks were occupied in loading the vessel, the Commodore, and getting everything ready. I was held responsible for all supplies. I wrote a letter at this time to my father while on the trip to Fortress Monroe, detailing an account of the expedition. It was further added to and mailed home from Yorktown, Va., in 1862. It was a long communication. It was an interesting letter to me then when living in and an actor in the scenes depicted, and the oftener I read it in these latter days, the more interesting it becomes, for it is a faithful record of history.

"We had settled in front of Yorktown and every opportunity I had to write to my father, my mother or my sister, then at home in Vermont, and give them a little diary of my experience. I took advantage of. My father very fortunately saved all these letters, and I have some fifty or sixty of them now to preserve my history while in the field. Naturally I value them very highly, and will be very glad, indeed, if some of you have an opportunity to read them.

"And now I want to speak of Mr. Dealy. He was one of my companions in the War Department. He was all-night operator while I was all-night cipher clerk in an adjoining room. I took a great liking to him. He was a little fellow and I was considerably larger, and sometimes we used to get so sleepy that one would lie down and take a little nap while the other remained on watch. Mr. Dealy is a phrenologist and he insisted in making a chart of my head. I had a great many things in that head that I did not want other people to know about, but finally, in order to kill time and not have it drag too heavily, I submitted to the operation and he felt my bumps and described them, and did it well, writing out something like twenty pages in defining my character. I always valued that paper very much, and fortunately I kept it. It occurred to me, however, about ten years ago, that Mr. Dealy might have forgotten the incident. I never heard of him becoming famous as a phrenologist. It was an unkind thing for me to do, I admit, but I wrote a little note to Mr. Dealy one day. I said: 'My friend, I am very sorry to learn that you have taken the liberty of criticising, and, somewhat seriously, my character. I would like to have you explain it.' Poor fellow! I know how he felt, because we were pretty good friends, and he, of course, was stunned. He wrote me a note and wanted to know the names of the parties from whom I had received that information. Then I felt the matter was more serious perhaps than I had thought. However, I con-

tinued the deception, telling him I could not, that I had the names under confidence and could not give him the authors. Well, then he wrote me again that he must have the names. He did not come to see me, but wrote a note in reply to mine, and when he could not stand it any longer he came to see me. All the time I had this paper in my desk. I was feeling that it was more serious than I had anticipated, so I took his hand and handed him the paper, and said: "There is the evidence." If he read it over he found the evidence of criticism of my character there.

"It has been mentioned here to-night that Mr. Bates, Mr. Chandler and myself, were called the 'sacred three.' It is simply a fact that we were in a confidential position, a position that made absolutely sacred the information that we received, and so far as I know never one of us was charged with having divulged any secret of the War Department. The term was given us by Major Johnson, who was with us a great deal, and came to think a great deal of us.

"I desire, in conclusion, to speak regarding my friend Colonel Chandler, the missing member of the 'three.' I met him on the street just before leaving New York. He is bearing this week a heavy burden of sorrow. This day is the anniversary of the death of his wife, who passed away a year ago, and he came down to the city from his country home in order to get away from the associations and be by himself in Brooklyn. He wished me to say to all that he was very sorry, indeed, that he could not be with us at this particular time, and I know we all sympathize with him and recognize that he would have been here if conditions were otherwise."

The next speaker to be introduced was Mr. M. J. O'Leary, of New York, secretary of the Telegraphers' Mutual Benefit Association. He said in part:

"My connection with the telegraph business has been instrumental in placing me in charge of the Telegraphers' Mutual Benefit Association. In connection with the work which has devolved upon me through this association and through my association with kindred societies, has come to me the knowledge of one of the most potential, and, I might say, one of the most remarkable developments in the spirit of fraternity in this or any other country. The society is now in its forty-second year, and during that time it has disbursed to beneficiaries of deceased telegraphers upwards of \$1,300,000, and there are no words, to my notion, that can possibly paint the good that this has done to the widows and orphans and dependent members of families of deceased telegraphers. To-day the society, very largely through the instrumentality and through the good will of the officers of the Western Union Telegraph Company, occupies an enviable and impregnable position."

Colonel Robert C. Clowry, of New York, president of the Western Union Telegraph Company, who had been a pleased listener to all that had been

said during the evening, briefly responded when introduced by Mr. Plum. He said:

"I never had so pleasant a time in my life as I have had to-day. It has been a constant delight to meet so many of my old friends and renew acquaintances, and I hope to be present at the next meeting and to find you all well and happy, as you are to-night."

The address of Colonel William B. Wilson, of Philadelphia, president of the Society of the United States Military Telegraph Corps, concluded the speeches of the evening. His remarks were as follows:

"The patriot sentiment so closely allied to the scriptural injunction of doing unto others as you would have others do unto you, has grown year by year as the life of this Republic has progressed and brought about the peace and prosperity that is now being enjoyed by eighty million citizens. It has rung out in clear tones and, cemented by noble sacrifices, and drenched by the blood of martyrs, it came down the years from Yorktown, asserted itself at Lundy's Lane, on Lake Erie and in the Halls of the Montezumas, burned into the hearts and lives and speech of men, and enrolling itself on every page of historic progress, at last enables the white winged dove of peace and love to rest upon the sword of Grant at Appomattox and proclaim to the world that the shackles had dropped from the American bondman, and that the United States were, in fact as well as in name, a free and independent nation, with a government of the people, by the people and for the people. In the achievement of that result the sentiment animated no breasts more warmly than those of the telegraphic craft during the soul-trying years from 1861 to 1865. It caused over twelve hundred young men to leave home, family and friends, and, spurning ease and comfort, to rally round their country's standard, resolved to do or die, so that the nation might live, and, living, have wiped from its escutcheon the only blot that marred its harmony and beauty. The cause which these young telegraphers espoused was, in the thought and some of the words of Charles Sumner, greater than that of the fathers of the Republic, inasmuch as the latter fought for the liberty of themselves, while the Grand Army of the United States, to which the Military Telegraph Corps was attached, fought for the liberty of others, and the peerless merit of their achievement is to be found in that fact.

"In all the American citizenship there were none brighter, more intelligent, more ardently true and patriotic, and none more unselfish or self sacrificing than those followers of Morse. They were the nerves of the army and the watch dogs of the camp, and when the battle was on they were the brave couriers of the field who, undaunted and undismayed by the whistling balls or shrieking shells, carried the orders of the commander. Their sufferings and sacrifices have never been told in detail, but their invaluable services have passed into history among phenomenal performances of the young

men of those days. But while history records their deeds, it is silent as to the ingratitude shown them by the government."

It was after midnight when the assembled guests arose and sang the "Ode to Morse," words and music of which were written by Marion H. Kerner, a member of the Military Telegraph Corps.

Among those present were:

- Ashtabula, O.—C. W. Jaques.
- Bangor, Me.—P. J. Feeney and wife.
- Boston, Mass.—J. B. Colson and wife.
- Buffalo, N. Y.—Joseph Anderson and wife; G. A. Burnett and wife; N. Hucker and daughter; T. A. Laird, John Lapey and wife; J. G. McNerny, L. M. More and wife; G. C. Newman, J. A. Pferd, H. D. Reynolds, wife and daughter; W. A. Sawyer, and J. W. Sullivan.
- Chambersburg, Pa.—Col. J. R. Gilmore.
- Chicago, Ill.—A. H. Bliss, C. Exera Brown, J. R. Dixon, S. E. Ingram, and L. W. Marston.
- Cincinnati, O.—C. E. Sawtelle and wife.
- Cleveland, O.—Geo. W. Baxter, Mrs. C. A. Juy, G. T. Williams, and Grace J. Williams.
- Columbus, O.—C. W. Black and wife, and O. H. Newell.
- Dallas, Tex.—F. B. Knight.
- Denver, Colo.—H. T. Schroder and wife.
- Detroit, Mich.—John L. Currier and wife; F. J. Dayman, wife and daughter; James Moxam and wife; J. L. H. Peterson, and R. M. Ross and wife.
- De Witt, Mich.—J. E. Jayne.
- Duquesne, Pa.—Miss M. D. Shryock.
- Elmira, N. Y.—W. N. Estabrook and wife.
- Eric, Pa.—Geo. J. Goalding.
- Holmesburg, Pa.—Col. Wm. B. Wilson.
- Indianapolis, Ind.—D. S. Bacon.
- Jersey City, N. J.—J. B. Bertholf.
- Johnstown, Pa.—Mrs. Peter Weitz and two daughters.
- Lombard, Ill.—W. R. Plum.
- Mattawamkeag, Me.—F. A. Perley.
- Montreal, Que.—W. J. Camp and wife; L. S. Humes and wife, and L. B. McFarlane and wife.
- Mount Clemens, Mich.—J. Schanher and wife.
- Muskogee, Okla.—J. R. Brown.
- Niagara Falls, N. Y.—M. J. Donohue and F. S. Lewis and wife; W. J. Martan and wife.
- Newark, O.—C. A. Anderson.
- New Hartford, N. Y.—F. C. Mason.
- Newport, Ky.—R. D. E. Rowe and wife, and Miss M. Werden.
- New York.—D. H. Bates, Belvidere Brooks; W. C. Burton, Col. R. C. Clowry; W. J. Dealy, L. Dresdner and wife; Mrs. Marguerite C. Gates, J. J. Ghegan, E. P. Griffith, W. L. Ives, M. J. Kenna, M. H. Kerner, F. E. McKiernan, D. F. Mallen, James Merrihew, E. M. Mulford, M. J. O'Leary, Fred Pearce, F. J. Scherrer, J. B. Taltavall and wife; C. R. Tilghman, C. A. Tinker and J. B. Van Every.
- Norfolk, Va.—L. C. Hall, wife and daughter.
- North East, Pa.—Mrs. W. L. Stow.
- Oil City, Pa.—W. F. Miller and wife.

Onosso, Mich.—J. M. Beckwith and wife.
 Philadelphia, Pa.—J. E. Janney, wife and daughter, and John Wintrop and wife.
 Pittsburg, Pa.—William Albaugh, wife and daughter; G. M. Ferry, wife and daughter; D. Kelly and wife; F. J. McKenna, Mrs. W. J. McQuaran, T. E. Moreland and daughter; W. R. Smith, wife and daughter; J. B. Stewart and wife, and J. W. Yealy, wife and daughter.
 Rochester, N. Y.—H. L. Gregg and J. K. Parsons and wife.
 Springdale, Pa.—Mrs. Lizzie C. Adams.
 Springheld, Ill.—H. H. Matlock.
 St. Johns, N. B.—P. W. Snider and wife.
 St. Louis, Mo.—R. H. Bohle and wife, and J. P. McClure and wife.
 Tip Top, Ky.—G. M. Dugan and wife.
 Toledo, O.—W. G. Brownson.
 Toronto, Ont.—I. McMichael and wife.
 Vincennes, Ind.—J. C. Watts.
 Washington, D. C.—J. H. Robinson and wife, and James D. Tyler.
 Waterville, Pa.—H. W. Hedge.
 Yonkers, N. Y.—J. A. Townsend.

An Operator's Zeal.

"The first office that I found myself in possession of," said the retired telegraph operator, "was a little way-station where there was not much else to do but to report the trains. I had the night trick, and the trains being few and far between, I spent most of my time dreaming of advancement. One night, soon after I had taken this office, I was called to the key to receive a message that came over the wire addressed to a railroad official who chanced to be visiting some relatives who lived about three miles from the office where I was.

"'Violet is dying,' the message read, and those three words sent the shivers up and down my back as I saw, with my imagination, a fair-haired, blue-eyed little girl dying, with her father far away from home. Then it suddenly flashed upon me that here was a chance to win promotion by hurrying the message out where the father was. I was alone in the office, and there was no one living near by whom I could send it.

"At last I determined to take it myself. I knew I had no business to leave the office, but I considered it a chance to win recognition that I might never have again. It was before the time of the bicycle, and, as there was no horse to be had, I started out afoot. There was a train leaving about 1 o'clock in the morning, and I had figured it out that the anxious father would take that train for the city, and that I would be able to get a ride back to the station with him, and have, at the same time, a chance to create a good impression.

"It was in the fall of the year and raining as hard as it could pour, with prospects that it would turn to snow before I got back. I was a little bit hazy just where the party was staying, but after braving any number of dogs and arousing

any number of farmers, I found the right place and delivered the message. The man, with a white face, hastily tore the envelope and read the contents, while I waited for him to say, "Well done, thou good and faithful servant!"

"But he didn't. He said things that I would not care to repeat, and called me any number of names that were not the least bit complimentary. It made me mad to see such an exhibition of unconcern over such a serious matter, and I was about to say so when he broke in with another torrent of strong words, of which I caught, 'fool woman,' 'pug dog,' 'glad of it.'

"Then I comprehended, and as I tramped wearily back to the office I had deserted, I had plenty of time to take a solemn vow never to again bother my head about what might come over the wire."—New York Sun.

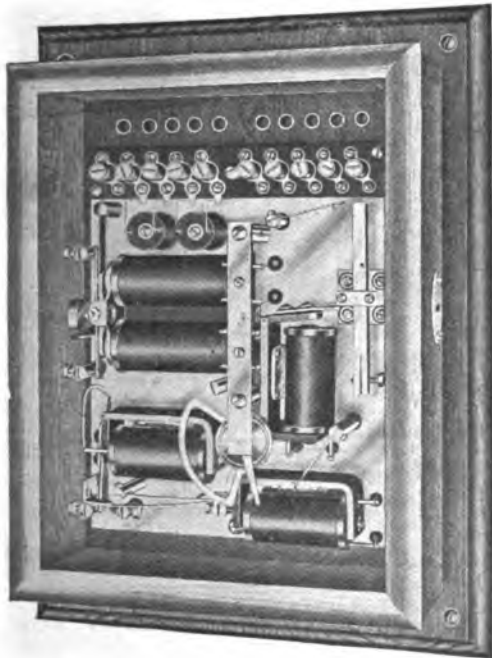
Book Review.

"Lord Kelvin," an account of his scientific life and work, a volume just off the press, by Andrew Gray, professor of natural history in the University of Glasgow, Scotland, a former pupil of and assistant to Lord Kelvin, 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.

The British delegates appointed by the London Board of Trade to attend the International Conference on Electrical Units and Standards, which is to meet in London on October 12, are the Right Hon. Lord Rayleigh, O.M., P.R.S.; Prof. J. J. Thomson, F.R.S.; Dr. R. T. Glazebrook, F. R. S.; Sir John Gavey, Kt., C. B.; W. A. J. O'Meara, R. E., C. M. G., and Mr. A. P. Trotter. Mr. W. Duddell, F.R.S., and Mr. M. J. Collins, of the Board of Trade, will act as secretaries to the British delegates, and Mr. F. E. Smith and Mr. C. W. S. Crawley as assistant secretaries.

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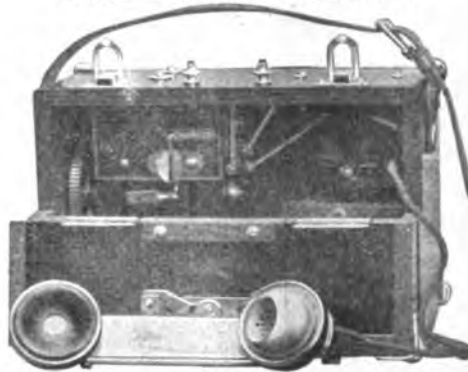


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The Railroad.

The regular September meeting of the Railway Signal Association was held at the Great Northern Hotel, Chicago, on September 8. About fifty members were present. Mr. L. R. Clausen presided.

Mr. Frank Camp, son of William J. Camp, electrical engineer of the Canadian Pacific Railway Company's Telegraph, Montreal, Que., has been placed in charge of the telephone service of the system in British Columbia.

The Interstate Commerce Commission has made an informal ruling that railroad telegraphers may, under the federal law regulating hours of service of railroad employes, work in excess of nine or thirteen hours in cases of emergency where trainmen may work more than sixteen hours.

Presiding Judge Coffin, of the Jackson Circuit Court, Alabama, has declared unconstitutional the act passed by the last legislature of that state, providing an eight-hour day for railroad telegraph operators, on the ground that it interfered with interstate commerce and the subject was covered by an act of Congress.

It is expected that train despatching by telephone will be an accomplished fact October 1 on the division of the Chicago, Rock Island and Pacific Railway between Chicago and Rock Island. The work of installation was carried out under the direction of J. G. Jennings, of Chicago, superintendent of telegraph of the road. The telephone will displace the telegraph only in the despatching of trains. The telegraph will be continued in use for all other business of the road. There will be no laying off of operators by reason of the new system.

At the quarterly meeting of the western division of the American Association of Railway Telegraph Superintendents, held in Chicago, September 17, eighteen roads were represented, as follows; Chicago, Milwaukee and St. Paul; Chicago, Burlington and Quincy; Chicago, Rock Island and Pacific; Chicago and Northwestern; Atchison, Topeka and Santa Fe; Missouri Pacific; Union Pacific; Grand Trunk; Queen and Crescent; Great Northern; Wabash; Michigan Central; Pennsylvania Lines West; Chicago, Indiana and Southern; Baltimore and Ohio; Chicago and Eastern Illinois; Wisconsin Central, and Illinois Southern. The western division includes all roads north and west of the Ohio River. Various subjects relating to service and construction matters, telegraphic and electrical, were discussed and acted upon, the one of greatest interest, says the Railroad Age Gazette, being the use of the telephone for the despatching and blocking of trains. Reports to the meeting indicated that within the last two years over 6,000 miles of road have been placed under telephone operation. Nearly all of this mileage is on heavy divisions, both single and double track. The advantages as to safety and efficiency from its use were brought out and reports indicated that on divisions so managed train movements were being greatly expedited

by the greater speed and flexibility of the telephone working. The train despatcher's duties are lightened, giving him more time to figure out and plan his movements, all of which tends to facilitate train movement and promote safety; operators' duties are likewise lightened. It was the unanimous judgment of the members present, many of whom are in general charge of train despatching by telephone, that the use of the telephone for the despatching and blocking of trains has demonstrated its safety and superiority for such purposes. The following resolution was unanimously adopted:

Resolved, That in the judgment of this association the use of the telephone in the despatching and blocking of trains is just as safe, if not safer, than the telegraph, and in addition thereto has many advantages; therefore, we unanimously endorse its use and recommend its further adoption for such purposes.

Methods for Locating Transpositions of Wires and Split Pairs in Telephone and Telegraph Cables.

Henry W. Fisher, in a paper published recently, stated that:

"Some of the telegraph companies demand that there shall be no transposition of wires in any of the layers in a telegraph cable. By this is meant that the wires of every layer must have the same relative order at each end of the cable. There is usually a tracer or wire covered with different colored paper from the rest in every layer, and by counting from this tracer any particular wire can be located at any point in the cable. If a wire is fifth from the tracer in a clockwise direction at one end of the cable, it will be fifth from the tracer in a counter clockwise direction at the other end of the cable. By this general plan it becomes possible to identify wires without resorting to some of the common methods of testing. However, in order to be able to place implicit reliance in a scheme of identification of this sort, not only must the cables be manufactured correctly, but the jointing must be made by skilled men who are careful to connect the wires of each layer in consecutive order, and as an extra precaution make repeated tests at both ends of the jointed sections as the work of splicing progresses. Even after exercising the greatest care, a transposition may occur."

Among the exhibits that will be made at the New York Electrical Show, to be held at the Madison Square Garden, October 3-14, in the section commemorative of the Atlantic cable of 1858, the Commercial Cable Company, through President Mackay and Vice-president Ward, is making a loan exhibit of relics, appliances, maps, models, etc., covering the entire period of submarine cable development, the whole constituting an object lesson of much interest.

"Pocket Edition of Diagrams," etc., the latest revised edition, 334 pages and 160 illustrations, published by TELEGRAPH AGE, contains just the information every telegrapher needs.

The Atlantic Telegraph Company.

A successful independent telegraph company maintained in this country is that of the Atlantic Telegraph Company, a New England enterprise. It has had a prosperous career during the year and a half it has been "going alone," and especially so since the management has been placed under the direction of Robert Morton, formerly of New York, well known in telegraph circles. One of our Portland, Me., correspondents writing of this company, says:

"It may be interesting to some of your readers to know that the Atlantic lines were constructed from Boston to Portland, Maine, by John Donovan, of Lowell, Mass., in 1885. Two years later they were leased to the Baltimore and Ohio Telegraph Company, for a term of twenty years. As the Baltimore and Ohio company was absorbed by the Western Union Telegraph Company, the Atlantic lines came under the jurisdiction of the latter, by which they were operated up to the expiration of the contract, which was on February 1, 1907. The Western Union and the Atlantic companies failing to agree upon terms for a release, the Atlantic company took over its property, and on August 15, 1907, placed it under the general management of Mr. Morton. Its lines have been carefully gone over and put in prime condition; the Edison current has just been put into service on them at the Boston end, and a part of the machinery to introduce it at the Portland terminal has been received.

"The Portland office of the company has recently been thoroughly overhauled and new operating tables placed therein. George L. Gaskell, formerly chief operator for the New England Telephone and Telegraph Company, at that point, is now superintendent of the Atlantic lines, with headquarters at 28 Exchange street, James H. Price being manager of the office. At Biddeford, Maine, Frank L. Malone, formerly The Associated Press operator at the Standard office, is the manager. The office at Dover, N. H., is under the direct charge of Fred C. Stuart, and, strange to say, occupies the same room at 3 Waldron street, in which it was originally located twenty-three years ago, even the same quartette operating table being used.

"At Portsmouth, N. H., T. C. Lecky, who has been identified with the telegraph in that town for forty years, is the manager. Mr. Lecky, has had about all the telegraph experience that Portsmouth has had to spare. He was at one time manager of the Western Union interests, next those of the Baltimore and Ohio, then the Postal, and now the Atlantic. Mr. Lecky is also engaged successfully in other outside business. George B. Shaw is the manager of the office at Exeter, N. H. He was formerly quite extensively engaged in the construction of opposition telephone exchanges, and possesses a wide acquaintance. The Lawrence, Mass., office is managed by George B. Cooney. At Lowell, Mass., the office is under the management of Miss B. M. Sutcliffe,

and does a fairly good business; yet the fact that it is distant only twenty miles from the Hub, the telephone does most of the business that the Atlantic lines would otherwise handle.

"The headquarters of the company were moved to Boston from Lowell on August 1 of this year, and are located at 61 Hanover street, the operating department occupying rooms 23 and 24, and the general manager room 20A, at that address. George F. Pleadwell is the city manager at Boston, and M. E. Cookson chief operator.

"The business of the company is steadily growing, and the Atlantic company has excellent prospects."

Since the above was put in type the control of the Atlantic Telegraph Company has passed by purchase into the possession of the Telepost Company, of New York, of which H. Lee Sellers is president, and which proposes to accept business at the uniform rate of twenty-five cents for twenty-five words, and five cents for each additional ten words.

Comparative Speeds of Morse Signals Required for Sending and Punching.

The following article from The Telegraph Chronicle, of London, will be of very general interest to telegraph operators:

The Morse telegraph alphabet of twenty-six English letters contains eighty-two signals or 3.1538 average signals per letter and 15.769 average signals per word of five letters. The basis of the alphabet is the dot. A dash is equal to three dots. The space between the signals of a letter is equal to one dot, representing the letter e. The space between the letters of a word is equal to three dots. The space between two words is equal to six dots.

The following table shows the comparative approximate number of signals required for sending or punching twenty to forty words of five letters each per minute or second:

No. words per minute.	Sending		* Punching		No. words per minute.
	Signals per minute.	Signals per second.	Signals per minute.	Signals per second.	
20	315.38	5.26	435.38	7.26	20
21	331.15	5.52	457.15	7.62	21
22	346.91	5.78	478.91	7.98	22
23	362.68	6.04	500.68	8.34	23
24	378.46	6.31	522.45	8.71	24
25	394.22	6.57	544.22	9.07	25
26	409.99	6.83	565.99	9.43	26
27	423.76	7.06	587.76	9.79	27
28	441.53	7.36	609.53	10.16	28
29	457.30	7.62	631.30	10.52	29
30	473.07	7.88	653.07	10.88	30
31	488.84	8.15	674.84	11.24	31
32	504.61	8.41	696.60	11.61	32
33	520.38	8.67	718.37	11.97	33
34	536.15	8.93	740.14	12.34	34
35	551.91	9.19	761.91	12.69	35
36	567.68	9.46	783.68	13.06	36
37	583.45	9.72	805.45	13.42	37
38	599.22	9.99	827.22	13.79	38
39	614.99	10.25	848.99	14.15	39
40	630.76	10.51	870.76	14.51	40

* including spacing signals.

Radio-Telegraphy.

According to present arrangements the new wireless station at Varna will have a range of action of three hundred and eighty-five miles. The Bulgarian government is in negotiation with the Marconi Company regarding the operation of the station.

Direct communication has been opened between the Norddeicher Telefunken station and the central telegraph office in Berlin, and it is now possible to transmit telegrams to the Berlin Telefunken station, whence they are transmitted to the ships.

A new wireless telegraph plant has been installed at the Kahuku station of the Hawaiian group. A message was picked up recently from the American battleship West Virginia, of the approaching fleet, while the ships were still 1,000 miles at sea.

Wireless telegraphy is now being used in connection with the German sea-fishing industry. The flagship of the fishing fleet has been fitted with wireless equipment, and messages can be sent from this ship to the German mainland. Special rules have been laid down for the conduct of this traffic.

The Australian government proposes to erect five "wireless" stations at Cape York, Thursday Island, Goode Island, Port Moresby and at Freeman's Island. The two stations of Cape York and Port Moresby will have a range of at least three hundred and fifty nautical miles, while the Freeman's station will work to three hundred miles.

A patent, No. 898,197, for a wireless telegraph apparatus, has been granted to Halsey Dunwoody, of the United States Army. A portable wireless apparatus adapted to send and receive messages for distances of over one hundred miles, and which is portable, includes complete features of transmitter and aerial.

A patent, No. 897,275, for wireless telegraphy, has been awarded to Reginald A. Fessenden, of Washington, D. C. In signaling apparatus an inductive coupling, and a receiver placed in the secondary of the coupling, and within influence of the primary so that the primary acts to shield it from disturbing influences.

A patent, No. 897,779, for a receiver for wireless signaling, has been issued to Valdemar Poulsen, of Copenhagen, Denmark. The method of wireless signaling which consists in impelling the energy from a resonant oscillation circuit having inductance and capacity through a detector having inductance by periodically unbalancing or destroying the condition of resonance in said circuit.

Lieutenant-Commander Clelland Davis, in charge of wireless telegraph work in the Navy Department, has submitted to the Secretary of the Navy plans for a wireless station on the top of the Washington Monument, by means of which it is claimed communication may be established with warships at any point within a distance of 3,000 miles.

Mr. Marconi, who recently arrived in New York, declares his object to be to complete and perfect the service between Canada and the other side. He said: "We have experienced great difficulty with the land lines from Canada, and want to get a big station nearer to New York. What we intend to do is to perfect the station at Cape Cod for receiving transatlantic messages there." Mr. Marconi said that the Cape Cod work probably will be completed by Christmas. Then his attention will be given to wireless work on the Pacific side of the continent.

The Southern Wireless Telegraph Company has been incorporated at Little Rock, Ark., with a capital of \$1,000,000, of which \$25,000 worth of stock has been subscribed for. George A. Parker is president; Harry C. Hale, secretary, and R. T. Balch, treasurer. This concern, it is stated, intends to erect a station for wireless telegraphy on top of the Southern Trust Building, Little Rock, and to establish connection with eighteen other stations in Arkansas, Louisiana, Mississippi and Oklahoma. The locations of these stations have not yet been determined.

Dr. Lee De Forest has made arrangements with the French government to use the Eiffel Tower for the purpose of establishing telephone communication between Paris and New York, the American antenna being erected on the Metropolitan Life Insurance Company's tower, which is 680 feet high. He believes that his apparatus will have a radius of communication of 1,000 miles, and he hopes that improvements now in progress will increase this sufficiently to make possible transatlantic communication. The great height of the antenna will enable him to use waves so long that to ordinary apparatus they will be inaudible.

It is stated that Valdemar Poulsen, the Danish engineer, has just carried out a series of interesting experiments in the direction of high-speed wireless telegraphy with new apparatus devised by him. The fast system is intended for use over the ocean, and the new Poulsen apparatus, corresponding to the Wheatstone apparatus, is said to fully attain the capacity of the latter. The provisional experiments, which were conducted between the stations at Lyngby, near Copenhagen, and Esbjerg, on the west coast of Jutland, are declared to have resulted in the transmission of about one hundred words per minute, and the inventor calculates that he will soon succeed in telegraphing one hundred and fifty words a minute. It is added that the trials will, in the immediate future, be continued between Lyngby and Tynemouth, and new stations are being erected on the west coast of Ireland and in Canada, between which the high-speed system is to be employed.

The important part which wireless telegraphy plays in navigation during fog will be seen from the following incident related by the captain of the North German Lloyd liner "Kaiser Wilhelm II." He says that during a recent voyage from

New York he encountered fog at the entrance to the English Channel. Neither Scilly nor Wolf Rock could be sighted and no fog signals could be heard. As he could not hear the fog signal on the Lizard, at 1.32 communication with the Marconi station at the Lizard, was effected, and, he discovered that this station could hear the liner's steam whistle two or three miles away. The course was now set for Eddystone, and the agent at Plymouth was instructed (by "wireless" presumably) to send the tender out. At 3.15 Eddystone's fog signal was heard, at 4.40 answer was received from the tender and the liner anchored; ten minutes later the tender came alongside, and having landed passengers, mails, luggage and cargo, the liner's journey was continued at 5.35 without Plymouth having been sighted.

Four more radio-telegraph stations will be established in British Columbia before the end of the present year, and the Dominion Government is now considering the sites upon which to erect these stations. The success of the stations at Cape Lazo, Point Grey, Pachena, Estevan and Victoria, which have been in operation for the past six months, has induced the government to proceed with the execution of the original plan of erecting ten stations, and the additional four are to be ready for operation before the end of the year. These will include one at Prince Rupert, the Pacific Coast terminus of the Grand Trunk Pacific; one at the northern end of Vancouver Island, and one on Moresby Island in the Queen Charlotte group. An example to the other transpacific lines has been set by the "N. Y. K." line of Tokio, which has equipped its six steamships of the American fleet with wireless. At present these liners communicate direct with Victoria when two hundred miles out at sea. The Pacific Coast Steamship Company's fleet were among the first of the coastwise fleets to be equipped with wireless, and now about ten of the steamers plying between Seattle and Alaska are provided with facilities. The Canadian Pacific Railroad Company is at present considering a proposition from the United Wireless Company to equip all its vessels, and orders have just been given by the Inland Navigation Company for installations on all the vessels of its fleet. In addition to the big liners a number of smaller coasting steamers have been equipped and in every way the system is proving most popular.

Propagation of Electric Waves in Wireless Telegraphy.

James E. Ives, Ph. D., in an article in the *Electrical World*, attempts to give a physical explanation of the throwing off of electrical energy into space by a wireless telegraph antenna. He says:

"The mathematical equations for electric waves, which were first given by Maxwell in 1864, indicate the possibility of a rhythmical propagation of electrical energy through space with-

out the aid of wires. These equations, however, can hardly be said to describe, or explain, the method of mechanism of such propagation.

"Hertz in 1888 showed experimentally that such electric waves actually exist, and that they behave in the same way as waves of light, moving in straight lines, being reflected, refracted and under proper conditions, interfering with one another.

"In 1895 Marconi showed that long electric waves, carrying much energy, could be used for telegraphic purposes, and since his first experiments an army of investigators and experimenters have used these waves continuously for the purpose of long-distance communication. The result is that the earth is now dotted with wireless telegraph stations sending out and receiving these waves, day and night.

"The belief in the existence of electric waves is now as strong and real as the belief in the waves of light, or even in the waves of the ocean. In the mind's eye, when a wireless telegraph station is in operation, there are seen ripples, in the all pervading medium, the ether, issuing from the antenna and spreading out in ever enlarging circles, just as the ripples arise and spread on the surface of a pond from the point where a stone has fallen into it. These electrical ripples in the ocean of the ether are the electric waves which carry messages even across the oceans.

"Although this analogy of the water ripple gives an excellent idea of the sort of thing which is taking place around an antenna, when in action, and is therefore perfectly justified in its use, it does not explain in detail how these pulses of energy become detached from the antenna, nor does it explain how when once started they proceed to move outward."

Telegram Went Too Fast.

Like a typographical error for which a newspaper receives censure, the uniform good work performed being accepted as a matter of course, people often complain of delayed telegrams, but there are few public records made of quick delivery. It appears that a gentleman in Richmond, Va., sent a telegram of thirty-five words to Washington a few days since over the Western Union lines, and fifteen minutes later had urgent reason for desiring its non-delivery. Manager Stevenson, of the Richmond office, did all in his power to recall the message immediately, but without avail. The record of the Washington office shows that the message was delivered to the addressee in Washington sixteen minutes after it was filed by the sender.

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*.

Vancouver Island which is said to have been the worst on record in that region, and caused an interruption of over seventy hours, all the wires having been thrown down. In August, moreover, the traffic, more especially that to the states, was considerably disorganized by reason of the strike of telegraph operators in Chicago, and the sympathy it excited among those employed by the Canadian Pacific Railway.

The health of the staff has been satisfactory throughout the year, and the service rendered by them has continued to be maintained on the high level of efficiency and zeal which has characterized it in previous years. Throughout the year the cable has worked without interruption, and no repairs have been called for. The buildings, electrical apparatus, and plant, at all stations, have been maintained in good order. No damage has occurred to the repairing vessel "Iris," and the discipline and efficiency of the ship's company have continued to be thoroughly satisfactory. The wharf and shed, which the New Zealand government undertook to provide for her use at Auckland, were completed by January of this year, and permanent moorings for the vessel are now in course of being supplied.

LETTERS FROM OUR AGENTS.

PITTSBURG, WESTERN UNION.

William H. Maize, quadruplex and repeater chief, was married recently to Mrs. Anna Canan, formerly from Tyrone, Pa.

Miss Cora Reese went recently to Braddock to relieve the manager, Miss E. C. Henkel, at that point while she was on a vacation.

Miss Pearl Creel was likewise sent to Punxsutawney, Pa., to relieve Miss M. A. Campbell, manager, to enable the latter to absent herself on a vacation trip.

D. Kelly, chief of the Barclay repeaters, accompanied by his wife, spent his vacation in Buffalo attending the reunion of the old time and military telegraphers and at Niagara Falls; subsequently visiting Toronto and other points in Canada.

Theodore E. Moreland, one of Pittsburg's military telegraphers, who has charge of the repeaters at night, was another visitor in attendance at the meeting of the United States Military Telegraph Corps at Niagara Falls, passing the remainder of his vacation at New York, Washington, Fredricksburg and visiting familiar scenes of the old battlefields where he has served.

Others who have been on vacation are: W. J. Dodge, chief operator; A. L. Dagens, who went to Detroit; David Lewis, loop chief, who went south; William Schrogen, who spent his time at Atlantic City; John Forhan, who visited at Wellsville, his native place; M. L. Fogle, repeater chief, who brought a bride back with him, and Miss Gertrude Sherriff, who left her key on the Pittsburg-Washington duplex to enjoy a well-earned rest; I. N. Barto, general wire and repeater chief; R. Sterling, repeater chief; Miss Gertrude Fitzgerald, H. J. Cupp, Miss E. P. O'Neill, and P. J. McKeever.

H. M. Burrell, wife chief, is recovering from a serious attack of pneumonia.

Continued ill health has compelled Ed. Farnett to resign his position to seek a more favorable climate.

TOLEDO, O., WESTERN UNION.

The large amount of special matter which was filed during the late G. A. R. encampment, and by reason of the presence of W. H. Taft, Republican candidate for President, in the city, was creditably taken care of by the force.

Traffic Chief, W. G. Davis, who has been on the sick list for the past two months, is slowly improving. The traffic is being taken care of by Operator C. Van Kueren.

RALEIGH, N. C., WESTERN UNION.

Business at this office is good, having shown a substantial improvement since the first of the year, in fact necessitating an increase of the operating force, L. J. Dughi being added about two months ago.

E. R. Riddle, who is spending a four months' vacation at Mars Hill, this state, is being relieved by W. M. McRary.

CHICAGO, WESTERN UNION.

J. E. Dayhoff, night chief operator, has resigned on account of ill health, and will go to Pasadena, Cal., where he hopes to derive benefit by the change in climate.

H. T. Price is acting night chief operator and George C. Gute, assistant.

J. F. Hickey, who has been assisting H. Detcher in the New York division, has been transferred to the quadruplex room; W. E. Claibeu, assistant to F. H. Gournoe, in the overland, has been transferred to the New York division; D. S. Gittings is assisting in the overland at night, and H. Brown assisting J. L. Pierce in the day time.

Mrs. Rose Dillon died August 29, after a lingering illness. The burial was at Pittsburg.

A. B. Cowan, chief operator, accompanied by his wife, is on a fishing trip in northern Wisconsin.

Mr. Boydston, an old employe of this office, is seriously ill.

M. M. Lovelace and wife have resigned and accepted positions at Seattle, Wash.

James Shaughnessy has resigned to accept a position in the Barclay department at Denver.

NEW YORK, WESTERN UNION.

Mrs. W. E. Eichler, who has been acting manager of the Middletown, Conn., office, has returned to her duties here.

Edward Messler has returned from State Camp at Sea Girt, N. J., where he was on duty during the international shoot.

W. L. Ives, vice-president of the United States Military Telegraph Corps, who attended the annual reunion of the "old timers" at Niagara Falls, spent a short vacation at Syracuse.

The following operators were detailed to the Democratic state convention, in charge of R. J. Murphy: R. M. Christian, J. A. Donahue, T. Nolan, T. T. Parr and Mr. Wilcoxon.

Those detailed to the Republican state convention at Saratoga under charge of Mr. Harry Pearce, were: Messrs. Bellis, Collins, Erwin, Wendroth, Jannace, Walsh, Gregovorius and Leopold.

Chief operator T. A. McCammon, himself an ardent disciple of the late Izaak Walton, was the recipient of an eleven-pound bass, caught by C. A. Kilfoyle, secretary of the Telegraphers' Aid Society, while on his vacation recently.

D. W. McAncey, eastern wire chief, whose health of late has not been of the best, has gone for a three weeks' vacation to Canada.

George F. Stainton, western division chief, is absent on vacation.

William Mayer, of this department, and a justice of the peace in Wallington, N. J., has been nominated for freeholder in that town.

R. T. Herlihy has returned to Boston to resume his studies at the Massachusetts Normal Art School.

The entertainment committee for the annual reception and entertainment of the Telegraphers' Aid Society, are working very hard in their efforts to make the affair, to be held on November 10, at the Lexington Avenue Opera House, a grand success.

A. L. Bougher, for many years an operator in this office, but for the past year and a half agent of the Long Island Railroad at Amagansett, L. I., is in the hospital at Long Island City, suffering from a fractured knee.

OTHER NEW YORK NEWS.

Assessment No. 483 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of John Brant, at Brooklyn, N. Y.; Nicholas C. Pamplin, at Pamplin City, Va.; George H. Albee, at Windsor, Conn., and James H. O'Donnell, at Philadelphia.

The Magnetic Club of New York, announces that its fall dinner will take place on Wednesday evening, November 18, at the Hotel St. Denis. This will celebrate the twentieth anniversary of the club. The delegates to the annual meeting of the Telegraphers' Mutual Benefit Association, to be held at that time, have been invited to attend as guests of the club.

Mr. E. F. Howell, secretary of the Serial Building Loan and Savings Institution, who has been visiting his old home in Canada, has returned to his office much improved by the rest.

Mr. Joseph Orton Kerbey, of Washington, the old-time telegrapher, who went to Rio Janeiro, Brazil, in June last, as a representative of the Pan-American Bureau, to attend the meeting of the International Bureau of American Republics at the opening of the Brazilian Exposition, reached New York on his return on September 25. While in Brazil Major Kerbey made a voyage up the Amazon River of one thousand miles.

Mr. B. A. Hughes, of the Western Union Telegraph Company, San Francisco, Cal., has accepted the agency of Telegraph Age for that city and vicinity, and we hope that our Western Union friends at that point of the Pacific Coast will not overlook Mr. Hughes when they have business with this paper to transact.

Obituary.

James H. O'Donnell, a broker operator, employed at Philadelphia, Pa., died on September 1, of paresis.

G. B. Gaines, aged fifty-five years, formerly in the telegraph and electrical supply business, but for the past three years living in retirement, died at Richmond, Va., on September 13, of heart failure.

M. L. Hellings, aged sixty-eight years, who was identified with the cable service of the Western Union Telegraph Company, with headquarters at Key West, Fla., was killed, September 17, in a railroad accident at Devon, Pa., where he was on a visit.

A New Office at Nashville for the Postal.

What it is believed will be one of the finest and best equipped offices in the system of the Postal Telegraph-Cable Company, is expected to be ready for occupancy by January 1, 1909, at Nashville, Tenn.

The Postal company has been located in Nashville for eighteen years and has occupied and still has offices at the southwest corner of Church street and Third avenue, North. The removal to the new location, in the Noel block, across the street, on the northwest corner, has been necessitated by the rapid growth of the company's business. The company will occupy the entire lower floor of the section of the building on the corner, the basement, and two large rooms on the second floor, these latter to be used as private offices for the officials. The operating department and the business office will be located on the ground floor. Dynamos and other machinery will go in the basement. The two offices upstairs will be thrown together save for a low partition.

The business office will be elegantly fitted up. The floor in front of the railing or desk will be tiled in white, with the word, "Postal," in blue. The desks across which business will be received will be quarter-sawed oak with marble bases. The floor back of the desks will be hardwood all the way through the operating department. The wainscoting around the office will be of oak. From this up to the border near the ceiling the office will be finished in colonial yellow. The ceiling and above the border will be in ivory white. Two handsome electric signs will guide the message sender or seeker to the building by night. One will be swung across the Church street pavement and the other across Third avenue. A big arc light will be over the main doorway. In the lobby in front of the receiving desks or counters, comfortable seats and tables for patrons will be installed.

The messenger department will be located in the basement. The boys will receive messages through the rear of the office and go out to the street both through Noel court and Third avenue. The electrical equipment for the new office will be elaborate, the installation of which will be under the direction of James P. Edwards, division electrical engineer, Atlanta, Ga.

A. P. Martin is the manager of the Nashville office; S. E. Elliott, chief operator, and at this point is located the headquarters of Charles B. Arrington, superintendent of the fourth district of the southern division.

Harvey B. Henderson.

Harvey B. Henderson, of Conewango Valley, N. Y., an old-time and military telegrapher, with an excellent war record, is now sixty-six years old, having been born at Manchester, Ill., in 1842. His date of entry into the service of the telegraph was



HARVEY B. HENDERSON,
Conewango Valley, N. Y.

on the Caton lines in 1861, at Jacksonville, Ill., subsequently serving the same interests at other points. He served nearly two years as a United States military telegrapher in the Army of Tennessee under the late Colonel J. C. Van Duzer, of whom he writes: "God bless him! We boys loved and honored him." After the war Mr. Henderson was associated a little while with Colonel A. B. Chandler at Springfield, Ill. Later, at Peoria, Ill., he was a train despatcher for a short time, and then for seven years was employed by the overland telegraph, serving under Superintendent W. B. Hibbard. Since that time Mr. Henderson has been in other business, his health not permitting him to continue any indoor occupation. He, however, keeps up his affiliation with and interest in telegraph organizations, and is a regular reader of Telegraph Age.

Mr. George F. Milliken, inventor of the Milliken repeater, and one of the foremost of old-time telegraphers, now a resident of Boston, in

renewing his subscription, writes: "Telegraph Age is always replete with matter of much interest to me, and is highly valued both for its many articles bringing to mind old associations and its up-to-date information on electrical and telegraphic subjects."

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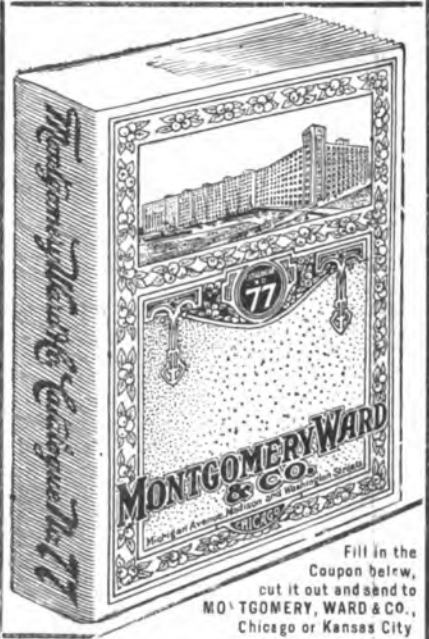
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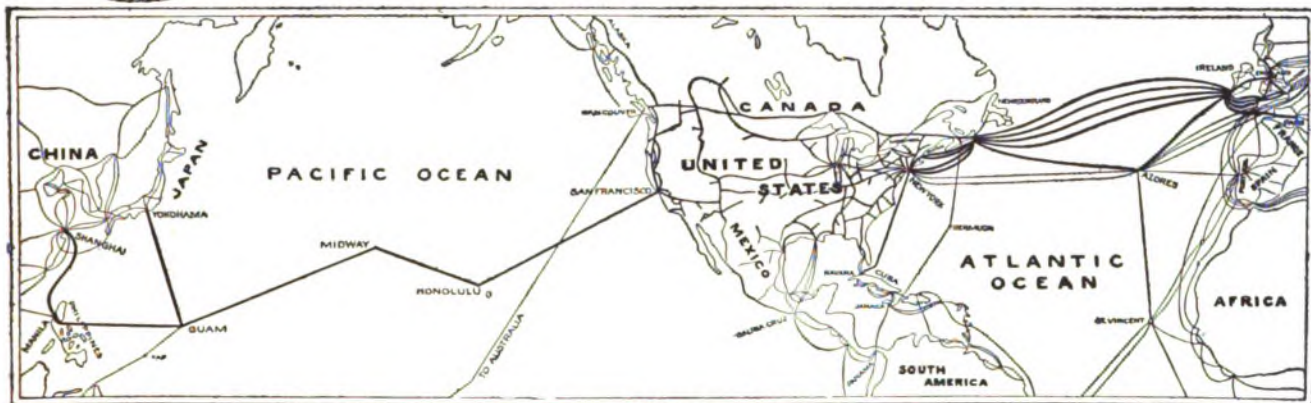
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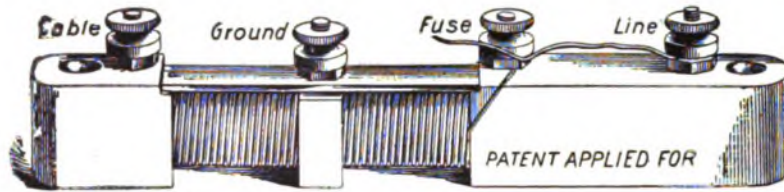
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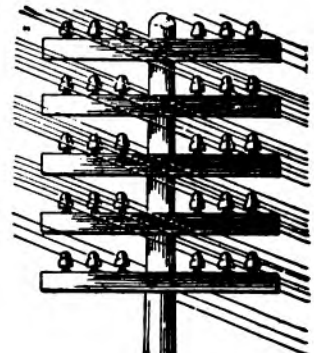
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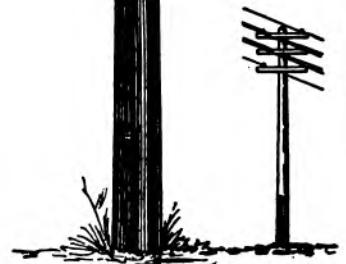
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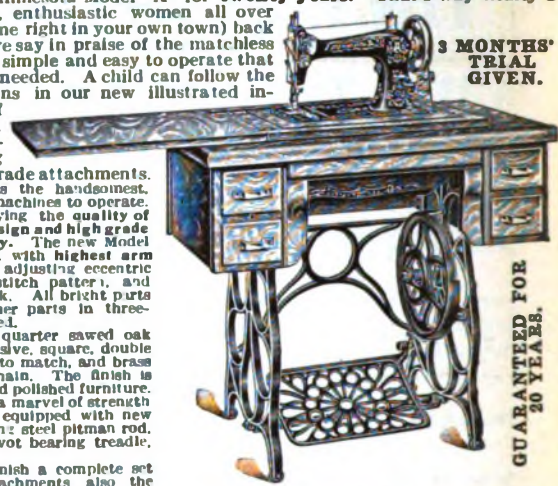
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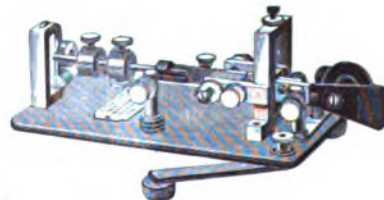
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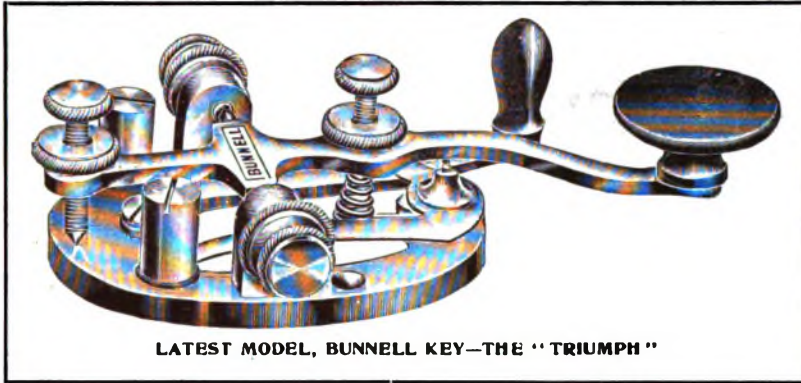
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TELEGRAPH AGE

No. 20.

NEW YORK, OCTOBER 16, 1908.

Twenty-fifth Year.

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SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

Concerning Inventions.

Nearly every one in the telegraph service at some period of his life has probably been ambitious to invent some device by which he hoped to realize fame or fortune, and, judging by the number of electrical propositions that have been submitted to TELEGRAPH AGE for approval or judgment, the number of aspirants is growing rapidly.

The unfortunate feature of this commendable ambition is that in the great majority of propositions disclosed the efforts made are practically useless so far as their commercial value is concerned, for the reason that the improvement, if any, is usually so slightly marked, compared with the prior device it is intended to displace, that there is really no "long felt want" for it.

Inventors should first realize the fact that no company is going to discard costly apparatus of any description and replace it with new unless it is satisfied that the latter will at least eventually show a monetary gain in their favor. The fact that a new device is "just as good" as one well established is, in itself, no argument in its favor. It must either be decidedly better in all respects, or, if equally efficient and durable, much cheaper. Otherwise the inventor is lucky if he ever realizes the cost of his patent papers.

These remarks are directed principally to that inexplicably numerous class of would-be inventors who seem to think that the most desired electric apparatus which telegraph people are looking for is a good single line repeater! It would seem that the first thoughts of nearly every ambitious young electrician turn naturally in that direction, but why this should be so the writer has never been able to determine.

It may be stated here that since the invention of the old Hicks-Milliken repeater there has never been another invented so much superior to it that any telegraph company would be warranted in expending any great amount of money for the purpose of replacing it with a later type. Not that later types are not "just as good," but because they are not sufficiently better.

As an illustration of this fact one of the most popular repeaters in use to-day went begging for years because there was no demand for it, although its praise was quite general among those called upon for an expression of opinion. The inventor, finding that he could not dispose of it at any price, finally offered it to one of the telegraph companies in exchange for a position as assistant chief operator in order to gain the salary attached thereto. Of course, the proposition was untenable as a matter of business policy. It is interesting to note that no less than five diagrams of new repeaters were submitted to the writer during the past year, soliciting his opinion as to their merits.

Nor is the repeater idea confined to the telegraph profession alone. The telephone offers a wide field for experiments in that line. Fortunately there is a real need of a practical telephone repeater. At present there is no such thing as a telephone repeater in the sense we use the word in connection with Morse apparatus, and from present indications there is nothing even in sight. The so-called telephone repeaters in vogue are merely "boosters" or amplifiers, and hardly warrant the dignity of bearing the name "repeater." Nevertheless, a very great number of useless propositions are constantly being advanced by would-be inventors, only to be turned down because of their utter ignorance of the requirements of such a repeater.

The following reply of a well-known electrician in the telephone service to the question, "Is there a demand for a telephone repeater?" may throw a little light on that subject and give those interested in such an invention a few points of information:

"In connection with the scheme for a telephone repeater, referred to in your note, and information as to whether there is a demand for one. I will say, I think you should first know some of the

requirements of such an instrument, and then you can judge better of your chances of success. In the first place, such a repeater must allow conversation in either direction. Unlike a telegraph repeater, however, there is no effective current in a telephone circuit with which to operate any mechanical switching device in order to reverse the direction of repetition. Even were such a thing possible it would not be practical, as there is no time for the operation of such a device during the intricacies of conversation. People have a habit of breaking in on each other's conversation and thereby creating conditions so different from those existing in telegraph circuits that it seems improbable that a satisfactory repeater analogous to a Morse repeater will ever be produced. Therefore, instead of wasting your time endeavoring to invent such an instrument, turn your efforts toward devising a good 'booster' or amplifier. The latter seem to be about the only practical instruments to use and, so far, are the nearest approaches to a telephone repeater that have been made.

"There are already one or two very successful instruments of this character now in use in the telephone service, while dozens of others have been patented. You can appreciate the difficulties encountered in devising a repeater or booster when I tell you that in addition to such an instrument being required to operate equally well in either direction, without the aid of switching devices, it must also amplify without distortion the regular conversation on the circuit, but must not amplify the line noises or the telegraph signals that may be simultaneously transmitted over a combination telegraph-telephone circuit. Even these few drawbacks do not cover the field of difficulties to be surmounted, but they should give you a pretty good hint as to what you will be up against before you get through experimenting."

The lesson to be learned from the two cases cited is that if one expects to realize on an invention he must turn his thoughts toward evolving something that there is really a demand for. Strike out in a new field. If you succeed you have no competitors.

Now, there are many things the telegraph companies would be glad to have, and it is not improbable that some day they may secure them, if much of the present ill-directed and thereby wasted efforts previously mentioned could be turned in useful channels.

For example, why not try to devise self-equating apparatus? All multiplex circuits become totally or partially useless when the "balance" is disturbed through leakage or other causes which alter the resistance of the line. We are not aware that any persistent efforts have ever been made in the direction of arranging a compensating device to meet this emergency, nor is there any particular reason to believe that the accomplishment thereof is impossible. But it goes without saying that one who solves the problem will meet with ample reward. It is not only worth trying for, because

of the fame and fortune there may be in it, but for the knowledge alone one would gain by studying the many combinations and situations encountered in the operation of a divided current in a duplex circuit.

Of course, automatic methods for cheapening the handling of messages and press matter are always in demand, but the outfit must be of a decidedly practical character throughout, or it will meet with no encouragement on the part of telegraph companies.

Nor is it necessary to confine one's bent to electrical devices alone. There are many opportunities open for operators of a mechanical turn of mind to help the company out and repay themselves at the same time.

It was but recently that attention was called to the indistinct and often undecipherable manner in which operators generally mark off their numbers on the number sheet, and "time" and "letter" the "sent" business with their left hand. Here is a chance for some one to invent a contrivance that will do the work now being done by the operator's left hand, but it should be inexpensive, and something in the line of a rubber stamp with an automatic action.

Of course, a great many needed devices could be mentioned, but that is not the purpose of this article. The cases cited are merely to bring out the point that if one desires to invent anything he should first be sure that there will be a demand for it before wasting time and money.

Recent Telegraph Patents.

A patent, No. 899,209, for an automatic telegraph, has been granted to P. B. Delany, of South Orange, N. J. Automatic telegraph employing a perforating tape at the sending end and recording device at the receiving end. Employs a transmitting tape with three rows of perforations, one for transmitting dots, one for dashes, and a third for grounding the line, and having as many perforations in it as there are perforations in both other rows.

A patent, No. 899,307, for a telegraph sounder, has been issued to Lee Kiblinger, of Jackson, La. Form of sounder having electromagnets with wide flat pole pieces extending directly across the length of the armature lever for the purpose of equalizing the density of the magnet field between the armature and different parts of the pole pieces.

The following patents have expired:

Patent No. 460,109, for a telegraphic transmitting instrument, held by C. G. Burke, of Richmond Hill, N. Y.

Patents Nos. 460,110 and 460,111, for a telegraphic instrument, held by C. G. Burke, of Richmond Hill, N. Y.

Patent No. 460,328, for a printing telegraph, held by J. E. Wright, of New York.

The Barclay Printing Telegraph System.

BY WILLIAM FINN.

(Part IX.)

ELECTRO-STATIC BALANCE.

Experience has shown that as a general rule the most satisfactory way to secure a perfect "static" balance under normal weather conditions is by some such arrangement as that illustrated in Fig. 28, where the values of the compensating capacities in the artificial line are represented by the different dimensions of the condensers C, C', C". These condensers, as already intimated, should be so arranged along the line of retarding resistances r, r', r", that the one nearest the polar relay PR, and having the greatest capacity C, will discharge through the least resistance r; whereas the condenser C" of least capacity, and furthest from PR, will discharge through the greatest resistance represented by $r'' + r' + r$.

ground by way of the home apparatus.

For similar reasons the static discharges from remote parts of the line are less voluminous when bad weather prevails at, or in the immediate neighborhood, of such parts, and on this account the capacity of the condensers at what may be regarded as corresponding positions in the artificial circuit will be required to be adjusted to the altered conditions in the main circuit. And, since one of the effects of leakage is to practically increase the conductivity of the main circuit, and to thus promote discharge, it will be evident that the amount of resistance in the retarding coils of the artificial line may have to be reduced, so that the time, as well as the distribution of the condenser discharges, shall be more nearly in unison with the shorter periods required to discharge the main line in wet weather.

This time factor is a most important consider-

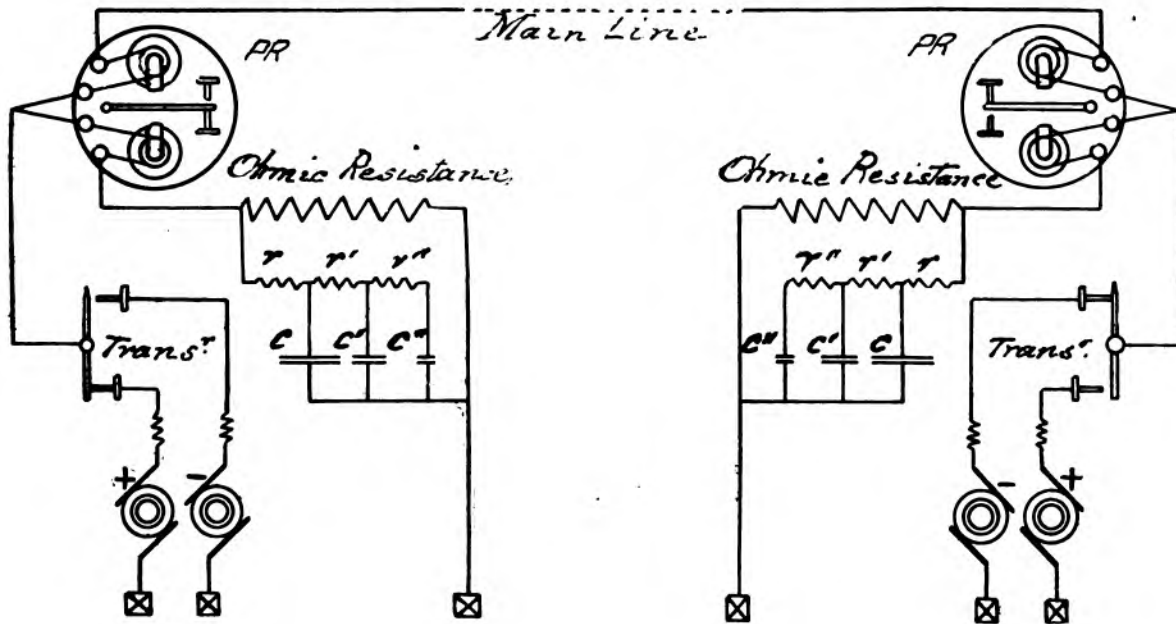


FIG. 28.—NORMAL ARTIFICIAL LINE ARRANGEMENT FOR ELECTRO-STATIC BALANCE.

It is a fact well known that the electro-static condition of a line is more or less affected by variations of weather; so that a knowledge of the climatic conditions existing at the terminal or other points of a circuit, may often prove serviceable as a guide in determining what particular combination of condensers and retarding resistances is best calculated to produce the most effective static balance. A rainstorm or other adverse conditions at the sending end of a line, for instance, will generally occasion a reduction in the number of sheets ordinarily employed in the first of the compensating condensers, and may also call for a similar action in a minor degree so far as the second and third of the series are concerned, because the leakage is so much greater at the insulators under these circumstances, as to favor the discharge of the static electricity at such points, leaving only a diminished quantity to take the regular path to

ation on automatic circuits of considerable length, especially if the conductor has one or more underground sections in it. For, under such circumstances, the main line will receive and part with its charge much more slowly than the condensers, and a proper working balance for high speeds will not be obtained until the charge and discharge from each are not only alike in amount, but correspond in duration. As a general rule, the electro-static capacity of a line is higher and less liable to fluctuate in dry than in wet weather; although it may occasionally be noticed that the condensation of moisture upon the cross-arms, insulators, etc., under slightly moist conditions, will temporarily increase the inductive capacity of the line.

The amount of electricity that accumulates upon a conductor is always greatest in very dry and frosty weather, when the dielectric properties of the air are a maximum, and the leakage at the

points of support a minimum. But, since the circuit is generally quite constant at such times, there is little or no difficulty in obtaining the necessary equations, and of maintaining the highest possible rate of speed that the inductive capacity and resistance of the wire will admit of.

A bad escape at one or more points in a circuit is very apt to produce a variable static disturbance—especially in damp or wet weather—and the utmost difficulty may then be experienced in holding the balance sufficiently steady to admit of the maintenance of working at other than slow speeds. It is always advisable at such times to have the wire changed, or cross-connected with some suitable Morse wire, rather than lower the carrying capacity of the automatic circuit. This may generally be accomplished without detriment to the working of the Morse circuit, inasmuch as the static fluctuations that are so fatal to the operation of high-speed circuits seldom prove serious enough to practically interfere with the hand-working of the Morse apparatus.

It is, of course, impossible to be cognizant of, or to anticipate all the changes and variations that are liable to affect a circuit from natural or other causes; and, for this reason, disturbances of the balance will frequently occur that cannot be counteracted by methods suggested from the partial knowledge possessed of the condition of the circuit. In such cases, the only guide to an accurate reproduction of the unknown conditions prevailing in the main line will be that afforded by the appearance of the incoming signals during the initiatory stages of balancing the wire.

Should there be a repeater in the circuit, it will always be well to determine in which of the two sections the irregularities that appear exist, otherwise much valuable time may be—and, as a matter of fact, often is—lost, through the ineffectual efforts to counteract them by taking balances at the home station, when the trouble in reality is on a part of the line that can only be compensated for at the repeating station. It would, of course, be quite possible to strike a balance without calling in the latter, provided the disturbance originated in the stretch of wire between the home and repeater offices; and this in point of fact is frequently done, but if after a reasonable length of time a satisfactory equation cannot be secured in this way, it may be fairly assumed that the trouble is beyond the repeating office which alone can remedy the fault.

It sometimes happens that the repeater chief, from one cause or another, is more or less unconscious of the static irregularities that are so manifest at the terminal station, and under such circumstances differences of opinion are apt to arise between the two offices as to the particular locality of such trouble. In cases of this sort, it is possible for the terminal office to definitely determine the point at issue, by having the repeater office first open and then close the switch inserted in the further section of the line. The latter will in this way become alternately simplexed and duplexed, and thus enable the terminal

office to note whatever difference may be apparent in the incoming signals under these different conditions.

If, for instance, A and C are the terminal points of a duplex circuit running east and west in which a repeater is inserted at B, the opening of the switch on the western side of B's repeater will allow the currents from C to be repeated to A, but not vice versa, as the latter signals are now prevented from passing beyond the repeater B. If the signals from the west, now that the eastern section alone is duplexed, come clear and perfect when the home transmitter is allowed to run, but are ill-defined and irregular when B's switch is closed, and the entire circuit once more duplexed, it will be proof conclusive that the western portion of the circuit needs a fresh balance.

(To be continued.)

Personal.

Mr. Fred G. Boyer, superintendent of telegraph of the Standard Oil Company, Oil City, Pa., was a recent New York visitor.

Rev. T. E. Ragsdale, a Cincinnati, O., operator, has left the telegraph service to become assistant pastor of the Central Christian Church of that city, and will hereafter devote his life to religious activities.

Mr. William H. Baker, former vice-president and general manager of the Postal Telegraph-Cable Company, whose home is at Bayside, fronting on Little Neck Bay, Long Island, derives much pleasure from yachting, a form of recreation in which he has become a warm adherent.

Mr. J. K. Butler, who in the seventies was one of the most efficient and popular Western Union managers in New England, and subsequently an extensive builder of telephone lines throughout that section, and whose business interests now center in Boston, has recently bought a summer home at Hebron, near Yarmouth, Nova Scotia.

Mr. Patrick B. Delany, of South Orange, N. J., the inventor of the system of automatic telegraphy known as the Telepost, has received as an award therefor, the Elliott Cresson gold medal, from the Franklin Institute of Philadelphia. This was conferred as a result of the findings of the sub-committee of science and arts composed of E. Alexander Scott, chairman; Carl Hering, William O. Griggs and Richard L. Binder. The report of this committee is published in the October issue of the Journal of the Franklin Institute.

Mr. John A. Sleicher, the proprietor of "Judge" and of "Leslie's Weekly," in the late seventies, was in the employ of The Associated Press, at 195 Broadway, and for several years filed the press report that was furnished to the New York state newspapers, and is well remembered by many of the older of the employes of The Associated Press. Mr. Sleicher is regarded as one of the foremost newspaper managers in this country to-day, and since he acquired control of the two papers named, their circulation and standing has been materially added to.

At a meeting at the City Hall, called by Mayor McClellan on October 8, to consider the preliminaries of the proposed Lincoln celebration on the one hundredth anniversary of his birth, February 12, 1909, among those present were: David Homer Bates, Charles Almerin Tinker and Colonel Albert B. Chandler, war department cipher operators during the war, the "sacred three" as they are called, whose association, by reason of their occupation, with the War President was intimate, being of a highly confidential nature. General Thomas T. Eckert, the venerable ex-president of the Western Union Telegraph Company, and who was at the head of the military telegraphers, did not feel sufficiently strong to attend.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Charles P. Bruch, third-vice-president, and Mr. E. B. Pillsbury, general superintendent of the eastern division, have returned from a trip of inspection to Buffalo and Pittsburg.

Mr. Harvey D. Reynolds, superintendent at Buffalo, was a visitor at headquarters last week, coming hither on business connected with the service.

Mr. Charles E. Bagley, superintendent at Pittsburg Pa., and who was recently elected vice-president of the Old Time Telegraphers' and Historical Association, was a business visitor here last week. He was accompanied by his wife.

The improvements now being made in the arrangement of space of the first floor or entrance corridor, will result in materially altering the appearance of that spacious and handsome hall. It was determined upon mainly because of the necessity of providing larger and more convenient quarters for C. F. Leonard, superintendent of city offices, now located on the ninth floor. At the same time it will afford additional room for the cashier's, delivery and receiving departments, so long confined to narrow offices partitioned off from the open, on the Murray street side. This divisional rearrangement has necessitated the removal of two central booths, hitherto occupied as bootblacking and newspaper stands.

RESIGNATIONS AND APPOINTMENTS.

Mr. J. W. Weed, manager at Elmira, N. Y., has been promoted to the managership of the Syracuse office, vice C. A. Balsley, transferred to New York. W. L. King, of the Elmira office, has been made manager to succeed Mr. Weed.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Among the recent executive office visitors were Sidney B. McMichael, general assistant of the Great North Western Telegraph Company. Toronto, Ont.; Theodore P. Cook, general superintendent at Chicago, accompanied by his private secretary, M. T. Cook; Jacob Levin, general superintendent at Atlanta; W. W. Ryder, superintendent of telegraph at Chicago, and V. T. Kissenger, assistant superintendent of telegraph at

Lincoln, Neb., of the Chicago, Burlington and Quincy Railroad.

A party made up of Superintendent R. T. Reid, of Seattle, Wash., Manager A. T. West, at that place, and Manager J. F. Rawie of Portland, passed Saturday, September 26, at Spokane, Wash., in conference with Manager B. S. Jones, of that point, and in an inspection of his office.

The Barclay printing telegraph system has been extended to cover circuits between Denver-Chicago, Nashville-Cincinnati, and Nashville-Chicago.

General Louis Fitzgerald, aged seventy years, who for many years was a director of this company, died October 6 at his country home at Garrison-on-the Hudson, N. Y.

At the annual meeting of the Gold and Stock Telegraph Company held September 29, the retiring directors were re-elected. These are: R. C. Clowry, Thomas F. Clark, George H. Fearons, George J. Gould, John T. Terry, J. B. Van Every, J. C. Barclay, Edwin Langdon, Howard Gould and G. W. E. Atkins. On October 1, the directors met and elected the following: R. C. Clowry, president; Thomas F. Clark and G. W. E. Atkins, vice-presidents; A. R. Brewer, secretary, and M. T. Wilbur, treasurer.

Much sympathy is expressed for Charles M. Holmes, the faithful executive messenger who has been in the service of the company for over thirty-eight years, because of the condition of his son, William O. Holmes, who was stricken with total paralysis four weeks ago.

J. F. Rawie, Western Union Manager at Portland, Ore.

J. Franklin Rawie, manager of the Western Union Telegraph Company, at Portland, Oregon, the appointment to which was noticed in our September 1 issue, is a native of Canton, Ohio,



J. FRANKLIN RAWIE,
Manager Western Union Telegraph Company, Portland, Ore.

where he was born January 27, 1868. Beginning as a messenger in 1882, in the local telegraph office, he eventually acquired a knowledge of the

dots and dashes. In 1890 he became identified as an operator with the Louisville, Ky., office of the Western Union Telegraph Company, from which he was promoted in 1891, to the manager-ship of the Roanoke, Va., office, a position he continued to hold for thirteen years. In November, 1894, he was sent back to become manager at Canton, where twenty-two years previously he began his telegraphic career. His stay here was short, however, for in May, 1905, he was further promoted to take charge of the Toledo office. In May of the present year he went West to Tonopah, Nev., to be transferred after three months' service to his present position at Portland, as first stated. As an operator Mr. Rawie early became well informed and proficient. Devotion to duty and proved executive ability have long kept him in the managerial chair.

The Annual Report of the Western Union Telegraph Company.

The annual report of the president of the Western Union Telegraph Company for the year ended June 30, 1908, shows that the capital stock outstanding is \$99,817,100, of which \$30,131.51 belongs to and is in the treasury of the company.

The bonded debt at the close of the year was as follows:

Funding and real estate mortgage bonds due May 1, 1950, four and one-half per cent.	\$20,000,000.00
Collateral trust bonds due January 1, 1938, five per cent.	8,645,000.00
Convertible redeemable bonds due November 1, 1936, four per cent.	10,000,000.00
	\$38,645,000.00

	Year ended June 30, '07.	Year ended June 30, '08	Increase.	Decrease.
Revenues	\$32,856,406.25	\$28,582,212.09		\$4,274,194.16
Expenses	26,532,196.20	25,179,215.33		1,352,980.87
Net revenue ..	\$6,324,210.05	\$3,402,996.76		\$2,921,213.29
Interest on bonds.	1,420,061.00	1,732,250.00	\$312,189	
Profits	\$4,904,149.05	\$1,670,746.76		\$3,233,402.29
Appropriated for cash dividends.	4,868,096.25	1,714,571.50		3,153,524.75
Surplus	\$36,052.80	\$43,824.74*		\$79,877.54

* Deficit.

Surplus July 1, 1907	\$16,884,781.18
Less deficit as above	43,824.74
	\$16,840,956.44

Less appropriated for stock dividends..... 2,447,100.00

Surplus June 30, 1908\$14,393,856.44

The net growth of the plant was: in poles and cable, 2,831 miles; in wire, 38,231 miles; in offices there was a decrease of 907, due principally to the fact that railroad companies have closed many small telegraph offices in consequence of the enactment of laws shortening the hours of labor. At most of such places messages are accepted and telephoned to an office of this company to be forwarded to destination.

Of the total of 1,359,430 miles of wire at the close of the year 485,801 miles were of copper and 873,629 of iron: an increase in copper of 66,351, and in iron a decrease of 28,120 miles during the year, due to the substitution of copper for iron.

The number of messages decreased 12,433,264, and the revenues of the company decreased \$4,274,194.16, due to the depression in business and to the strike of operators, which began early in August

and lasted until November 7, 1907. The average tolls per message transmitted by the company were the same as the previous year, but the cost was increased by the strike to such an extent that that branch of the business showed a small loss for the year. This loss ceased as soon as conditions became normal. Notwithstanding the abnormal expense during the strike, the expenses for the year were reduced \$1,352,980.87, which left the net loss in revenue \$2,921,213.29, as compared with the previous year. The decline in gross receipts is proportionately less than that which followed the panic of 1893, the low receipts of which period were succeeded by many years of growth. This it is hoped will be the case in the present depression, and there are at this writing indications of improvement manifested by demands from many different sections of the country for help to handle increasing traffic.

For the past six years liberal appropriations have been made for the maintenance of the company's lines. The plant is, therefore, in good condition. As stated in the last annual report, much of the work of improving the property of the company had been completed before the close of the fiscal year, 1906-07. There has followed, as anticipated, a material decline in the demands for such work which has permitted a substantial reduction in expense.

The automatic printing telegraph, owned by the company, and mentioned in the last report as having been put in operation at many of the principal cities, has been further extended to Washington, Cleveland, Cincinnati, Kansas City, St. Paul, Omaha, Denver and Nashville.

The Cable.

Cable communication was interrupted October 14 with:

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

Messages can be mailed from Hongkong.

Mr. F. N. Dresing, foreign advisor to the Chinese telegraph administration, and a delegate from that country to the International Telegraph Conference, held lately at Lisbon, and who has an international reputation in telegraph and cable circles, while stopping at the Imperial Hotel, Tokio, Japan, en route to China, on his return from Europe via the United States, suffered the loss of his money and all of his official papers and decorations by robbery.

At the conference of the Association of Chambers of Commerce at Cardiff, Wales, September 15, a resolution was passed urging the reduction of foreign and colonial cable rates, a tariff of one penny per word being suggested for France, Belgium, Holland and Germany. Some wild statements were put forward regarding the maximum capacity of the Atlantic cables and their actual traffic, the arguments of Mr. Henniker Heaton being quoted. One member objected to any reduction in the cost if it were likely to interfere with the efficiency of the service.

and stated that he had to send cable messages via New York for quick delivery at Havre, France.

The Colonial Secretary of Bermuda, in a recent report, states that there is no inland telegraph in that island. An efficient telephone service throughout the colony is worked by a private company. The cables of the Halifax and Bermudas Cable Company, Limited, and the Direct West India Cable Company, Limited, both of which companies are under subsidies from the English Government, connect Bermuda with the outside world through Halifax on the one hand and Turk's Island and Jamaica on the other. The cable to Halifax was laid in 1890, and that to Turk's Island and Jamaica in 1898. The company also have a cable between Hamilton and St. George's for the use of the public.

Sir Samuel Canning, aged eighty-five years, one of the best known men actively connected with submarine telegraphy in England since 1850, died September 24. In giving the history of his life the London Electrical Review says: He was born at St. Andrews, in Wiltshire. In the year 1855 he laid the Cape Breton Isle and Newfoundland telegraph cable, and in 1857 and 1858 his services were secured by the Atlantic Telegraph Company as consulting engineer to Sir C. Bright, and as one of the engineers-in-charge for the laying of their Atlantic cable. In 1865 he was appointed engineer to the Telegraph Construction and Maintenance Company, and in that capacity he superintended the manufacture and laying of the Atlantic cables of 1865 and 1866. Probably his greatest achievement was the work he performed in connection with the recovery of one of those cables, a feat which he accomplished as engineer to the contractors in the Great Eastern. He fitted out that vessel for the purpose, and had the control of the expeditions. He also connected England with Gibraltar, Malta and Alexandria, and laid other important lines of cable connecting various countries in the Mediterranean, North Sea, etc. In 1866 he received the honor of knighthood, at the same time a similar honor was conferred upon William Thomson, who afterwards became Lord Kelvin. In the following year a gold medal was awarded to him by the Chamber of Commerce in recognition of his valuable services. The Insignia of the Order of St. Jago D'Espada was received from the King of Portugal. Sir Samuel acted as consulting engineer to the West India and Panama Telegraph Company, and was a co-operator with the late Mr. W. O. Callender in the first days of Callender's Cable and Construction Company.

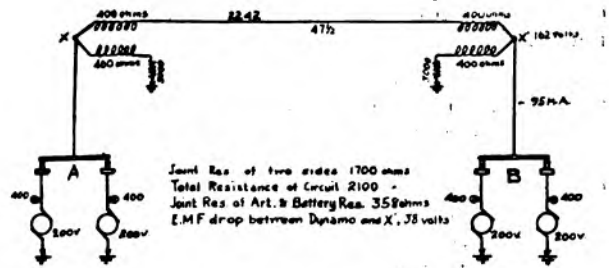
The Mexican Federal Telegraph Company has just occupied new and commodious quarters on Plaza de Libertad, at Tampico, Mexico.

"I have nothing but good words to say for Telegraph Age." is the way Mr. R. C. Smith, general superintendent of the Anglo-American Telegraph Company, at St. John's N. F., speaks of this paper in renewing his subscription for another year.

A Study of the Duplex Circuit.

(Contributed.)

On page 389, Telegraph Age, of the issue of June 16, the following diagram appears:



Suppose a line wire of 3,342 ohms should be substituted for the wire of 2,242 ohms, shown in the diagram, Fig. 1, what resistance should be unplugged in rheostats at A and B to balance? And what is the simple rule for calculating it?

The rheostats have 3,000 ohms to balance a line wire of 2,242 ohms. After adopting a resistance of 3,000 ohms for rheostats to balance a wire, it is easy to calculate the resistance of the wire, but to calculate the resistance of the rheostats to balance a wire of a given number of ohms is not so easy.

Permit me to show a method of readily solving the problem in Fig. 2.

$$\text{Line} = \left\{ \begin{array}{l} \text{Relays... } 800 \\ \text{Line wire } 3432 \end{array} \right. = 4232 \text{ ohms} = l$$

$$\text{Battery resistance } 400 \text{ ohms} = r$$

$$\frac{1}{2} + \sqrt{\left[\frac{1}{2}\right]^2 + [l \times r]} = R$$

$$1 = 4232 = \text{Line wire and relays}$$

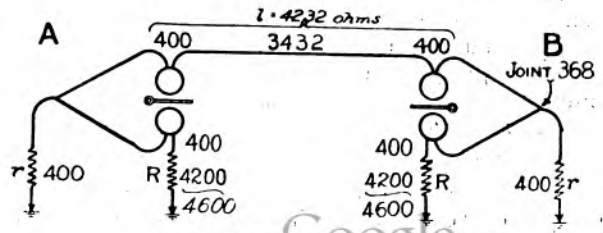
$$\frac{1}{2} = 2116$$

$$r = 400$$

$$\left[\frac{1}{2}\right]^2 = 4477456$$

$$r \times l = 1692800$$

2	6.17.02.56	2484 + 2116 = 4600
	4	Deduct relay 400
44	217	4.200 =
	176	Rheostat
488	4102	
	3904	
4964	19856	
	19856	



Radio-Telegraphy.

A patent, No. 899,264, for an oscillation detector, has been granted to Charles E. Russell, of Cambridge, Mass. A magnetic detector which does not require a cyclically varying magnetic field.

A patent, No. 899,272, for apparatus for determining the direction of space-telegraph signals, has been secured by John Stone Stone, of Cambridge, Mass. System whereby the bearing or direction of the transmitting system from the receiving system may be determined by observing at the receiving station the direction of motion of the electromagnetic waves which emanate from the transmitting system.

A patent, No. 899,243, for space telegraphy, has also been obtained by Sewall Cabot, of Brookline, Mass. A form of detector for use with the above system. Has a dynamo electric machine with field coils and an armature winding, means connecting said armature winding and said field coils in series, a condenser in series with said field coils and armature winding, and means for varying the magnetic flux threading said armature winding by the electrical oscillations to be detected.

A patent, No. 899,239, for a signaling system, has been issued to Sewall Cabot, of Brookline, Mass. Wireless telegraph system which may be operated in connection with existing wire telegraph systems without changing any of the operating features thereof. Designed to be operated so as to automatically bridge by wireless telegraphy any gaps which there may be in the wire line due to intervening property rights or the like. Additional patents, Nos. 899,240, 899,241 and 899,242, relating to other features of same, have also been granted.

Recently a demonstration of typewriting by wireless telegraphy was given at the Hotel Cecil, London, by Mr. Hans Knudsen, the inventor of the system. The method adopted, says the Electrical Review, of London, involves perfect synchronism between the sending and receiving apparatus; this having been attained, the transmission is effected by means of traveling contacts at either end of the system, a set of keys at the sending end, and a corresponding set of coherers and relay circuits at the receiving end in connection with a typewriter. At the moment when any particular key is pressed at the sending end, only the corresponding circuit is closed at the receiving end, and, therefore, only that circuit can respond. Thus, so long as perfect synchronism is maintained, and the speed of the traveling contacts is sufficiently great, a typewriter or typesetting machine can be actuated from a distance by telegraphy, wireless or otherwise. The principle of distributive telegraphy is well known, but its application to wireless telegraphy appears to be novel.

A reply to the criticisms of Branly on thermoelectric detectors, by C. Tissot, is thus abstracted

from the Comptes Rendüs by the Electrical World: "It is pointed out that tellurium detectors work without a battery, and are, therefore, not based upon a mere coherer effect. When they are connected with the antenna in parallel with a galvanometer, the galvanometer shows a deflection when waves impinge upon the system. The latter would hardly produce the unidirectional effect described if the detector simply operated by a variation of the closeness of the contact. Another characteristic difference is that the thermoelectric detectors respond, not in accordance with the amplitude of the variation of potential, but in accordance with the mean energy impinging upon the system. This may be proved by measuring the energy with a bolometer, an instrument by means of which detectors may be tested quantitatively. Good results are also obtained with other substances occupying extreme positions in the thermoelectric series, notably with fused sulphide of copper and its natural variety (chalcosine), as well as Becquerel's alloy, containing ten parts bismuth and one antimony. The thermoelectric detector may be described as a 'total-effect' instrument. It has properties which fit it in a special way for the receipt of signals in selective telegraphy and in wireless telephony."

Mrs. Tillotson Remembers Telegraph Interests.

Mrs. Emma A. Tillotson, of New York, lately deceased, widow of Luther G. Tillotson, disposed of an estate said to amount to \$2,000,000. Her benefactions were numerous. Among the bequests was one of \$5,000 to the Telegraphers' Mutual Benefit Association, of New York, and another of like amount to her husband's namesake, Luther Griffith, who is the son of one of Mr. Tillotson's old telegraph operators employed on the Erie Railroad in the early seventies. Mrs. Tillotson was widely known to many of the older members of the telegraph fraternity, by whom she was highly esteemed. Mr. Tillotson's father was a pioneer in the construction of telegraph lines in the Western States, and it was in that section that Luther G. Tillotson, while yet a boy, learned to operate the telegraph. Eventually he became superintendent of telegraph of the Erie Railroad. In 1862 he established in New York the firm of Tillotson and Company, dealers in railway and electrical supplies. In 1865 he entered into partnership with General E. S. Greely, of New Haven, and H. W. Holt, and founded the L. G. Tillotson Company, which afterwards became one of the largest telegraph and railroad supply companies in the country. Mr. Tillotson died January 31, 1885, when fifty-one years of age. The business of his concern then passed under the control of E. S. Greely and Company, the successor of which, in part, is the present house of Foote, Pierson and Company.

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Efficiency of the Signal Corps and Aeroplane Development.

The efficiency of the Signal Corps of the Army of the United States, which the alertness and fine intelligence of its officers constantly aim to secure and permanently maintain, has become the subject, and justly so, of much favorable remark. Not only is this true in our own country, but the fact is attracting much attention abroad. Not long since a foreign military officer of high rank paid a merited compliment to the American signal corps, pronouncing it to be in advance of anything in Europe, dwelling particularly upon the numerous and important experiments undertaken by it in connection with wire and wireless telegraphy, telephony and ballooning. Foreign army officers generally credit the signal service of the United States with receiving generous financial support from the Government for experimental purposes, declaring that in other countries a more conservative policy prevails to, by comparison, the consequent detriment of such service. Be this as it may, the American corps is entitled to further commendatory remark by the very praiseworthy interest it is manifesting in the aeroplane, or flying machine, in the series of interesting yet severe tests lately conducted under government auspices at Fort Myer, Va., near Washington. Although disaster, resulting in the wreck of the aeroplane, the killing of Lieutenant Selfridge, and the serious injury of Orville Wright, the inventor, has brought the tests to a close for the present, the Signal Corps will proceed with its aeronautical work, and it is understood that the Wright brothers will be permitted to make their official trials whenever they are ready, without endangering their chance of receiving the contract price of \$25,000 for their aeroplane.

A writer in the *Western Electrician*, in an article referring to the Wright aeroplane, says: "It has been generally admitted the world over that if a successful aeroplane were developed it would probably prove to be the connecting link through which wireless telegraphy and telephony would greatly, if not entirely, change methods of warfare. The dirigible balloon is nothing more than a balloon with a propeller and practically is at the mercy of even a comparatively light breeze, while a bullet or shot puncturing its thin sides might be sufficient to bring about its destruction. If successful, the aeroplane would not only be navigable with and against the wind, but would be at the same time probably practically bullet-proof, in that a small shot hole through any one of the planes of the aeroplane would have but little effect on its flight. In view of these facts the results of the tests made with aeroplanes chiefly by the Wright brothers and Mr. Herring at Fort Myer, have assumed a world-wide importance." Orville Wright has conclusively demonstrated the ability of his machine, for it remained up in the air at one of the tests for over an hour, exhibiting qualities of great speed, estimated at over thirty-seven

miles an hour, and ease in maneuvering, thus practically fulfilling exacting government requirements. How severe these are is shown by the Signal Corps specification, No. 486, successfully meeting which makes the work accomplished by Mr. Wright all the more creditable.

A movement to increase the strength of the army Signal Corps has taken definite form in the shape of a bill now before the military committee of the Senate.

The Signal Corps is now a staff corps and has a quota of 1,200 officers and men. The bill awaiting the action of Congress provides for a full peace strength of 2,500 officers and men, and if passed will put the Signal Corps in the line of the army. Military experts estimate that two and one-half per cent. of the entire force of an army is the minimum that can safely be used for signal work. The present strength of the Signal Corps is slightly more than one per cent. of the authorized strength of the army in time of war.

The officers and men of the Signal Corps require a great amount of special training. Their work involves the establishment and maintenance of cable, telegraph and wireless systems, the installation of fire control systems in all fortifications, military aeronautics, cable and telephone equipment, participation in military maneuvers, and all signal work.

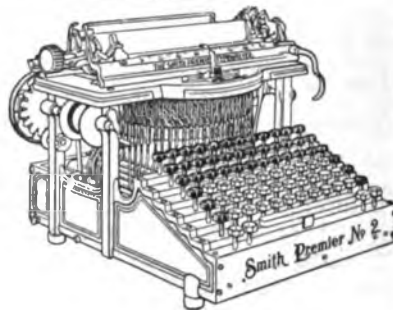
The construction of the Washington-Alaska military cable, its maintenance, the operation of the Philippines cable and of telegraph and wireless lines in Alaska, Cuba, the Philippines and the United States, has required the services of a large percentage of the force of the Signal Corps.

Among a number of books on the market treating of the general subject of train despatching, that bearing the generic title of "The Train Dispatcher," written by A. W. Early, a train dispatcher himself, has gained a wide popularity, its value being based on the fact that it is one of the best books of the kind ever produced. It supplies a certain practical information of a class desired by the ambitious worker as a guide and inspiration to him in his daily work. Its 104 well printed pages are packed full of educatory matter, and the volume should be, as it has been, a welcome possession to every telegraph operator and train dispatcher in the railway service. This book will be sent to any address on receipt of price, \$1.00. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

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OCTOBER 16, 1908.

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

The Exercise of a Loyal Purpose.

Loyalty to employing interests, those governing one's occupation, the source from which payment for services is derived, the means of livelihood obtained, indicates character, fidelity of purpose, moral attributes that no employer, no matter what deficiencies may exist in his own personality, is unmindful of. Honesty, lofty resolve and untiring zeal, coupled with intelligence, should never permit a man, if health remains, to "beg his bread."

It has sometimes been said, not always wisely, that "the world owes every man a living." It does if he earns it; not otherwise. We are all anxious to get ahead. As a means to an end if all telegraphers, men and women, would consider themselves solicitors, or solicitous spokesmen, for their respective companies, much resultant good

might be accomplished. It is not necessary to make an ostentatious display of energy; what we mean is that if each person in the telegraph would take it upon himself or herself to stand by it, to defend it, when assailed, as a great carrying corporation deserving of confidence, an act of practical benefit would be conferred. For it has become the habit in these latter days on the part of many to pass uncalled for and indiscriminate criticism not only upon the telegraph, but equally so upon other great corporate institutions that have come to fruition in this country. Such censure, sometimes deserved, but more often uttered without adequate knowledge of existent facts, following unfortunately a disposition, too prevalent at this time, to sit in judgment upon men, measures and methods of business conduct, with which the average lay person, as we meet him, is not always the most competent pronounced upon, should be met and overcome.

It is not unusual to hear the telegraph reprehended, sometimes roundly so, on the theory that it fails to transmit and deliver its messages promptly. Now, every telegrapher knows the injustice of such complaint; he knows that such statements are at variance with facts, in other words, that they lack the element of truth. In the vast amount of business handled it would be strange indeed with so many conflicting elements to deal with, that some errors did not occur, that some delays were not encountered. But as compared with the whole, failures are few. It may be doubted if they amount to two per cent. Ninety-eight per cent. out of every hundred telegrams reach their destination promptly, without delay. Where—in what other line of business will, as a matter of fact, a less shortcoming out of a given total be observed? Yet the two per cent. deficit, small as it is, is largely responsible for very much of the criticism heard respecting the telegraph. The infinitesimal annoyance represented in this low maximum of two per cent. is permitted to overshadow the giant and excellent service the telegraph is constantly rendering. A typographical error will frequently call forth more petty adverse remark than the otherwise strong and dignified statement in which it occurs, will receive recognition. Such experiences serve to remind us that human nature is much the same wherever encountered.

The point we desire to get at is this: Telegraphers have it within their power to materially offset this hostile sentiment to which we have referred, to render the telegraph companies a great and abiding service. If, when occasion demands, voices were raised in defense of the telegraph, explanatory in averment, speaking the exact truth, and proclaiming it with dignity and enthusiasm, thus meeting and repelling misstatement and gratuitous slander, cheap, oh, so cheap! a new era would dawn upon the telegraphic horizon. Such united expressions would tend to confer specific benefits in vindicating the telegraph companies, would clarify the atmosphere of public under-

standing, and cause a more enlightened point of view to obtain.

Men and women who draw their sustenance from the telegraphic purse, owe this much in allegiance to the companies, giving them employment. The retroactive influence of such a course on the individual would be considerable. Try it and watch the results. A new era of prosperity, and of good will between every grade in the service would be likely to follow. Fifty thousand or one hundred thousand persons following out the suggestion here outlined, would constitute a tremendous force towards moulding favorable public opinion. It is not too much to say that the telegraph has a right to expect such action on the part of its employes. Let enthusiasm prevail in the service rather than a dull listlessness, an interest directed only by the extent of the wage received! What a magnificent exhibition of *esprit de corps* would attend such a resolve and display of loyal purpose!

May Retaliate Against British Patent Law.

The International Congress for the Protection of Industrial Property, which began its sessions at Stockholm, Sweden, on August 28, took up the discussion of the British patent act in its effect on foreign countries. About three hundred and fifty delegates were in attendance, including twenty-one official delegates, who represent that number of foreign countries. Edward B. Moore, United States patent commissioner, is quoted by cable as saying:

"The result of the discussion on England's new patent law will probably be that the majority of nations belonging to the International Patent Union will enter a protest against it and recommend to the official congress to be held next year in Washington that some sort of retaliatory combination against Great Britain be formed whereby Great Britain must either become a party to their proposition or be excluded from all benefits to be derived from such a combination."

Under the new law all articles patented in Great Britain and intended for the British market must be manufactured in that country, and the attempt on the part of the congress to have the law modified is of particular interest to American manufacturers of electrical and other machinery largely used in British factories, who, having obtained the patent rights in Great Britain, continue to supply British factories with machines and devices made in the United States.

The year of grace given foreign patentees under the British law closed August 28, and henceforth foreign patents may be revoked in Great Britain unless the patented article is manufactured or the patented process is operated in the United Kingdom to an adequate extent.

A great number of foreign firms have already bought sites and started works in Great Britain, many others are making arrangements to do so. These are mainly German and American firms. It is estimated that \$125,000,000 will thus be

invested for the manufacture of articles formerly manufactured abroad, and a prominent expert in patent law thinks that no fewer than 8,000 patents granted to foreigners will come under the new law. Meanwhile British newspapers and workmen are congratulating themselves on the benefits they foresee for home industry.—Western Electrician.

The Harvard Building Association.

The Harvard Building Association, of Boston, organized and maintained in the interest of telegraphers, affords a very pertinent illustration of what may be accomplished by intelligent co-operation and earnest effort. In 1898, eleven telegraphers, following a general discussion of the subject held at two or three preliminary meetings, met and organized the association named. Each one present contributed \$5, thus establishing a capital of \$55. It was a modest sum with which to start out in an endeavor which had for its purpose an important beneficial undertaking. But there was determination behind the scheme, and serious-minded men stood by pledged to give personal service in directing its affairs. A plan of operation had been carefully devised, ideals were not wanting. A resolution to succeed was the actuating impulse of those engaged in this initiative. At the outset Mr. Frank T. Viles was chosen secretary, a position he has since retained. This was ten years ago. With a membership limited to twenty a fine degree of prosperity has been attained. A spirit of thrift has been engendered. The tenth annual report, just at hand, records an excellent showing. It appears that the association during its single decade of existence has demonstrated that it is managed by careful yet progressive executives; it has proved its earning capacity, for in addition to other acquirements it has just erected and holds to its credit a six-flat apartment house. The association receives monthly rentals of a little over \$800, all of which, minus running expenses, is being applied to the retirement of construction loans now reduced to about \$10,000. The Harvard Building Association affords an object-lesson and example well worthy of study and emulation. Its officers are: Wm. J. Hennessey, president; Thomas J. Gill, vice-president; Edward F. Blake, treasurer, and Frank T. Viles, secretary. Trustees: Archibald L. Stark, Jeremiah F. Scully and Harry R. Stone.

Judge Buchanan, at Jackson, Miss., says that the railroad commission of that state has a right to force the Postal or any other telegraph company to put in offices wherever they deem proper, but he cannot understand how or why a railroad company should be forced to go into the telegraph business when it doesn't want to.

The statue to be erected in Belfast, Ireland, as a memorial to the late Lord Kelvin, is to be executed by A. Bruce Joy.

The Statement of Ohm's Law.

BY MORTON G. LLOYD.

In 1826 G. S. Ohm announced the relation between electromotive force and current, which has ever since been regarded as one of the fundamental laws of electrical science. The law discovered by Ohm is that in a definite conductor of the first class,¹ under definite conditions, the current is proportional to the electromotive force which produces it, that is, to the total electromotive force in the circuit. It was applied by him to continuous currents, but it is equally true of conductors in which alternating currents are flowing. Since it is true of the instantaneous current it must hold also for values obtained by summation over a complete cycle.

Put into the form of an equation, using the usual symbols, Ohm's law becomes $\frac{E}{I} = \text{a constant}$. That is to say, if E be varied while all other conditions remain the same, the ratio $\frac{E}{I}$ remains constant. If some other condition, such as the temperature, be changed, I is again proportional to E, but the ratio has now a different value.

If e be the instantaneous impressed electromotive force in an alternating-current circuit, then we must combine with it the self-induced electromotive force, since Ohm's law applies to the total

electromotive force. Thus $e - L \frac{di}{dt} = \text{constant}$, where $\frac{di}{dt}$ represents the rate of change of current and L the inductance. If the circuit or conductor be coupled with a secondary circuit, there will be another component of electromotive

force to be considered; thus $e - L \frac{di_1}{dt_1} - M \frac{di_2}{dt_2} = \text{constant}$.

When we consider effective or maximum values in an alternating circuit supplied from a source of sinusoidal electromotive force, Ohm's law may still be applied if the inductance of the circuit be definite and constant (e. g., free from iron). The

equation then becomes $\frac{\sqrt{E^2 - L^2 p^2 I^2}}{I} = \text{constant}$, where E is the electromotive force impressed on the circuit or conductor, and LpI represents the self-induced electromotive force.

If there be capacity in the circuit, its potential forms one component of the electromotive force which must be included in the equation. Thus for

¹i.e., metals, etc. Ohm's law does not hold in gaseous conductors.

instantaneous currents, $\frac{e - L \frac{di}{dt} - \frac{q}{C}}{i} = \text{constant}$, where C is the capacity and q the charge; and for the effective values with sinusoidal currents,

$$\frac{\sqrt{E^2 - I^2 \left[pL - \frac{1}{pC} \right]^2}}{I} = \text{constant.}$$

When put into this form it is evident that Ohm's law holds for alternating currents, and the idea so often expressed that this law does not hold under these conditions is seen to be due to an erroneous point of view. Just as in the case of continuous currents, the value of the constant is changed whenever the conditions are changed, and here a greater variety of conditions may exist. Thus a variation of frequency, if the latter is sufficiently high, may alter the value of the constant, and in this case the variation of L with the frequency would have to be considered also.

The form which Ohm's law takes in the case of alternating currents is not one which is convenient for computation, and it is due to this fact that the formula involving the expression for impedance has taken its place in the discussion of alternating currents. But it should be borne in mind that the law of Ohm is just as true, for the law then takes on a greater significance.

It should be noticed that up to this point the word "Resistance" has not been used, and I want particularly to lay stress upon the fact that Ohm's law can be discussed without mention of it. Resistance is the name which has been given

to the ratio $\frac{E}{I}$ in the case of continuous currents,

and the practical units of measurement of the three quantities, electromotive force, current and resistance, have been so chosen that the numerical

relation $\frac{E}{I} = R$ holds. When a change of

temperature or other condition alters the ratio $\frac{E}{I}$ we say that the resistance changes, in order to keep intact the above relation.

Having defined resistance in terms of the conditions in a continuous-current circuit, it then becomes a matter of experience (or extension of definition) as to whether the same relation holds under other conditions, as, for example, with alternating current. As a matter of fact with sin-

usoidal currents the ratio $\frac{\sqrt{E^2 - I^2 \left[pL - \frac{1}{pC} \right]^2}}{I}$

is still called the resistance, and if the value of this ratio changes with the frequency, for example, again we say that the resistance changes,

even though all the physical characteristics of the conductor remain unaltered.

Inasmuch as the conception of resistance is a consequence of Ohm's law, it does not seem desirable to use that term in the expression of the law, at least not in the way that it is so often stated, viz.: "The current is equal to the electromotive force divided by the resistance." The law is better stated from the logical standpoint, by saying that the current is proportional to the electromotive force, or that their ratio is a constant.—New York Electrical Review.

Use Your Spare Moments.

There is no occupation in which the employe does not have spare time; whatever the occupation, there are numerous moments that may be used for advancement. It is every one's duty to be busy. God intended it. When our usefulness is done, He will remove us. Do not idle your time away; it is a sin. The men who have won success are men who knew the value of time and made good every moment. Think of such a man as Gladstone, who carried a little book in his pocket lest he let a moment slip from his grasp. If such a man be careful of his moments, what ought we to do? Time wasters are on every side, and we should choose to do our duty every moment.

At no time in history has there been such opportunity for study as at present. There is no excuse for the man or woman who has no education. There are thousands of boys and girls, men and woman, who use their time for naught when they could be making some improvement. Business firms are searching for men and women qualified to fill positions.

It is the moment here and there that you grasp that makes you go up the ladder of success. Lincoln made use of every moment to accomplish something, and he rose to be one of the great men.

When it is necessary to rest, do so. It is not intended for us to work continually. You should not pause because you can, but because you need it. Lying around or loafing is not a necessity. If you are quiet when needs be you will do your work better and enjoy it more. The man who accomplishes things is the one who rests, studies, and reads in a manner that develops every part of manhood.

Rest is a necessity; we cannot live without it. It is what each of us must have if we expect to become men of power; but in resting there is a limit and it must not be carried to such an extent that we become lazy. The great difficulty with most young men is they waste many moments in idleness. It is not expected that you will use all your spare time in study. If you did that you would be likely to become a bore and not succeed so well. There are twenty-four hours in a day and you should divide the time so as to utilize it for advancement. If you are careful you may divide your time so that you may accomplish

many things; it is not how much work you can do, but how good. Wise men have a time for all things, and it is "up to you" to do the same.—J. M. Baldwin, in "Office Appliances."

Opportunity.

"If I had a chance, my position in life would be a better one," is what one hears quite a number of men say. In some cases it is true; in others, it is not. Too many permit the chance to pass them by; or, when the chance comes their way, they find themselves poorly equipped for the chance. A young man learns how to telegraph, or how to manipulate the levers of a railroad signal tower. The years pass by and he has no knowledge of anything else, except how to work the telegraph key and read the Morse language as it is clicked from the instruments. Switchboards are a mystery to him, and if called upon to make a "cross connection" he is unable to do so. If his levers get out of order, or anything goes wrong with the mechanical signaling apparatus, he calls for a repairman and learns naught from him which might prove valuable in an emergency. Every year brings improved signaling apparatus into use, and the up-to-date leverman seeks knowledge regarding such improvements so he will become better equipped for promotion. He has a business eye on his opportunities.

The best evidence one can give to the members of our Order is: "Wake up and rise to fight and win" Post up on your work; become skillful employes. Those who have strained their muscles for years throwing old-fashioned levers, must find the time to "post up" on more approved appliances. Books are available and a few hours a day would bring results. Keep up with the procession.

No man without a "pull" can obtain promotion if he does not merit it. Seniority of service is of no value when a better position is in sight, unless one is competent to fill the position. Reliance on "pull" is insecure, because such influence is liable to be lost through death, or the "pull" losing its power. The best "pull" is what one has stored away in the brain; what the hands have been taught to do. Eating so-called brain foods for breakfast, traveling the same old daily rut and growling about promotion not coming your way, wins nothing. We cannot all become presidents of a railroad, but every man ought to try to pull himself up to a higher position. To succeed, he must know something more than his associates, because that superior knowledge lessens the number of his competitors. Be prepared to grasp "Opportunity" when it knocks at your door.—The Railroad Wire and Signal.

"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 Atlantic Cable of 1858.

BY WILLIAM MAVER, JR.

The development of transatlantic cable telegraphy was not by any means the work of a day; in fact, it had been led up to step by step, and not until many shorter seas had been successfully bridged by submarine cables was the question of a cable across the Atlantic seriously mooted. It is true that as early as 1843 Morse, as a result of experiments that he had made in telegraphing over a circuit about 80 miles in length, wrote as follows to the Hon. John C. Spencer, then Secretary of the Treasury of the United States: "The practical inference from this law is that a telegraphic communication on the electro-magnetic plan may, with certainty, be established across the Atlantic Ocean! Startling as this may now seem I am confident the time will come when this project will be realized."

This, however, was obviously nothing more than a happy prediction, for at that time no proper means of insulating wire for submarine telegraphy were at hand. Guttapercha, which nature appears to have especially provided for this purpose and without which submarine cable telegraphy would have been next to impossible, was not then known as an insulator. Indeed, specimens of guttapercha were not introduced into Great Britain until 1843, and the material did not reach the United States until 1847, where its property as an insulator for submarine cables appears to have been discovered, or at least developed, by Mr. S. T. Armstrong, of New York.

With the advent of a suitable insulator for submarine cables it was natural that attempts should be made to connect countries separated by stretches of water, by means of the electric telegraph, and within a short time after the discovery of guttapercha plans were being made to connect Great Britain and France telegraphically.

The concession for this cable was obtained from the respective governments by Mr. Jacob Brett on August 10, 1849, with the condition that the work must be completed before September 1, 1850. The cable for this purpose consisted of a No. 14 copper wire, covered with guttapercha to a thickness of about one-quarter inch. No armor or jute was placed over the cable, but to insure its remaining at rest on the bottom of the sea, lead sinkers, weighing twenty-five pounds each, were attached to the cable every one-sixteenth of a mile. In order to comply with the conditions of the concession the work of making and laying the cable was prosecuted with all possible celerity, and on August 27, 1850, just three days before the expiration of the concession, Dover, England, and Calais, France, were for the first time telegraphically united, and messages of felicitation upon the happy completion of the work were exchanged amid the joyful acclaims of the inhabitants of both countries.

But the operation of this cable was short lived, a thing not to be wondered at in view of the man-

ner of its construction, and subsequent investigation by divers showed what now appears might have been foreseen, namely, that where the cable hung over ledges on the bottom of the sea, the chafing of the lead weights had worn away the guttapercha, exposing the bare conductor.

"It was no wonder," said a writer of the period, "that the cable was cut, it being no thicker than a lady's stay lace, while it ought to have been as thick as the cable of those placed in the Britannia tubes in position, say, eight inch or ten inch cable, and to be submerged below five fathoms, by the aid of enormous weights, so as to avoid all currents."

It is but fair to say that even the projectors of the enterprise themselves were not surprised at the unfortunate termination of the work, regarding it more in the nature of an experiment than otherwise. The results of this experiment showed conclusively that a properly constructed cable would prove successful between these points, and the energies of engineers and manufacturers were devoted promptly to designing a cable to meet the requirements. The form of cable next determined on was a four-conductor cable in which the guttapercha insulation was protected by a jute covering over which was placed an armor of galvanized iron wire. A cable constructed according to this plan was successfully laid between Dover and Calais, October 17, 1851. The length of this cable was twenty-five miles. Its total cost was \$75,000. Its operation was a complete success, and in the course of a comparatively short time London and Paris were exchanging messages directly; that is, without the aid of intermediate stations.

The inauguration of the Dover-Calais cable gave incentive to the laying of numerous other submarine cables in Europe and America, with the result that before the year 1857 there were, exclusive of short cables across rivers, nearly one-thousand miles of cable in operation in those countries, the longest of which was between England and Holland, one-hundred and fifteen miles. Four hundred miles of cable had also been laid between different ports of the Black Sea during the Crimean War and by means of which the respective countries interested were kept in electrical communication with the seat of war, a great desideratum at that time.

The successful operation of these numerous but comparatively short submarine cables naturally suggested to many minds the possibility of transatlantic submarine telegraphy. There were others, however, who were fearful that the difficulties in the way were too great to be surmounted. As Dr. Lardner wrote at the time (1855): "The sanguine consider the project practicable, and its speedy realization probable. The more phlegmatic notice it only with ridicule. Men of science generally admit the possibility of a remunerative result." Others, imperfectly informed, believed that the cable would not sink below a certain depth, at which

the increasing density of the sea water would render it, bulk for bulk, as heavy as the cable. This view, however, was erroneous for the reason, as pointed out at the time by the same writer, and as subsequent experience has shown, that water is susceptible of compression in so slight a degree that even at the greatest depths of the ocean the cable must always greatly exceed the sea water in specific weight. There were others also like Shaffner in our own country who had no faith "that a telegraphic cable laid in the ocean two thousand miles could be made available for practical telegraph purposes with the present known sciences." Shaffner doubtless had in mind the retardation of signals due to the static capacity of cables and there is no doubt that if the "known sciences" of overland telegraphy, at that time had not been improved upon in long-distance submarine telegraphy his lack of faith in that art for "practical telegraph purposes" would most likely have been justified.

Prominently, if not initially, among those who were instrumental in pushing the project of transatlantic telegraphy into the open, impartial history requires that the name of F. N. Gisborne, an Englishman in the telegraph service at Montreal, must be mentioned. As early as 1852, or immediately following the success of the Dover-Calais cable, he appears to have become imbued with the belief that a transatlantic cable from Newfoundland to Ireland was a possibility, and with that end in view set about to obtain the means to construct the necessary intermediate cables between New Brunswick and Prince Edward Island, thence to Newfoundland. Only partially successful in his endeavors he came to New York in the spring of 1854 to exploit his schemes and was so fortunate as to meet Cyrus W. Field at the hotel where he was stopping. In Mr. Field he found an attentive listener and from that moment began Mr. Field's historical association with the ultimately successful accomplishment of transatlantic telegraphy.

One of the first acts of Mr. Field when his attention was called to the project was to communicate with Lieutenant Maury, then director of the National Observatory of the United States, requesting his views as to the possibility of immersing a cable between the old and the new world. He also communicated with Professor Morse, soliciting his opinion as to the practicability of transmitting signals electrically over a distance equal to that separating Newfoundland and Ireland, namely, 1950 miles. To both of these inquiries affirmative replies were received, whereupon he at once undertook the organization of a company to raise the necessary funds to put the project into execution. The company, known as the New York, Newfoundland and London Telegraph Company, was organized in 1854, and was immediately successful in its efforts to raise capital, and the remarkable interest taken in the enterprise by the people and the governments of the countries and states concerned is well ex-

emplified by the manner in which money, land, landing rights and the free use of war vessels for the laying of the cable was bestowed on the company. The government of Newfoundland, for instance, gave the cable company exclusive privileges for fifty years of landing cables on Newfoundland, Labrador and their dependencies, and it may be recalled that these privileges were invoked when the Marconi Wireless Telegraph Company recently sought to erect a wireless station in Newfoundland. The same government also guaranteed interest on the bonds of the company to the extent of \$250,000, together with a grant of fifty square miles of land on the Island of Newfoundland. The governments of Prince Edward Island, of the State of Maine and likewise the governments of Great Britain and the United States, gave grants of exclusive landing privileges and subsidies of large amounts of money. The capital stock of the company, \$1,750,000, was quickly subscribed for in America and Great Britain; and in a comparatively short time the contracts for the construction of the first Atlantic cable were given out, the work being divided equally between Messrs. Glass and Elliott, of London, and Messrs. R. S. Newall and Co., of Birkenhead, England. Great care was exercised in the design of this cable, every precaution being taken to avoid the defects of previous shorter cables and to provide for the severer conditions that its greater length and the greater depths of ocean in which it was to be submerged would involve. If the cable were too heavy the previous experience of John Watkins Brett with a heavily constructed cable between France and Algiers had shown that "the management of such an ocean cable would be an impossible undertaking." On the other hand, the experience with some of the earlier cables, notably the first Dover-Calais, had demonstrated that the attempt to utilize too light a cable would be useless. Hence a cable that would possess maximum strength and flexibility, combined with minimum size and weight, was designed. The conductor itself was a strand of seven No. 22 copper wires of the purest copper then obtainable. The outside diameter of the strand was one-sixteenth of an inch. This strand was covered with three coatings of guttapercha to an outside diameter of three-eighths of an inch. Over this was placed a coating of thread yarn, well saturated with a mixture of pitch, tar and oil. Around this core was wound an iron armor consisting of eighteen strands of No. 22 iron wire, seven wires to a strand, or 126 wires in all.

The completed cable had a diameter of three-quarter of an inch. The weight of this cable was 1860 pounds per mile. The shore ends of the cable were protected by much heavier armor and jute, and weighed approximately seven tons per mile. In short, it may be said that this pioneer cable virtually embodied all that has been found necessary in subsequent transatlantic cables, except as to improvements in details of con-

struction. The total length of the cable, including the shore ends, was 2535 miles, a large allowance for possible losses of cable being supplied. The cost of the cable was \$1,258,250.

The cable having been completed, the portion manufactured by Messrs. Newall and Company was shipped on board the United States Ship Niagara, while the portion from the works of Glass and Elliott was placed in the hold of the British ship Agamemnon.

After many preliminary festivities in celebration of the laying of the cable, upon the successful completion of which the thoughts of two continents were hopefully turned, the expedition set forth from Valentia Bay, Ireland, on August 7, 1857, but after paying out 344 miles of cable from the Niagara, the cable parted, and the cable-laden ships despondently returned to Valentia; the unused cable was uncoiled from the holds of the Niagara and Agamemnon and for the time being operations were suspended.

Following this disaster the public mind became distrustful of the ultimate success of transatlantic telegraphy and additional capital for further operations became difficult to raise. The directors of the company, however, continued firm in the belief that success was yet possible and during the winter of 1857-58 measures for a renewal of the enterprise during the following summer were vigorously prosecuted. The governments of the United States and Great Britain courteously granted the request of the company for the further use of the Niagara and Agamemnon and these vessels were once more got in readiness for a renewal of the undertaking. In the expedition of 1857 it had been arranged that the Niagara would lay her portion of the cable from Valentia to the middle of the Atlantic where she would be met by the Agamemnon which would then proceed with her part of the cable to Trinity Bay, Newfoundland.

This time it was arranged that both vessels should proceed to the middle of the Atlantic, where they would separate after splicing the ends of the cable together, the Niagara to proceed to Newfoundland, the Agamemnon to Ireland. In accordance with this plan the vessels met in mid-ocean June 26, 1858, and commenced paying out the cable. The ill success of the previous expedition still followed, however, and after several breaks in the cable, work was abandoned on June 29 and the vessels returned to the rendezvous, Queenstown, arriving at that port July 5, 1858.

Nothing daunted, however, and in the face of countless forebodings of continued ill success by a large portion of the public and press, the directors of the enterprise once more started the telegraph fleet to their meeting place in mid-ocean on July 17, 1858. The ships met as arranged and each proceeded to its destination. This time the laying of the cable was successfully accomplished, no mishaps having occurred from the

moment the ships separated until they arrived respectively in Trinity Bay and Valentia.

The public had become so discouraged by previous failures that the announcement of the successful arrival of the expedition at Newfoundland, August 5, 1858, was not immediately believed. Dispatches from Cyrus W. Field speedily convinced the most sceptical that the unexpected had happened, and the entire country gave way to rejoicings, and as a writer of that time put it: "Bells were rung, bonfires blazed, business ceased, illuminations sprang up, the press became jubilant. Rarely has there been heard so universal a shout of joy."

This it must be noted was upon the announcement of the safe arrival of the cable on the American shore. No public message had yet passed over the cable and it was not until August 16 that the long expected message from Queen Victoria to President Buchanan was received. By some oversight or delay in transmission only the first paragraph of the Queen's message was at first received and its apparent curtness caused great disappointment. This feeling was dissipated on receipt of the entire message the following morning, August 17. The Queen's message was as follows:

"The Queen desires to congratulate the President upon the successful completion of this great international work, in which the Queen has taken the deepest interest. The Queen is convinced that the President will join with her in fervently hoping that the electric cable which now connects Great Britain with the United States will prove an additional link between the nations whose friendship is founded upon their common interest and reciprocal esteem. The Queen has much pleasure in thus communicating with the President, and renewing to him her wishes for the prosperity of the United States."

The reply of President Buchanan was as follows:

"The President cordially reciprocates the congratulations of Her Majesty, the Queen, on the success of the great international enterprise accomplished by the science, skill and indomitable energy of the two countries. It is a triumph more glorious, because far more useful to mankind, than was ever won by conqueror on the field of battle. May the Atlantic telegraph, under the blessing of Heaven, prove to be a bond of perpetual peace and friendship between the kindred nations, and an instrument destined by Divine Providence to diffuse religion, civilization, liberty and law throughout the world. In this view will not all nations of Christendom spontaneously unite in the declaration that it shall be forever neutral, and that its communications shall be held sacred in passing to their places of destination, even in the midst of hostilities."

It had been predicted by the engineers of the cable company as a result of experiments which they had made that a speed of at least seven words per minute would be obtainable over the

Atlantic cable. From the fact that the Queen's message, containing just ninety-nine words, had taken sixty-seven minutes in its transmission it is evident that seven words per minute were not realized. However, allowance must be made for the crudeness of the art and for the many disadvantages under which the engineers and operators were then laboring.

But, alas, like the first cable between Great Britain and France, this first Atlantic cable was also doomed to a very short useful existence. After the transmission of the messages to and from the Queen the signals over the cable became weaker and weaker until August 31, 1908, when they failed utterly. C. F. Varley, the electrician of the company, was sent to Valentia to ascertain the cause of the non-working of the cable. He made a number of tests and reported that a fault of great magnitude existed at a distance of about two hundred and sixty miles from Valentia. W. T. Henley, telegraph engineer, and Professor W. Thomson, also carefully tested the cable during the month of September, but without success so far as obtaining readable signals through the cable was concerned.

It has been thought, and perhaps correctly, that the injury to this cable may have been due to the employment of high-tension currents from induction coils in signaling, and the view has been expressed that had only low-tension currents been employed, their utility for this purpose having been demonstrated by Latimer Clark, the injury to the cable might have been avoided. There is, however, no proof that the fatal faults in the cable were due to these high-tension currents, and it is not difficult to imagine that the inexperience in cable making at that time, together with the more or less crude methods of paying out the cable on ship-board, may have been sufficient to account for the cause and development of the faults in question. Furthermore, it is to be remembered that at this early period of long-distance submarine working, variable earth currents practically debarred the use of very weak currents for signaling. It probably was not until Varley's interposition of the condenser in the cable circuit, thereby obviating the disturbing effects of the earth currents, that recourse could be had to weaker signaling currents.

Whatever may have been the cause of the failure of the Atlantic cable of 1858 there is no doubt that its failure confirmed the opponents of transatlantic telegraphy in their opinion as to its impracticability. So firmly were some of these opponents convinced on this point that the construction of an overland telegraph line between America and Europe via Behring Straits and Asiatic Russia was undertaken and over \$3,000,000 were expended on this work before the final success of cable telegraphy was assured by the satisfactory completion and operation of the Atlantic cables of 1865 and 1866.

Since that time submarine cable laying has gone on apace until all lands and continents are

now joined together by these metallic threads. In 1880 there were about 51,000 miles of cables laid and working in various parts of the world. To-day there are 250,000 nautical miles of submarine cable in operation, and if cable laying now be at a lull it is only because there are no more waters to conquer. Indeed, singular to say, submarine cable telegraphy has shown itself able to supplant overland telegraphy between points not separated by water, but where the difficulties of construction and maintenance of overland lines are practically insurmountable, as witness the electrical connection of many of the ports of South America and of the Philippines by long submarine telegraph cables.

In an impartial review of the events connected with the making and laying of the Atlantic cable of 1858, the jubilee of which is now being celebrated, as well as of the shorter submarine telegraph cables beginning with the Dover-Calais cable, it would be unfair to omit mention of the important part, one might almost say the exclusive part, borne by British telegraph engineers and cable manufacturers, among which shine out conspicuously the names of Engineers Whitehouse, Varley, Thomson (Kelvin), Brett, Bright and Henley, and the manufacturers already mentioned. Regarding Varley especially it may be questioned whether he has yet received the credit due for his important early work in this relation.—*Electrical World*.

Book Notices.

The "New Catechism of Electricity," by N. Hawkins, M. E., covers so wide a range in its consideration of the field of applied electricity, as to attach peculiar value and significance to the volume. Few there are, comparatively speaking, who are in a position to take advantage of the technical training afforded by special schools and the science departments of colleges and universities. The workshop must of necessity continue in large measure yet to furnish and develop the electrician of whatever grade, of the future. Such a volume as the one under consideration affords a distinct help to the student and seeker after aid in electrical matters. It is a practical treatise prepared with especial care and knowledge of the subjects presented, by an author of extended reputation and versatile information, whose numerous educational works are well known. In its treatment it includes the dynamo and motor; wiring; the electric railway; electric bell fitting; electric lamps; electric elevators; electric lighting; electric plating; the telegraph and telephone; measurements, tables, etc. The book, which is abundantly illustrated, embraces nearly 550 pages, is bound in red durable leather with gilt-edged leaves—a handsome and substantial volume. It will be sent on receipt of price, \$3, to any address, carrying charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

The Military Telegrapher in the Civil War.

PART VIII—(Concluded)

In concluding the account of the personal experiences of William H. Woodring as a military telegrapher during the Civil War, embodied by him in a letter addressed to Colonel William R. Plum, the historian of the military telegraphers, and written from Kansas City, Mo., in October, 1878, begun in the September 16 issue, the interesting chronicle goes on to say:

"On January 9 (1863) we expected the attack on Springfield, Mo., to be renewed. General E. B. Brown, our commander, had been severely wounded. Not knowing at that time that the enemy was in retreat, and expecting another assault, we prepared for a final defense on the opposite side of the town from the point of attack by the enemy the day before. In such anticipation early in the morning I went to my office and secured all my books, together with late files of messages, destroying all others, making a bonfire of them on the hearth, determined that nothing that could possibly be the means of conveying information should by any chance fall into the hands of the rebels. Also taking with me my instruments, I hid them under the house at which I boarded, reserving only a relay and key, which, with my books, I took with me to the main fortification. I was so exhausted by this time, having had little or no respite from labor and excitement incident to the battle, for forty-eight hours, that I was compelled to seek rest, and gladly accepted an officer's tender of the use of a cot in his tent. Here I slept undisturbed through the day, until late in the afternoon, when learning that Colonel George H. Hall, who assumed command when General Brown fell, wished to send some despatches to department headquarters requesting that reinforcements be sent to our succor. I volunteered to perform this service, promising, if possible, to transmit the messages as soon as I might reach a point on the line where I could get a circuit from the east, provided that the Colonel would furnish me with a suitable escort. I was ordered to report just before dark when the despatches and escort would be ready.

"Summoning 'Bob' Bates, my repairer, as an assistant to accompany me, we got our horses ready. I strapped my relay to the saddle (for I had no pocket relay then) and after supper with the despatches in my possession, we started out under escort of a cavalcade of twenty-one men, a sergeant being in command. These soldiers, who were selected from a contingent of militia, were not seasoned veterans, and their courage was of the vapory kind, requiring numbers to sustain it when placed under trying and lonely conditions, as the sequel will show.

"On account of the wire, which had been pulled down by the rebels, being strewn along the sides of the road and across it in many places, our progress was necessarily slow and dangerous, as the horses' legs frequently became entangled in its

meshes. Evidently the broken wire had purposely been placed where it would cause us the most embarrassment. After proceeding slowly and with extreme caution for a distance of ten miles, we halted at a farm house, where we waited until near morning, when the moon arose, in the light of which we resumed our journey. At a point twenty-four miles from Springfield we stopped to prepare our breakfast. Alarmed at the distance that separated them from headquarters, and with possibility of capture, for the country was liable to be overrun by the enemy as by the Federals, the men began to express discontent and to object to proceeding further. By the time the meal was finished they had made up their minds to return, the sergeant exerting little or no authority in opposition to this mutinous decision. I was determined to press forward, however, at all hazards, as no connecting circuit had yet been found, and endeavor to accomplish the errand on which I had started. I called for volunteers to go with me. One soldier alone responded, as also did brave "Bob," my repairer. Our valiant escort turned back, and we three were left alone to face such dangers as might beset us. I determined to push forward to Lebanon, thirty-one miles distant, the nearest military post, and which my experience thus far gained led me to believe would be the nearest telegraph point from which I could send forward my messages. We examined our arms, mounted and started on our perilous trip, urging our horses into a fast pace.

"After proceeding in this manner about ten miles we came suddenly in sight of eight or ten mounted and armed men, partly uniformed in blue and partly in jeans, looking altogether very much as did the men who so lately fought against us. They were as suspicious of us as we of them, and when the command came for us to "Halt!" discretion caused an immediate compliance with the order. The strangers proved, however, to be friends, the advance guard of a large command of militia which had been sent to reinforce Springfield. We were, of course, permitted to pass and continue on our way to Lebanon, reaching that place shortly after dark. We were made welcome and heartily congratulated on our long ride and on the gratifying news we brought as the result of the battle at Springfield. We were given a fine supper, after which I hastened with my despatches to the telegraph office, transmitting them myself to department headquarters at St. Louis. The St. Louis Democrat requested me to give them the particulars of the fight, as the news had gone abroad after the wires were cut that Springfield had been captured. I also sent the sad news of Briggs' death to his bereaved family. He had a wife and two children in Delevan, Wis., to whom I subsequently forwarded all his effects. Briggs was buried before I reached Springfield, on my return, and now sleeps in the soldiers' cemetery in that city.

"The sergeant who commanded the little troop of escort, as I afterwards learned, was placed under arrest on his return to Springfield after his

cruel and cowardly act of desertion, tried by court-martial and punished by being reduced to the ranks. The shell, a shrapnel, that so unceremoniously banged into my office at Springfield, I packed up carefully and sent it as a present to Captain George H. Smith, my superintendent at St. Louis. He had the charge of powder withdrawn from it, and at the close of the war returned the trophy to me. I keep it with my war relics.

"Thunder storms were and still are of frequent occurrence at Springfield, due in great part to peculiar mountain formations. At such times the lightning would sometimes play serious pranks with the telegraph wire. At one time both of my office relays were burned. I had one experience with the lightning while in Springfield which came near 'breaking the current' of my own existence. We had just moved our main battery from one part of the building to another, and to reach it had run the main line to a pair of brackets fastened to the window sill on the second floor, this window being directly over a long flight of inside stairs. I had run the office wires to this window, and, sitting on the sill, was connecting them to the main wire, when the lightning struck the line somewhere east, giving me such a tremendous shock that it nearly threw me from my lofty seat.

"On the sixth of June, 1863, I got my second furlough, and hastened home to join my friends in Illinois. At the expiration of the thirty days to which I was entitled, I returned to Springfield, but this time was accompanied by my wife. The remainder of the year passed pleasantly away. There was not much to do. We had now little disturbance in the way of war alarms, an occasional raid our way would sometimes stir up excitement, but it was only of a temporary nature, for by this time the main armies of both sides were operating at points further to the southward. By the latter part of March, 1864, the Union forces had concentrated at Little Rock and Fort Smith, Ark., to which places we had extended our wire, reaching the former point from Memphis, Tenn., the latter from Springfield. On March 8, I was relieved at Springfield, Ewing L. Armstrong succeeding me, and ordered to Fort Smith, with directions to report first at St. Louis. My wife returned to Illinois, and I, after receiving instructions and being supplied with the latest department cipher, started for Fort Smith via Springfield, proceeding thence on my own horse and in company with a government supply train, protected by a heavy military escort. We reached Fort Smith, April 2.

"The country south of the Missouri line and between Fort Smith and Little Rock was infested by many roving bands of guerrillas, cruel and bloodthirsty, whose boast was that they took few or no prisoners. The telegraph line had been extended from Fort Smith to Little Rock, but it was interrupted much of the time by being cut. In fact, it worked only a very few days after my arrival. Repairers had to be kept moving constantly in order to restore connections. The entire section became so thickly infested by these

"bushwhackers," as they were called, that it was exceedingly dangerous for repairing parties to travel along the line. Indeed, Alexander Kane, Thomas Jones and Jacob Richards, line repairers, were killed by a party of guerrillas near Clarksville, Ark., a short distance below Fort Smith, on or about April 15. Kane, or "Doc," as he was called, was the foreman, but he was a man who never thought of danger, and was exceedingly cheerful and popular on the road, over which he had made a number of trips. He had often remarked to his companions that being non-combatants, the enemy would not attack them, and that it was useless to have troops to accompany them. When, finally, they were attacked they were without military escort, unarmed, and all were cut down in cold blood, their bodies being horribly mutilated, Kane's ears being severed from his head.

"After this event and until late in the fall of 1864, this line of telegraph was entirely abandoned, it being deemed altogether too hazardous a matter to attempt to keep it open. In August our situation became quite critical; only partial communication was maintained with department headquarters at Little Rock; the enemy was concentrating around us and frequently attacking our outposts. It became necessary to send information to Little Rock of our condition. General Thayer wrote his despatch and had me rewrite it in the department cipher for him. He then sent two trusty soldiers dressed in citizens clothes with it to Little Rock. They avoided the public highway during this journey, traveling through the brush most of the distance. One of the incidents happening on the way, according to their report, was that while tramping along one day, following the line of the telegraph, in company with another citizen whom they happened to meet and to whom they represented themselves as being 'Secesh,' they remarked on the dilapidated condition of the telegraph wires, when their companion boastfully mentioned having helped to kill the three repairers some time before. The two disguised soldiers seized the self-confessed culprit and forthwith hung him to a pole with a piece of the broken wire and left hanging there with a card pinned to his coat stating the reason why he was thus strung up.

"My assistant at Fort Smith was Joseph L. Sears, a good operator, while James Lane and J. K. Bear were my repairers. At Van Buren, four miles distant, Joseph Hansen was the operator. On September 1, being ordered to report at St. Louis in company with Mr. Sears and Mr. Lane, I left the office at Fort Smith in charge of Mr. Bear, who was only a fairly good operator. At St. Louis I was given the military wire to Cincinnati, which I continued to work until October 7, when Major Eckert, at Washington, asked Captain R. C. Clowry (then our superintendent) for the temporary loan of four good operators. In response to this request Captain Clowry sent on Charles H. Mixer, Joseph L. Sears, John W. Gregg and myself. I was given a letter of introduction to

Major Eckert, who assigned me to duty in the War Department, Mixer being sent to Jamestown Island in the James River, Va., and the other two to City Point, near Petersburg. After remaining in Washington one week I, too, was ordered to City Point. On reaching Fortress Monroe, however, a despatch was received directing me to remain there, as another man was greatly needed at that point, it being a repeating station between City Point and Washington.

"Our telegraph lines leading toward the former place had been frequently tapped by the enemy, and it became very annoying to our army commanders, that their messages were so frequently made public in the enemy's camp. Accordingly Major Eckert had a cable laid up the James River from Jamestown Island to Fort Powhatan, twenty-two miles distant, thus opening a safe line of communication, at least from the depredations of the enemy, over the worst infested portion of the route. At the same time the land line was kept up, for the sake of appearances. The gunboats and monitors frequently anchored in the river and occasionally hooked up the cable; sometimes even breaking it during windy weather by dragging their anchors. George D. Sheldon, the assistant superintendent, sent me up the river about two weeks after my arrival, in charge of a repair boat, to test for a break made under these circumstances, a task I successfully accomplished.

"At the expiration of the six weeks for which we were wanted by Major Eckert, the four of us returned to St. Louis, reaching that city November 21, 1864. Reporting to Captain Clowry, I obtained permission to proceed to Springfield, Ill., there to be mustered out of the military service, after having served the government three years and a half. My regiment had been mustered out six months previous, but by reason of the scarcity of operators and the dangers and distance to travel, I was not relieved, and could not join my regiment when it was discharged, and its members received their final pay and bounty."

The injustice with which the military telegraphers have been treated by the government from the time of the war to the present day is fittingly set forth by Mr. Woodring's closing words, written thirty years ago, evidently with much feeling, laboring under a sense of wrong and injustice inflicted, then comparatively fresh in his mind. He says:

"In closing this sketch permit me to make a statement concerning the very unjust way in which the government treated the detailed military operator in the Department of the Missouri. The great wrong inflicted I did not fully realize until I presented myself at the State Department at Springfield, Ill., for the bounty, which the government had offered to its soldiers, and which other detailed men, including clerks, hospital stewards, etc., were permitted to draw without question. I was coldly told there was nothing due me. This decision was based on an order which, for some reason unknown to me, was issued by the Secre-

tary of War in October, 1863, at a time after I had served two and a half years, to the effect that soldiers detailed as operators should be given an indefinite furlough from their regiment, without pay or emolument, yet permitting them to receive an operator's salary, the same as citizen operators. This order was not sent to me until some time after its issue, and when it did come was not understood in its full sense. The loss of my month's pay as a soldier was right enough, for I was drawing a monthly salary through another source, but to be deprived of the bounty which the government offered as a premium, not as a reward, to those who enlisted in the army, was a wrong which it was hard to endure, a wrong which I think the government should, even at this late day, rectify. I have tried through three different solicitors to obtain the bounty, but each time my papers were returned with the endorsement: 'Nothing due this soldier from United States for pay; bounty not allowed by decision of Colonel Gibson, chief of division.'

"The salary paid by the government to its operators was hardly commensurate with the duties performed. The position of a military operator was of vast importance. He necessarily became acquainted with all the movements or intended movements of the armies, were necessarily entrusted with the secrets of the government and its armies, yet the pay was no better than that of an ordinary clerk. I hope that others better qualified for the task may take up this subject and present it in its proper light, that the reading public may know how poorly this great republic has compensated its military telegraph operators and what a debt it owes them."

Notwithstanding the fact that Telegraph Age keeps a standing announcement on the editorial page that it furnishes cable codes through its book department, as well as the further information of like character disseminated through the medium of catalogues issued by us and scattered broadcast by the thousands throughout the telegraph service and elsewhere, we are frequently in receipt of letters from managers, receiving clerks and others, requesting to know where certain cable codes are to be obtained. Why, from the office of this paper, of course, from which codes of all kinds and descriptions have been supplied for years in response to a never-ending demand. Let us emphasize this statement and further say that Telegraph Age is headquarters for everything in the telegraph and cable line in the shape of literature and educational matter. Our friends and the public generally may write us, confident in the thought that any telegraph cipher code, not out of print, and all electrical books of whatever nature, telegraph and otherwise, can be purchased here. They will be sent on receipt of price to any address.

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The Storage Battery in Signal Service.

BY H. M. BECK.

In the operations and care of a storage battery there are four points which are absolutely vital to its success, and if they are not properly handled, trouble will surely come sooner or later: First, the battery must be charged properly; second, the battery must not be discharged too low; third, short circuits between the plates must be prevented; fourth, the plates must be kept covered with electrolyte and only water of the proper purity used for replacing the evaporation. Never use acid for this purpose.

The proper charge is one of the most important and least commonly understood, and it is the purpose of this article to give some hints as to the proper methods to be employed under ordinary operating conditions, and the reasons for the same.

In charging there are two ends in view: First, to restore the charge to the battery after a discharge has been taken out, so that it is ready for another discharge. These charges are known as regular or service charges; second, to keep the battery in good condition and obtain the maximum life out of the plates. Such charges are called overcharges.

Possibly if ideal conditions could be counted upon, these two types of charges could be combined into one, but under practical conditions experience has shown that it is better to separate them. The service charges are then planned on a very efficient basis; in fact, the charge is cut off slightly before the cells are full in order to allow some leeway for irregularities without danger of continually overcharging, and the overcharges, given only at intervals of one or two weeks, are carried far enough to even up the different cells and reduce sulphate which may have formed, thus keeping the cells in good condition. It is easily seen that as a battery consists of individual cells, each working as an independent unit, and since the efficiencies of these units vary to a slight extent, it is necessary to even up the cells at intervals, or they will become very irregular and get into bad condition. It is common practice to overcharge once a week where a battery is charged every day, and once in two weeks where it is charged less often, including those cases where it is not discharged at all. In other words, it is well to overcharge at least once in two weeks whether the battery has done any work during this interval or not.

Where practical it is well to charge at about the normal rate. Lower rates take longer and the indications of the end of charge are not nearly so marked, so that there is greater danger of charging too long or cutting off too soon. Higher rates require closer watching and if allowed to continue after the cells begin to gas, they mechanically wash out the active material and thus decrease the capacity and life of the plates. There is also greater danger of heating

in warm weather. Where it is desired to hurry a charge on account of limited time, the current rate should be increased during the early part of the charge and before the cells begin to gas, and during this period rates considerably above normal can be used with comparatively little injury, although this depends somewhat upon the type of the plates used. A safe rule is to limit the maximum charging rate to forty per cent. above the normal. From the gassing point on it is well to keep the rate at normal or below.

The temperature of a battery will not usually show any dangerous increase during charge except in the case of sealed cells or where the battery room is very hot and ventilation poor. It should, however, be watched, where there is any question, and never allowed to exceed 110 degrees. If it shows a tendency to do so, decrease the charging rate or stop entirely and allow periods of rest for cooling. High temperatures, while they temporarily increase the capacity of a battery, eventually decrease its efficiency and life.

A storage battery gives three indications which are in common use for determining the proper point at which to cut off a charge: First, the rate in voltage; second, the rise in specific gravity; third, the appearance of gassing.

Rise in Voltage.—The voltage during charge gradually increases until the cells are fully charged, when it ceases rising and will not rise any higher, no matter how long the charge is continued. This final voltage is generally termed the "maximum," but it must be clearly understood that it has no fixed value. The actual figure varying widely at different times, depending upon the age of the battery, the temperature of the electrolyte and the charging rate.

Rise in Gravity.—During discharge, acid from the electrolyte goes into the plates and the specific gravity readings fall. During charge the reverse process goes on, the acid is driven out of the plates, and the specific gravity readings rise. When all of the acid has been driven out of the plates, however, the specific gravity cannot rise any higher, no matter how long the charge is continued, and the cell is fully charged. This final specific gravity is called the maximum and like the maximum voltage, is a variable figure, depending upon the temperature of the electrolyte as well as upon the actual proportion of acid and water present in the cell.

Gassing.—Until nearly charged, the plates of a storage battery should absorb the energy put into them with little or no gassing, but when they are nearly charged the energy, instead of being "stored," shows itself in the form of more or less violent gassing, the amount depending upon the rate of charge.

To experienced battery men the color of the plates also serves as a guide for charging, but this is used rather as a check on the charging methods than for the governing individual charges, and in fact it would not be adapted to the latter pur-

pose, as the change in the color of the plates from charge to discharge is too slight in a normal battery.

Of these indications the first two, voltage and gravity, are those most commonly employed in operating. Gassing, while frequently of great assistance as a guide or warning, cannot be depended upon for accurate results and is only used where nothing but the most crude methods of operation are practical.

Either voltage or gravity readings alone could be used, but as both have advantages in certain directions and disadvantages in others, it is advisable to use each for the purpose to which it is best fitted, the one serving as a check on the other.

Voltage has the great disadvantage that it is dependent upon the rate of current flowing, and for this reason where it is used the charging rate must be kept at a fixed value. Open circuit readings are of no value, as a cell then reads almost the same discharged as it does charged. On the other hand, a voltmeter is a very easy instrument to read and where desirable can be placed at a distance from the battery.

A hydrometer reading is almost independent of the current flowing, so that it is not necessary to keep the charging rate fixed, but the instrument is harder to read than a voltmeter, the readings are not as sensitive, and, at least with the present apparatus, the readings have to be taken at the battery. The fact, however, that the hydrometer reading is largely independent of the current rate is bringing it more and more into use where gravity readings are practical, the voltage then being used only as a guide or check.

As already explained, during the early part of a charge, the cells should show practically no action, and during this period they need comparatively little attention except to see that they do not heat. When gassing begins, however, it is an evidence that the end of the charge is drawing near, as the plates are not absorbing all of the current and this is showing itself in the form of gas. The gravity or voltage should then be watched closely in order to detect the proper cutting off point. Where the battery is accessible and it is practical to get accurate gravity readings, it is preferable to use these for determining the end of charge, the voltage simply serving as a check. Where the cells are small at a distance, or sealed so that gravity readings cannot be obtained, then it is necessary to depend on the voltage, and in this case the current rate must be kept accurately fixed during the latter part of the charge. This is not of so great importance when the gravity method is used and constitutes one of its great advantages.

On overcharges it is well to begin reading and recording the gravity or voltage every fifteen minutes from the time the gassing begins. The charge is then continued until five of these readings are alike or show no further rise, if it is intended to charge to a one-hour maximum, the

most common practice. It should be especially noted that no mention of any given voltage or gravity limit has been made. The point is not to charge to any given voltage or gravity, but to charge until the voltage or gravity will not rise any higher, no matter what actual figures are reached. These will vary widely at different times, due chiefly to the age of the battery, the charging rate or temperature changes, and it is thus evident that charging to any fixed figure, as, for instance, 2.50 volts, is almost sure to result in too much or too little charge, and cannot produce the best results. The writer has seen cells which could not be charged above 2.40 under some conditions, while under others it was necessary to bring them up to 3.00 volts to get them fully charged. It is thus evident that it is a great mistake to attempt to cut off at any fixed figure.

In some classes of service it is not practical to charge as often as once in two weeks, and in such cases all charges become overcharges. In fact, they should be continued longer than ordinary overcharges in order to make sure that all the cells are brought to a maximum. For instance, where there is only one charge a month, it is advisable to continue the charge to a four or five-hour instead of a one-hour maximum.

The question is sometimes asked as to why it is necessary to charge beyond the maximum point, for instance, to a one-hour maximum, which means charging for one hour after the maximum gravity or voltage is actually reached. This is necessary for two reasons, first, because, we have no means of determining when the maximum is reached except by charging further and seeing that there is no further rise and, second, because, as already explained, an important function of overcharges is to even up the various cells in a battery and to this end it is necessary to run long enough to bring up not only the most efficient cells, but also any which may have dropped behind since the preceding overcharge. Thus the longer the intervals between overcharges, the greater the variation between the cells is likely to be, and the longer the overcharges should be carried.

The maximum gravity or voltage determined by the overcharges serves as a standard for cutting off the regular charges, the idea being that for a period of one or at most two weeks it is safe to use a fixed figure in cutting off, especially when this figure allows some little leeway. The general principle is thus to use a fixed standard for short periods and to have the overcharge maximum automatically change this standard, as the conditions change, especially temperature. When the temperature variations are very great, it is sometimes advisable to correct for them, but this is not usually necessary.

The common practice is to cut off service charges when the gravity has reached a point from three to five points below the preceding overcharge maximum, or when the voltage is from .05 to .10 volts per cell below the maximum.

In using the gravity method of cutting off charges, it is necessary to have a pilot cell; that is, one cell on which readings are taken to represent the rest. Readings might be taken on all of the cells, but this would entail a great deal more labor and experience has shown that it is not necessary. Where a battery is either charged or discharged in more than one series a pilot cell should be selected in each series, as the different series are likely to work differently, and thus need separate watching. As the specific gravity readings vary not only with the charge and discharge but also with the temperature and amount of water in the cell, it is necessary to take some precautions in order to obtain accurate results. It is not usually necessary to allow for temperature changes between overcharges, but if necessary this is not a difficult operation. The temperature of the electrolyte is taken with a thermometer, a floating dairy thermometer being a good type, and one point is added to the specific gravity readings obtained for every three degrees above 70° or one point subtracted for every three degrees below 70° F. This corrects the readings to a standard of 70°, that is, gives the reading which would have been obtained at this temperature, the other conditions being the same.

Variation in the height of the electrolyte and consequently the amount of water in the pilot cell, is obviated by adding water to the pilot cell so often that only a slight amount is put in at any one time and consequently the readings not affected. To accomplish this end, a convenient height for the electrolyte should be marked and then sufficient water added to the cell each day to keep the level accurately at this mark. It will be found that only a slight amount of water is thus added at a time. In the case of glass jar batteries, a line of paint on the outside constitutes a convenient mark and it should be clearly understood that unless the height of the electrolyte is kept accurately fixed, the pilot cell readings are of little value and may be very misleading.

The gravity method of determining the end of charge has become so important that apparatus has been developed to meet its special requirements and thus assist in rendering the operation more accurate. To obviate irregularity due to temperature changes, there is now a compensating hydrometer which automatically corrects for temperature so that this factor does not have to be considered. To keep the height of the electrolyte at a fixed point, there is an automatic cell filler which adds water to the cell in direct proportion to the evaporation, the only attention required being to occasionally fill the small reservoir. Such refinements are, of course, not always practical, but there is unquestionably a large field where they are well worth while and will pay for themselves many times over.

From what has been said it will be seen that if thoroughly understood, the proper charging of a battery is not a difficult matter, although the fact that fixed gravity or voltage limits cannot be

given, makes it somewhat more complicated than we could wish. It is probably this fact, the variable final gravity and voltage readings, more than any other, which has caused so much trouble.

With storage batteries as with other apparatus, the conditions cannot always be made to conform to the methods which would give the best results, looked at purely from a storage battery standpoint, and in such cases, the methods have to be modified to meet the conditions at the expense of the life of the plates. Such conditions must be met as far as possible by special operating methods, but fortunately they are rather the exception than the rule, and the present day battery has shown itself capable of giving splendid results even under extremely trying conditions.—
The Signal Engineer.

A Unique Telegraph Line.

In Bolivia between the City of La Paz, the capital, and the town of Oruro, the terminus of the railway connecting it with the seaport of Antofagasta, there still may be seen the remains of what was probably the most original telegraph line ever erected, says the London Electrical Review.

In this part of Bolivia there are no growing trees, and wood is so difficult to procure that even the ordinary household furniture of the native is invariably made, not of wood, but of dried mud, or adobe, as it is called. It is, therefore, not surprising that when the war broke out in 1880 between Chile and Bolivia, and the need for a telegraph line between the two places mentioned became urgent, that, as all communication with any seaport was cut off, this material was used to construct pillars to take the place of ordinary posts for supporting the wire, with the addition of old bottles as insulators.

These pillars were substantially built on stone foundations, and measured about five feet square at the base, with a height of about fifteen feet. They were placed at intervals of about one hundred and ten meters, and thus held the wire at a height sufficient to clear the only animals of the country, the llama and the donkey. The total length of the line was one hundred and fifty-six miles, and it rendered useful service for some ten years before being replaced by the ordinary wooden telegraph pole line.

Among other curious telegraph lines may be mentioned the growing pole line erected in Uganda by an ingenious English engineer, who, unable to find any dead wood which would withstand the white ants, hit on the idea of transporting growing bark cloth trees to the side of the roads and using them as poles. This system has been in use some ten years with success. In the Dutch East Indies trees are also made use of for a similar purpose, but here a wire is stretched across the road between trees on either side, and the insulator is suspended in its middle, and the line is thus over the road and clear from vegetation.

The New Models of the Remington Typewriter.

Announcement is made of the appearance of new models of the Remington typewriter. These are known as Nos. 10 and 11. It may be said of them that they are not new in name only, nor are they new only in that they combine principles new to the Remington. They might, in fact, be called advanced typewriters, for they offer many features of merit new to every user of the writing machine. The new models are front-stroke machines. They possess all of the excellent features of typewriter construction which have always been associated with the Remington name, including the solid drop-forged type bars and the broad pivot bearings, new features in front-stroke construction but which have always been vital factors in the durability and reliability of the Remington typewriter.

The five-key column selector, as expressed in this device, is an entirely new feature in typewriter construction. It is distinctly a time and labor saver. The characteristic feature of the column selector is that it will "jump" columns. This device is built into the machine of which it forms an integral part. It consists of five keys placed immediately back of the upper row of type keys on the keyboard, thus enabling the carriage to be brought instantly to any one of five writing points on the scale. A reversible rack at the back of the machine permits the "setting up" of four different sets of stops, thus in reality providing for twenty stops to the line, a sufficient number for every conceivable kind of work.

The column selector is in no way intended to supersede or take the place of the Remington decimal tabulator, for that mechanism appears in the new model, but with increased convenience of operation and efficiency in results.

Another new feature observed in these new models is the escapement or letter-spacing mechanism. This is a great improvement of the wheel escapement. Instead of the single wheel with adjustable dogs heretofore used this new escapement has two wheels and a single dog, the latter permanently adjusted in the machine. Any operator by the manipulation of three small screws can set the wheels of the new escapement to a regular, reverse or off-set spacing, with any variations of these general spacings which may be desired. Such a feature will be welcomed by operators everywhere. Then there is a black spacer on the new Remington which enables the operator to return the carriage space by space, depressing a key. There is also a new lock for the variable line spacer so that when the right thumb wheel is pushed in, disengaging the teeth of the ratchet from the cylinder, the ratchet may be permanently locked out of contact until released by a touch of the finger.

Paper guides of great strength, which adjust themselves automatically to any thickness of paper, a two-color ribbon device which also permits a transverse use of the entire surface of the ribbon where one-color ribbons are used, front marginal stops which are simple and convenient,

a new paper side guide, a new shift lock, and two carriage release levers which render it equally convenient to release the carriage either with the right or the left hand, are some of the other notable improvements of these new models.

Old Time Telegraphers' and Historical Association.

Elgin G. Saylor, of Pittsburg, Pa., superintendent of the Western Union Telegraph Company at that point, who was elected president of the Old Time Telegraphers' and Historical Association at its late meeting held at Niagara Falls, has appointed the following-named to membership in the executive committee: J. G. Splane, Robert Pitcairn and George A. Cellar, of Pittsburg; Daniel Colestock, of Titusville, Pa., and Belvidere Brooks, of New York. The holdover members are: Harvey D. Reynolds, of Buffalo; J. C. Barclay and C. C. Adams, of New York, and U. J. Fry, of Milwaukee, a total of nine members.

The following report of the treasurer shows the financial standing of the Old Time Telegraphers' and Historical Association:

Balance on hand September 1, 1907.....	\$781.28
Received as dues	676.00
Received as initiation fees.....	12.00
Received as interest	15.76
	\$1,485.04
Total expenses	\$694.77

Sept. 1, 1908—Balance on hand..... \$790.27
Examined and found correct.

M. J. O'LEARY, Auditor.

New York, September 1, 1908.

To the Members of the Old Time Telegraphers' and Historical Association.

GENTLEMEN:—Your secretary begs to report that at the beginning of the fiscal year there were 1,395 members. During the year, six new members were enrolled. So far as known, fifteen have been reported dead, eight have resigned, fifty-six have been dropped from the roll for non-payment of dues, leaving a net membership of 1,322.

The names of the dead are: Herbert M. Arnold, John Brant, George H. Corse, William A. Case, Albert Ford, Ernest Jennett, J. W. Kates, Charles Matthias, V. H. MacCord, George F. Randolph, George E. Stuart, M.D., Charles A. Stancliff, G. F. Thompson, James Ware, M.D., and W. H. Young.

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.

KERITE

INSULATED WIRES AND CABLES



KERITE 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.

KERITE 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

W. R. BRIXEY

SOLE MANUFACTURER

Hudson Terminal, 30 Church St., New York

Western Representative: WATSON INSULATED WIRE CO., Railway Exchange, CHICAGO, ILL.

The Railroad.

Following the action of the state of Arkansas, recorded in our issue of October 1, the Supreme Court of the State of Wisconsin has declared unconstitutional the Wisconsin eight-hour railroad telegraphers' law, which was enacted at the 1907 session of the legislature. The law is declared unconstitutional on the theory that it is in conflict with federal enactment.

The annual meeting of the Railway Signal Association was held at the Willard Hotel, Washington, D. C., October 13, 14 and 15. The principal subjects considered were as follows: Tuesday, electric interlocking; mechanical interlocking; storage battery. Wednesday, committee No. 1, signaling practice, and sub-committee of No. 1, standard design: automatic stops and cab signals; subjects and definitions. Thursday, automatic block signals; rubber-covered wire; manual block signals; election of officers.

The special committee appointed to report on rubber-covered wire, has been painstaking, arriving at results of much value. It commends kerite, although not providing a specification or test for it. In the memorandum of the association of manufacturers, the following appears: "Inasmuch as wires insulated with kerite have been in use for fifty years, and have proved their merit, we suggest that a special specification be made for them, in which the mechanical and electrical requirements be the same as called for by general specifications." The committee's comment is as follows: "The committee concurs, with the exception that it does not desire to present a specification for this compound."

In addition to the two despatchers' telephone circuits, already mentioned in this column, the Delaware, Lackawanna and Western Railroad Company has just completed and put in operation a similar train despatcher's telephone circuit, between Binghamton and Buffalo, a distance of 203 miles, with forty-five stations and equipped with Gill selectors. This is up to the present time the longest circuit, with the largest number of stations in one circuit which has been put in operation by the Lackawanna system. The transmission, according to the statement of Mr. L. B. Foley, the superintendent of telegraph of this road, is entirely satisfactory, and enables the despatcher to handle his work very much quicker than was done with the telegraph.

Mr. J. A. Norris, of Chicago, a veteran line-man in the service of the Chicago and North Western Railway Company, was retired on a pension on October 1, after more than forty-two years of faithful service. Mr. Norris reached his seventieth year on August 5, for he was born in 1838 at Leesburg, Ind. Going to Texas when a young man, Mr. Norris had a war record on the Confederate side. After the conclusion of hostilities, coming North, he had a short experience in the telegraph service, that of the Illinois-Mississippi Valley company, during which, however, he was concerned in laying the first sub-

marine cable across the Mississippi River at Keokuk, Iowa, in 1865. He also made the first change from the old wooden insulators to the glass insulators that was made in that section of the country. In April, 1866, he entered the employ of the North Western company, and from July of that year until the present time, he had charge of the lines of the Galena Division. He was a faithful servitor, and throughout that long period never lost a day's time, and has retired honored and respected by his company.

The annual convention of the Association of Railway Telegraph Superintendents, held at Montreal, Que., on June 24, 25 and 26, the twenty-seventh in the series, was a memorable one, particularly so as the important question of train despatching by telephone rather than by telegraph, engaged a large share of the attention and time of the members present. The verbatim report of the meeting has been carefully compiled and published in substantial pamphlet form by the secretary and treasurer of the association, Mr. P. W. Drew, of Chicago. It furnishes a volume of over 170 pages, and embraces an amount of interesting matter of value not alone to the superintendents who were there and who themselves took an active part in the meeting, joining in the discussions in which many debatable questions were argued, but also to the telegraph operators and despatchers in the railway service, whose duties therein were searchingly analyzed, and many others whose business closely allies them to the railroads. The papers read on the occasion were of a timely nature and mainly considered questions just now appealing with peculiar force to numerous phases of practice observable in the railroad situation, considered from an operating and telegraphic point of view. In the discussions that followed the several questions thus treated keen interest was manifested and an immense amount of information elucidated. All this is fully set forth in the volume, the plan of publication following careful and sequential order in arrangement, pleasing to the reader and seeker after knowledge. Mr. Drew, as usual, has done his work well, and it may readily be imagined why it is that his associates return him so regularly year after year to the position he has so long occupied of secretary and treasurer.

The annual election of the Philadelphia, Reading and Pottsville Telegraph Company was held at the office of C. M. Lewis, October 5, at Reading, Pa., and resulted as follows: President, Geo. F. Baer; treasurer, H. E. Paisley; secretary, W. R. Taylor; directors, Joseph S. Harris, Theo. Voorhees, Samuel Dixon and B. H. Bail. The judges were C. M. Lewis and L. D. Shearer.

China having negotiated a loan of \$25,000,000, a reserve of twenty per cent. of this amount has been set apart, a portion of which is intended to be used for the nationalization of the telegraphs.

The Magnetic Club.

The annual dinner of the Magnetic Club will take place, as has been previously announced, at the Hotel St. Denis, New York, on the evening of November 18, when, in accordance with precedent, telegraphers visiting New York as delegates to the annual meeting of the Telegraphers' Mutual Benefit Association, will be invited to be present. The fact that this affair will celebrate the twentieth anniversary of the club, invests the occasion with more than ordinary interest, and a large company is likely to be in attendance to share in the hospitalities of its generous board.

During the twenty years of its existence the Magnetic Club has been the foremost—in fact, it may be said about the only social club of the telegraph in the metropolis. It has served the laudable purpose of promoting acquaintance and maintaining a state of good fellowship in telegraph ranks, officials and members of the working staff alike meeting at these dinner events on common and delightful grounds of social equality. It has also served as a model for clubs of like character organized elsewhere. At its banquets in the past many persons distinguished in the history of the telegraph have assembled. Wit and wisdom have found gracious expression in the oratory that has followed gastronomic feats. These dinners have been the scene of good cheer. It is no wonder that the approaching anniversary awakens many thoughts in retrospection of events and of those who took part in them, crowding the memory of twenty years.

On the evening of April 4, 1888, about thirty well-known telegraphers met at dinner at a well-known restaurant on Sixth avenue, New York. Such men as T. C. Martin, Minor M. Davis, Charles P. Bruch, Gardner Irving, W. H. Baker, J. B. Taltavall, J. M. Moffatt, E. T. Barberie, Alonzo Beatty, R. G. Stephenson, Tom O'Reilly, C. L. Chase, W. Betzel, J. H. Montgomery, D. W. McAneeny, D. B. Mitchell, W. L. Ives, T. A. Brooks, John Brant, E. F. Howell, Hugh A. Moody, Lant S. Jones, George W. Walcott and W. G. Magowan, were present. The affair proved to be most enjoyable, and as telegraphers only were in attendance, thus giving to the meeting a sort of professional exclusiveness, the idea was there generated that resulted in the formation of the Magnetic Club. This was accomplished about two weeks later at a meeting called for the purpose and held in the Western Union Building on April 19, 1888, when Charles P. Bruch was elected temporary chairman and George F. Fagan as temporary secretary. The desirability of effecting a permanent organization of a social character among telegraphers was a pointed one and met with instant favor. The result was that the Magnetic Club had its birth. A constitution and by-laws were adopted, likewise a badge made in the form of a permanent (horseshoe) magnet with the symbolic figures "73" appearing between its forks. The charter membership numbered fifty-one, the limit being fixed at one hundred. At an adjourned meeting, held a few days later, namely,

on April 26, officers and members of a governing committee were elected. These were: Charles P. Bruch, president; William J. Dealy, Gardner Irving, William L. Ives and Lant S. Jones, vice-presidents; George F. Fagan, secretary, and John Brant, treasurer; governing committee: J. B. Taltavall, D. W. McAneeny, J. M. Moffatt and W. H. Baker, to serve for two years; E. F. Howell, E. F. Cummings, Conrad Meyer and T. A. Brooks, to serve for one year.

Included in the list of original membership, besides those already named, were the following: F. W. Baldwin, George W. Logan, A. F. Hurd, M. J. O'Leary, T. W. Greene, Theodore Betzel, W. B. Waycott, S. A. Coleman, T. B. Fullom, J. L. Edwards, H. I. Jolly, A. F. Lauer, F. D. Murphy, T. J. Smith, George F. Baker, F. O. Nourse, W. H. Jackson, T. P. Scully, W. J. Johnston, T. M. Brennan and Harry A. Du Souchet.

Thus was the Magnetic Club inaugurated. Its subsequent history has been a record of success; its dinners have been welcomed events within fraternity circles. The hospitalities of the club, always generously extended, have been accepted by many, and during the years such men have sat down to its festive board as W. D. Baldwin, John Bottomly, A. R. Brewer, Professor F. X. Carmody, Colonel A. B. Chandler, Thomas F. Clark, Colonel R. C. Clowry, Charles A. Coffin, Hon. P. V. De Graw, Thomas A. Edison, H. D. Estabrook, Frederick P. Fish, S. S. Garwood, Judge J. W. Goff, Dr. Norvin Green, W. C. Humstone, E. A. Leslie, Hon. Julius M. Mayer, William Maver, Jr., T. Commerford Martin, John C. Barclay, James Merrihew, Colonel J. R. McIntosh, Patrick F. Murphy, Ralph W. Pope, Hon. J. D. Reid, Charles Selden, Frank R. Shattuck, Melville E. Stone, Joseph W. Stover, Charles A. Tinker, J. B. Van Every, J. R. Van Wormer, George G. Ward, besides many others, numbered among the official staffs of the Western Union and Postal telegraph companies, the New York Telephone Company and of the New York and New Jersey Telephone Company.

Of the notable dinners held by the club, four perhaps stand out with greater distinctness than others. Of these that given in honor of Colonel Robert C. Clowry, president and general manager of the Western Union Telegraph Company, drew together the largest number of telegraphers ever assembled on a like occasion in the annals of the club to pay respect to a telegrapher. The second dinner event of most note was that given to Alexander Graham Bell. A large gathering was present, augmented by the attendance of the officials of the American Telephone and Telegraph Company, and of its local subsidiary companies, the New York Telephone Company and the New York and New Jersey Telephone Company. The banquet tendered to Thomas A. Edison, the greatest inventor of the age, himself a former telegrapher, drew a very large and representative number of people, and should be placed third on the list. The fourth may be referred to as the dinner given in honor of the officers of the West-

tern Union Telegraph Company. At this unique affair company distinctions were rendered conspicuous, the Western Union executives occupying seats at the head of the table and wearing boutonnieres of white carnations, while the Postal officials, seated opposite, were designated by pink carnations.

The club has had as presidents; Charles P. Bruch, William J. Dealy, Edward C. Cockey, William H. Baker, E. H. Johnson, R. J. Hutchinson, Francis W. Jones, Colonel A. B. Chandler, the present incumbent being George H. Usher. Mr. Usher is supported by Marston R. Cockey, B. M. Downs, D. W. McAneeny and Theodore L. Cuyler, Jr., respectively first, second, third and fourth vice-presidents; J. J. Cardona, treasurer, and William H. Mathews, secretary.

The New Office Boy.

BY J. P. WILLIAMS.

It was in a telegraph office in Philadelphia way back in the early seventies that the following incident took place. The working force consisted of a manager, an operator and two boys. Competition between the rival companies was very keen and the nine wires, which dropped from a ponderous pole in front of the office, bore the signboards, "New York," "Washington," "Cleveland," "Chicago," "San Francisco," "Mexico," etc., though in truth these same wires had their termination, with one or two exceptions, in the central office some few blocks distant. The switchboard, into which these wires were led, was a large, clumsy affair, very imposing with many green cords and plugs.

Promptly at 9 o'clock Manager Weston appeared at the entrance to the office, alert and business-like in manner and wearing a "plug" hat, an ornament much affected by telegraph office managers of those days. He paused a moment to interrogate a small freckle-faced, red-headed lad, who for the past half hour had been glancing furtively at the placard reading "Boy Wanted," which hung from the gas fixture in the window. Evidently the boy's answers pleased the manager, for the first business of the day was to place the youngster, James Dawson, on the pay-roll.

Mr. Weston spent the next quarter hour lecturing his chief operator, Robert Green, on the uncleanly condition of the office, particularly the accumulated dust on the switchboard, suggesting that he could spend the early hours of the morning in cleaning up. To all this Jimmie was a most attentive listener and secretly resolved to win the good will of his new employer.

At 8.11 o'clock on the following morning the chief operator strolled leisurely down the street toward the office. He paused a moment on the threshold and saw a sight that lingered in his memory for many, many years. There was James Dawson, aged twelve, mounted on a chair, scrubbing brush in hand, a bucket of water and

a bar of soap nearby, working like a beaver. The switchboard was already drenched in soapsuds, which ran down the floor in streams. Every wire in the switchboard was completely crossed and, of course, the apparatus was useless. It required a new switchboard and the united efforts of six wiremen to get the office in shape for business by noon. Jimmie secured a situation in a tea-importing house next day.

The New York Electrical Show.

The New York Electrical Show, held at Madison Square Garden, New York, October 3-14, commemorative of the jubilee of the first Atlantic cable of 1858, and twenty-five years of Edison electric lighting service on Manhattan Island, was a notable affair. Its interest was heightened by a speech of Thomas A. Edison, delivered through the medium of an Edison business phonograph, into which it had been dictated. This was as follows:

Those of us who began our labors at the operator's key fifty years ago have been permitted to see and assist in the whole modern industrial development of electricity. Since the remarkable experiments of Morse in 1844 and the unsuccessful efforts of Field in 1858, there have come with incredible rapidity one electrical art after another, so that in practically every respect civilization has been revolutionized. It is still too early to stand outside these events and pronounce final judgment on their lasting value, but we may surely entertain the belief that the last half of the nineteenth century was as distinct in its electrical inventions and results as the first was in relation to steam.

The lesson of the jubilee of the Atlantic cable of 1858 is one of encouragement to all who would add to the resources of our race and extend our control over the forces of nature. Never was failure more complete, never was higher courage shown, never was triumph more brilliant than that which since 1866 has kept the Old World moored alongside the New by pulsating cables of steel and copper—the "family ties" of the civilized world.

When I look around at the resources of the electrical field to-day as shown in this exhibition, I feel that I would be glad to begin again my work as an electrician and inventor; and we veterans can only urge upon our successors, the younger followers of Franklin and of Kelvin, to realize the measure of their opportunities and to rise to the height of their responsibilities in this Day of Electricity.

The collection of specimens of various Atlantic cables, models of cable ships, etc., were especially attractive, and instructive in the lesson conveyed in showing the advances that have been made in the art of submarine telegraphy and cable-laying since the early days. Included in this display, the exhibit made by the Commercial Cable Company excited much favorable comment.

The famous gun-cap battery, by which signals were sent through the Atlantic Cable from Heart's Content, N. F., to Valentia, Ireland, in 1866, the property of Henry H. Ward, now a resident of East Orange, N. J., a forty-niner of the telegraph, was also shown.

Watching the hands of a clock go 'round makes a long day of it.

LETTERS FROM OUR AGENTS.

LOS ANGELES, CAL., POSTAL.

Charles L. Lewis, superintendent, recently made an inspection of the San Diego, Cal., office as well as offices at other points within his districts.

The local Postal operators certainly have many reasons for self-congratulation. In the first place, it is a privilege to live in Southern California. No one who has not enjoyed that pleasure can imagine its many advantages over less favored regions. This company has provided at this point one of the finest operating rooms in the country. It is modern in every respect, and is justly a cause of pride and satisfaction to those members of the fraternity fortunate enough to be located here.

Then it may be said that the local officials are courteous gentlemen. Superintendent Lewis, who is also acting as manager, is well known for his genial manner. He is consistently kind and considerate to all. No more efficient chief operator could be found than V. V. Stevenson. He understands the telegraph business thoroughly and is not ashamed to admit that he likes it. As a result of his careful management the daily business of the operating room moves like a well-oiled machine, without noise or friction. F. H. Merrill is night chief, and is the friend of everybody; and Walter Ogden, late night chief, is a man well liked by all.

The Chicago bonus wire is looked after by Messrs Page and Cahoe, while Messrs Terry and Anderson attend to the San Francisco wire, and Carl Jensen the Denver phantoplex.

It will no doubt be of interest to the Old Timers to know that we have in our midst the liveliest one in captivity in the person of S. L. Griffin. He is one of the "Pilgrim Fathers," so to speak, of the business. He is still in the harness, too. Mr. Griffin was born at Delaware, O., December 24, 1482 (or it might have been 1842) and entered the telegraph service March 15, 1857. When the war broke out he went to the front. After undergoing experiences sufficient, if recounted, to fill several books, he wound up in New York, where it is said all the bad ones go. For seventeen years he was chief operator of the eastern section under A. S. Brown and A. S. Downer, after which he resigned to act as the private secretary of Thomas A. Edison. Three years later business called him West, and to his great joy he found himself in Los Angeles. Being a wise man he gave the return portion of his ticket away and took permanent root here.

A recent caller at this office was Moody Rosenquist, Postal manager at Pasadena, the popular winter resort near here.

J. H. Dorsey, of this office, is the local representative of Telegraph Age.

R. B. Chamberlain, formerly of the Sioux City division of the Chicago and Northwestern Railway Company, is now manager of the branch office in the delightful section of this city known as Highland Park.

Miss Margaret Sperling, of this office, returned October 1 from an extended vacation of two months, which took her to various points in Arizona and to Santa Barbara, Cal.

NEW YORK, WESTERN UNION.

The friends of D. W. McAneeny, and their name is legion, will rejoice to know that he has returned to duty greatly improved in health.

Miss Lulu Brannin, daughter of Traffic Chief Edward E. Brannin, was married, October 10. She was the recipient of a number of handsome gifts presented by Mr. Brannin's associate chiefs.

Mr. Con. A. Meyer, eastern division chief, is absent on vacation.

Mr. W. G. Phillips, who has been employed in this office for the past year, has returned to Lake Charles, La., to accept a broker position.

NEW YORK, POSTAL.

Extensive improvements are being made throughout the operating room. Tables have been rearranged so as to meet certain demands. New switchboards are being installed and the office has the appearance of housecleaning time. The eastern division is now at the Broadway end of the room, the western and southern divisions are on the Murray street side, and the city is where the eastern division was formerly located. Many of the improvements which have been inaugurated are a direct help to the staff. Every one seems pleased with the new restaurant, previously described, where good meals are served at reasonable prices. The men's waiting room, as has been the case with that devoted to the ladies, is also going to be a great comfort. It is well furnished and there operators can read, smoke and enjoy freedom while waiting to report for duty. It is well lighted by three windows and is also provided with electric lights. The men's coat room is now on the same floor as the operating room.

Night Manager D. F. Mallen and Wire Chief F. E. McKiernan recently returned from a trip to Pittsburg and Buffalo, where they went on a tour of inspection.

Miss Winifred Crawford is on a vacation.

Messrs. Keegan, Bauman and Driscoll are on the all-night force.

A large waiting list is in readiness to handle the election bulletins.

Some of those who compose the night force are D. F. Mallen, manager; Charles J. McCarthy, assistant night manager; Harold Dobbs, traffic chief; John Mearns, city chief; Jesse Ewing, eastern wire chief, and E. A. Coney, wire chief. Colonel Taylor looks after the annunciator board.

The Postal is represented nights at the newspaper offices, as follows: Herald, F. C. Frace, J. F. Ellis and Harry Funk; Times, E. A. Byron and R. S. Crosskill; World, F. J. O'Meara and Harry Lieber; Journal, M. L. St. John and C. B. O'Rourke; Press, J. P. Williams; Sun, H. H. Bonney and E. F. Murray; Tribune, George W.

McGill; Pike News, M. J. Pike and L. Meloche, and the Hearst News, Thomas P. Monaghan.

Day newspapers assignments are: Harry Linder, Herald; Robert C. Mitchell, Hearst News; J. B. Havice, the United Press Association; George Wichmann, World; John Quill, Sun; Mr. Schieber, Journal, and Mr. Wetterauer, Evening Post.

Mr. F. F. Norton is the day manager, with Mr. J. J. Whalen, assistant; S. C. Dodd is traffic chief; F. E. McKiernan, wire chief; C. B. Obst, city chief; Phil. Reiley, assistant city chief, and Joe Kreager, eastern traffic chief. Thomas Smith looks after the Rowland system with circuits to Chicago, Boston and Philadelphia. John H. Twyford is the western traffic chief.

A number of operators in this office are now stockholders in the Mackay Companies.

Mr. C. W. Harmon, manager of the 45 Broadway office, located in the financial district, is absent on sick leave, and is spending a month at Mount Clemens, Mich., for the benefit of his health.

Annual Meeting of the Telegraphers' Mutual Benefit Association.

The regular annual meeting of the Telegraphers' Mutual Benefit Association of New York, will be held at 195 Broadway, on Wednesday, November 18. The affairs of this sterling association, which are in excellent shape, have been conducted through the rather trying period of the last year, due to the prevailing business depression, with a wise and prudent conservatism, gaining for M. J. O'Leary, the managing secretary, many expressions of confidence in his ability from his associates and others interested—a confidence that has also found expression through courtesies shown and kind offices bestowed on the part of both telegraph companies, tenders highly appreciated by the recipient. An instance of this was shown specifically in the case of the Postal company which furnished through the office of the general manager extensive lists of the names of employes resident in all parts of the country, obtained through the agency of general and district superintendents, a valuable contribution materially facilitating purposes of canvassing.

George B. Gaines, of Richmond Va., a former telegraph operator, whose recent death was recorded in the October 1 issue of Telegraph Age, evidently realized the importance of membership in the Telegraphers' Mutual Benefit Association, for the records show that he became such when less than thirteen and one-half years of age, July 27, 1868.

Mr. A. A. Patterson, of the Western Union Telegraph Company, Toledo, O., who acts as agent for Telegraph Age at that point, and who has sent in a number of new subscriptions lately, takes occasion to remark in a recent letter that somehow the recent advance in price has acted as a means of calling special attention to the paper; has had a stimulating effect, its excellencies, as

he says, apparently gaining readier recognition, when gauged by cost, even though the figure be a higher one. Be this as it may, we are gaining subscribers, not only at Toledo, but elsewhere, at \$2, where before the rate of \$1.50 did not always prove an acceptable charge. Possibly the even amount is what tells—so easy to handle, you know. Yet, after all, is not the paper well worth the sum demanded? If everybody in the telegraph service would make the question a test case, the problem would be speedily solved.

Mr. F. E. Patrick, who has had charge of the Barclay department of the Western Union Telegraph Company, at St. Louis, Mo., has resigned in order to devote his entire time to the management of his six-hundred-acre stock farm, situated at Olvey, Boone County, Ark.

Telegraph Age as a Telegraphic Newspaper.

The amount of matter that has been furnished readers of Telegraph Age thus far during 1908 exceeds that of any preceding period of like extent. The record up to the present time is 125 pages ahead of 1907, an advance likely to be increased to 300 by the close of the year, while the probable total number at that date will approximate 1,000 pages. These are phenomenal figures and are largely exclusive of the advertising and cover pages. While they serve in their very abundance to emphasize the thought and labor that has been devoted to making Telegraph Age what it is, they also give evidence of the expanding degree of the great field of telegraphy in its various phases of application. Yet to the average reader, unfamiliar with newspaper work with its multitudinous details, although insistent in demanding a complete telegraphic newspaper, it is doubtful if more than a dim conception exists of the care and close scrutiny that must be exercised in governing every statement published, especially in all that pertains to technical utterance. While a greater latitude of expression is permitted in the daily and non-technical press, a paper like Telegraph Age would speedily lose its prestige as an authoritative journal of the telegraph were it to lower in any manner its necessarily high standard of being accurate in all that it publishes.

Such a medium of telegraphic news and information is surely worth to any one interested the modest charge of \$2, the price of subscription. Our agents and friends everywhere are urged to press the claims of Telegraph Age on the attention of possible subscribers. With returning prosperity and because of manifest evidences of the intrinsic worth of the paper to every telegrapher, at least, in this broad land, we confidently anticipate a large gain in circulation during the coming year.

Copper wire thieves are at work in the vicinity of Cleveland, O., much to the annoyance of the telegraph, telephone and trolley systems.

United States Military Telegraph Corps Life Membership.

At the twenty-seventh annual reunion of the Society of the United States Military Telegraph Corps, held at Niagara Falls, N. Y., September 16, a resolution was adopted providing for life membership, upon the payment by any regular member of the sum of fifty dollars. Thomas T. Eckert, Jr., the youngest son of General Eckert, was the first to file his application for life membership. The application has been duly approved as of October 3. The secretary of the society, D. H. Bates, has ordered new certificates engraved for this class of membership and hopes to find use for a number of them.

Blanks are being sent out to members by Secretary Bates with a view to obtaining signatures to a petition to be delivered to Congress through the medium of Senators and Congressmen, appealing for recognition and to the placing of the military telegraphers on the pension list of the United States in common with the soldier.

Mr. Thomas A. Davin, for the past twenty-five years identified with a stock brokerage house in Boston, and who is a member of the Society of the United States Military Telegraph Corps, and well known throughout the country, is again able to resume work after a severe illness lasting two months.

The working of telegraph wires was seriously disturbed on the evening of September 29, particularly in the West and Canadian Northwest, due to the unusually brilliant display of the aurora borealis, charging the atmosphere abnormally with electricity.

Obituary.

Walter J. Crews, until within a recent date manager of the Postal Telegraph-Cable Company, at Raleigh, N. C., died on September 23.

William C. Dudley, a wealthy retired broker and former telegraph operator, died suddenly at Cincinnati, O., September 23, of heart disease, aged forty-four years.

Milford L. Fancher, aged seventy-eight years, died at Lansingburgh, N. Y., September 29. Mr. Fancher was appointed manager of the first Western Union office opened at that point, a position he continued to hold for twenty-five years.

Joseph H. Wheat, aged sixty-five years, a veteran telegraph operator at Cumberland, Md., and a member of the Grand Army of the Republic, as well as of the United States Military Telegraph Corps, died on October 4.

George M. Ferry, aged fifty-one years, general yard master of the Pennsylvania Railroad, at Duquesne, Pa., died on September 30. He was a native of Pennsylvania and had spent his entire business career in and around Pittsburg in the employ of the Pennsylvania Railroad Company, advancing from the position of telegraph operator to the place he occupied at the time of his death. A picture and sketch of Mr. Ferry appeared in the issue of Telegraph Age for October 16, 1906.

The Serial Building Loan and Savings Institution, 195 Broadway, New York, long-tried, safe in plan, economical in method and satisfactory in results, solicits the accounts of telegraphers, city or country, paying five per cent. on deposits. The soundness of this institution is certified to by the New York state bank examiner, who also commends its careful system of doing business.

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

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

Postal Telegraph-Cable Co., Executive Offices, 253 Broadway, New York; purchasing agent, W. D. Francis, 14 Desbrosses St., New York.

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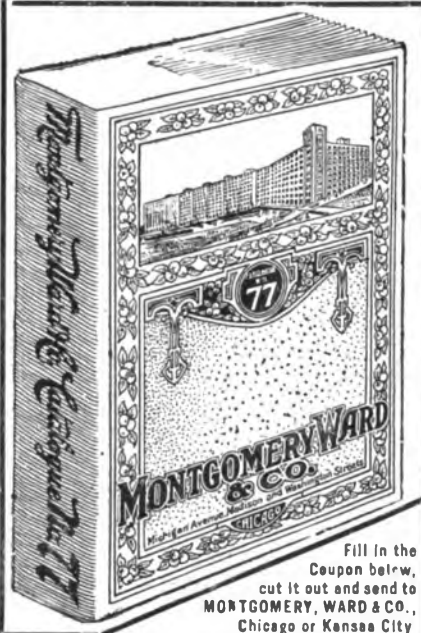
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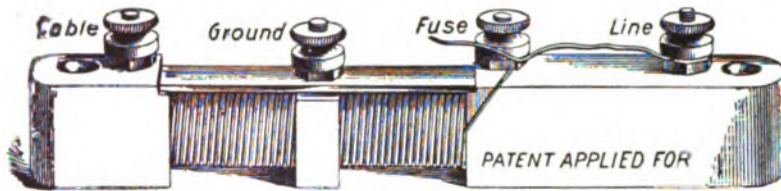
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