TELEGRAPH AGE

A Semi-Monthly Journal Devoted to Land Line Telegraphs, Submarine Cable Interests and Radio-Telegraphy

ESTABLISHED 1883

Office of Publication: 253 BROADWAY, NEW YORK

Single Copies 10 Cents | For Yearly Subscription Rates See Editorial Page

No. 3. NEW YORK, FEBRUARY 1, 1908. Whole No. 593.

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No. 3. NEW YORK, FEBRUARY 1, 1908. Twenty-fifth Year.

CONTENTS.

SOME POINTS ON ELECTRICITY.

How to Become a Wire Chief.

BY WILLIS H. JONES.

(Part III.)

Having acquired a fair knowledge of the construction and manner of handling the switchboard apparatus, the next thing is to be able to determine quickly the nature and location of a fault when a wire has been reported in trouble. Of course, it is an easy matter to determine whether the wire is open, grounded or crossed, but it is not so easy for an inexperienced wire chief to tell just where the fault is located. Before he can find the seat of trouble without unnecessary delay he must learn and profit by the facts hereinafter stated and the lesson they teach.

Nearly every wire has its individual distinguishing mark, so to speak. That is to say, it "feels" somewhat different from its companions as indicated by the manner in which the wire chiefs test relay inserted therein is affected. Two companion wires may both be O. K. in every respect, yet each will "feel" differently from the other owing to different conditions existing in the two circuits. One wire may contain a great many relays, thereby creating a draggy action, the other but few, and thus causing a sharp, snappy effect.

In like manner other conditions may exist in certain conductors which contribute to give individual characteristics, hence the importance of becoming thoroughly familiar with the normal characteristics of each circuit. This knowledge would, of course, come eventually with experience, but it is so valuable that we suggest making an effort to early acquire the same.

For example, let us suppose that two companion way wires, No. 1 and No. 2, become grounded. No. 1 has a great many stations cut in and No. 2 but comparatively few. Naturally No. 1 will "feel" differently than No. 2 during normal conditions. In the first place it may possibly feel weaker because of less current, and will not work with the "snap" that No. 2 will on account of so many magnet coils being in the circuit.

Now, an inexperienced chief attempting to locate these grounds might conclude that No. 2 was grounded at a point this side of the ground on No. 1, merely because the current on No. 2 was so much stronger than that flowing in No. 1, whereas the facts may be directly opposite to this "indication." An experienced wire chief would not attempt to estimate the distance to the respective grounds by a comparison of the two values of current volume flowing in the circuits, but by the percentage of alteration from the normal flow noted in each wire separately; that is to say, by comparing roughly the strength of the current now flowing to the "ground," with that normally flowing in the same wire when the latter is O. K. Thus, if under normal conditions the current volume is, say, 40 milliamperes, and a "ground" on the circuit increases the current to eighty milliamperes, it follows that the "ground" is located at about the middle of the circuit, ohmically speaking. As the current volume increases inversely as the resistance of the circuit decreases we are thus able to make a pretty close guess as to the whereabouts of an accidental ground and thus lose but little time testing with unnecessary way stations. While an ammeter, of course, gives an accurate measurement of the current alterations, in practice the wire chief does not resort to that expedient except in difficult cases. He soon becomes able to estimate the value of the alterations by means of his relay with sufficient accuracy for ordinary purposes, and thereby saves a great deal of time.

In a similar manner the distance to an "open-

ing" in a circuit is primarily estimated by a comparison of its existing and normal "static" conditions. Every wire possesses a certain capacity for holding a charge of electricity in captivity on its surface when the wire is open at its legitimate terminal. When the home or charging battery is removed and the wire quickly grounded in the board by the wire chief, the accumulated charge rushes back through his test relay to the ground and causes a static kick on his instrument in a degree proportioned to the amount of charge returning. It follows then that as the charge accumulated on a given conductor is in proportion to the total superficial area of the wire affected, other conditions being equal, the longer the wire the greater the kick. In other words, if the kick is very pronounced, look for the opening at a great distance, vice versa, near home. Here again the qualification must be noted that the comparison must be made with the known normal or full static capacity of the particular wire being tested. A comparatively short length of a railroad wire containing a great number of relays would give a greater kick than possibly twice that length of another wire containing few or no magnet coils. Hence it is the alterations we must gauge and not the size of the kick. The weather must also be considered in connection with both a ground and an opening test. However, these points are soon learned and a good wire chief is not often badly deceived by a mere rain storm. He simply makes a reasonable allowance for the temporary conditions and proceeds as under normal conditions.

LOCATING A CROSS.

When a wire is crossed with another circuit which carries a current of electricity the fact is usually determined by removing the home battery and grounding the wire reported at the switchboard and inserting the test relay in the spring-jack. Under these conditions the relay will show the presence of an incoming current from the as yet unknown wire with which it is crossed. To ascertain which wire it is crossed with the wire chief should open each wire in his board in turn for a moment, that runs along the same route until he finds one that when he removes the home battery therefrom also opens the grounded wire his test instrument is in. This will indicate that those two wires are crossed together somewhere on the line, the location of which is still unknown.

To determine the location of the cross the wire chief must ask the different way stations possessing the wire his test set is in to "open" the wire a moment. All stations this side of the cross will be able to open clear, but the first station beyond the cross cannot, because the current from the other circuit with which it is crossed will continue to flow back through the chief's test set to the "ground" in the switchboard whether the last tried station has his key open or closed. The lineman is then instructed that the cross will be found between stations, say, E and F, meaning between the most distant station that can open clear, and the first station beyond the cross who cannot.

When two circuits thus become crossed one of them must be thrown out of service in order to clear the other. This is done by opening one circuit each side of the point of contact. It is always best to open the wire as near the cross as possible, especially if it is a quadruplex circuit we wish to clear, for the reason that a long length of wire in contact with another circuit, even though it carries no current, adds a variable "static" to the wire it is in contact with through the charge it accumulates from the working circuit supposed to have been thus "cleared." By opening the discarded circuit at two points opposite but close to the cross the short length of wire then still in metallic contact becomes practically harmless. The other circuit may be made good by splicing between E and F with some other side or less important conductor, if such is available.

The presence of an incoming current, when the wire chief grounds at the board, must not in itself be taken as an indication of a cross. Here is where the chief must use his knowledge of the circuits individually. Some circuits have battery at each end of the wire, so he must not be deceived by what might prove to be a legitimate current. Others, such as city and short-way wires, work to a distant ground and, of course, could not show an arriving current unless crossed with another circuit.

Other indications of a cross are the inability to break a sending station, the arrival of the signals in a distorted or backstroke manner, and other peculiar manifestations one soon recognizes after a little practice. Hence, in the case of trouble on a wire with battery at the distant terminal it is upon the latter mentioned manifestations principally one must depend rather than on that of the mere presence of an arriving current such as would otherwise be sufficient evidence to disclose a cross on a circuit with a permanently grounded terminal. All these things must be considered at the time a test is made, hence the importance of knowing each circuit well.

(To be continued.)

Recent Telegraph Patents.

A patent, No. 376,069, for a telegraph transmitter, has been awarded to Charles E. Lee, of Chicago, and Lewis K. Miller, of Brooklyn, N. Y. This telegraph transmitter has a toothed actuator movable into operative relation to a contact on its down-stroke and out of operative relation to the contact on its upstroke, and a key lever arranged to raise the actuator to permit its free return.

A patent, No. 876,312, for quadruplex or multiplex telegraphy, has been granted to Lawrence Connell, Jr., of Portland, Ore. The station apparatus comprises a polarized relay, a neutral relay having an armature and two main energizing coils, one composed of two differential high wind-

ings and the other of two differential low windings, one of the high windings and the low winding of similar direction being connected in series in the main line and one coil of the polarized relay.

A patent, No. 876,391, for a telegraphic key, has been issued to Roy K. Patterson, of Chicago. Telegraph transmitting instrument having two keys, both of which move vertically as usual and one of which forms dashes and the other dots.

A patent, No. 876,669, for a telegraphic transmitter, has been taken out by D. S. Troth, of Fruitvale, Cal. A transmitting typewriter of the kind having a continuously revolving cylinder and key-operated detents for clutching different circuit-closing elements into action.

A patent, No. 876,886, for cable telegraphy, has been awarded to I. Kitsee, of Philadelphia. Means for relaying or translating true reversals impressed upon lines of comparatively large capacity.

Personal.

Mr. C. F. Annett, manager of the Western Union Telegraph Company at New Haven, Conn., was a visitor recently at Chicago, his former home, spending a few days in that city.

Mr. James Kent, of Montreal, Que., manager of the Canadian Pacific Railway's Telegraph, reached his fifty-fourth birthday on January 15. He was the recipient of many congratulations from hosts of friends, not only in the Dominion but also on this side of the border.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Morris K. Jesup, a director of this company, died on January 22. He was a man prominent in many affairs of the city, of fine culture, a philanthropist, and his passing has occasioned profound regret. He was in his seventy-eighth year.

Mrs. M. W. Hamblin, wife of the city superintendent, who has been seriously ill with typhoid-pneumonia, is reported to be convalescing.

Among the recent executive office visitors were Charles Selden, superintendent of telegraph, and F. G. Adams, circuit manager, of the Baltimore and Ohio Railroad Company, Baltimore, Md.

Mrs. Elizabeth Martin, mother of Mrs. C. H. Bristol, Mr. Bristol being the general superintendent of construction, died at the home of her daughter in Flatbush, Brooklyn, on January 11. The remains were taken to Chicago, her former home, for interment, Mr. and Mrs. Bristol accompanying the same.

Mr. W. W. Umsted, manager of the Omaha, Neb., office, accompanied by his wife, sailed for the south of Europe on the Republic on January 25. He will stop first at a number of Mediterranean ports, and will be absent seven or eight weeks. Many of Mr. and Mrs. Umsted's New York friends were at the pier to see the voyagers safely off.

The tariff book of this company for 1908 bears testimony to the genius of Mr. William Holmes, its author, as a compiler of versatile abilities. Such a volume, of course, is indispensable for reference purposes, and the careful and logical arrangements of its contents will make the vast fund of information it contains the more readily to be found.

RESIGNATIONS AND APPOINTMENTS.

Mr. E. T. Moore, manager at Knoxville, Tenn., has been appointed manager at Memphis, Tenn., vice W. A. McKeever, resigned.

Miss Nellie Beers, of Johnson City, Tenn., has been appointed manager at Morristown, Tenn., vice W. L. Sinclair, made manager at Baton Rouge, La.

Miss Laura C. Hull, of St. Louis, Mo., has been appointed manager at McComb, Miss., vice Mrs. A. M. Miller, appointed manager at Sheffield, Ala.

Miss C. M. Green has been appointed manager at Clarksville, Tenn., vice P. A. Williams, made manager at Cynthiana, Ky., in place of F. J. Timoney, resigned.

Mrs. M. M. Abernathy, of Jackson, Tenn., has been appointed manager at Decatur, Ala.

Miss M. E. Dunn, of St. Louis, Mo., has been appointed manager at Richmond, Ky.

Mr. J. Benedict has been appointed manager at Vicksburg, Miss., vice S. G. Bentley, made manager at Knoxville, Tenn.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Edward J. Nally, vice-president and general manager of the company, is at Atlantic City, N. J., where he is passing a short period seeking rest.

Mr. E. W. Collins, superintendent at Cleveland, who has been in the hospital for nine weeks, is recovering and expects to leave soon for Cambridge Springs, Pa., or possibly will go South.

RESIGNATIONS AND APPOINTMENTS.

The following changes have occurred in the service of the Postal Telegraph-Cable Company of Texas:

Mr. Joseph Coffer, manager at Muskogee, Okla., has been appointed manager at Oklahoma City, Okla., vice O. M. Lowe, made manager at Little Rock, Ark.

Mr. P. S. Coleman, an operator in the Dallas office, has been appointed manager at Muskogee, Okla., vice Joseph Coffer, transferred.

Mr. P. H. Fennell, manager at Monroe, La., has been appointed manager at McAlister, Okla., vice D. L. Edwards, made manager of the Hot Springs, Ark., office.

Mr. W. I. McFatter has been appointed manager at Pine Bluff, Ark.

Mr. W. E. Griffitts, manager of the Hot Springs, Ark., office, has been appointed manager at Fort Worth, Tex.

The Cable.

Cable communication is interrupted January 28, with:

Venezuela — Jan. 12, 1906.
Hayti — Jan. 18, 1908.
All offices closed to international traffic except Cape Hayti, Mole St. Nicholas and Port au Prince.
Demerara — Jan. 25, 1908.

Theophilus Smith, chief of the submarine cable laying department, of W. T. Henley & Co.'s cable works, North Woolwich, England, died suddenly on December 24, 1907. He assisted in the laying of the 1869 Atlantic cable. Following that his experience in submarine cable work was extensive and varied. Among the numerous cable-laying expeditions in which Mr. Smith took part, holding the leading position in those during the greatest portion of his career are the following: Havana-Key West; the French Atlantic cable on the steamship Great Eastern; British Indian cable; German-Norwegian cable; Aden-Zanzibar; Persian Gulf; Galveston-Vera Cruz; Cadiz-Teneriffe; Lima-Valparaiso; West Coast of Africa cables; the cables of the Cie. Francaise des Cables Telegraphique in the West Indies and along the coasts of Dutch and French Guiana and Brazil; a cable in Japanese waters, and, lastly, a line connecting Vancouver with the mainland.

Annual Dinner of the Commercial Cable Company Staff.

The seventh annual staff dinner of the Commercial Cable Company was held at the Hotel St. Denis, New York, on Saturday evening, January 18. The staff was well represented, all who could be spared from duty being present.

Mr. H. Vickers presided. The committee of arrangements consisted of Messrs. P. Keating, J. Dunlap, F. J. Mills, John Shea and J. Weyrich. A fine menu was served, after which an attractive programme of entertainment was gone through with. The first toast offered was "The President and King," by the chairman, drunk standing, the entire assemblage remaining on their feet while the orchestra played Hail Columbia and God Save the King. Vocal music followed, selections being rendered by W. O'Keefe and A. H. Roberts. Mr. Morgan Williams, in replying to the toast "The President and Executive," paid a glowing tribute to the officials of the Commercial Cable Company upon the great work they have performed in linking the continents with a Pacific cable and more recently connecting Cuba by a direct cable. This toast elicited hearty and prolonged cheers for the cable officials.

Mr. James Power then sang most acceptably two baritone solos and was followed by Mr. W. Sinnott, who rendered a number of Scotch, Irish and German dialect songs, besides reciting Scotch dialect stories, all of which were received with laughter and cheers.

The next toast, "Our Annual Dinner," was proposed by Mr. E. L. Cohn, who, by the way, is a member of the Old-Time Telegraphers' and Historical Association. His remarks were of a humorous character and were frequently interrupted with applause and laughter. He said that he objected to the title of the toast to which he was expected to respond, for in no sense was it his annual dinner. He reminded the company that he had his dinner every day in the year, and moreover he did not have to wait for it. Then he thought the staff would agree with him if he expressed the opinion that the present occasion was not their annual dinner. Respecting the gastronomic habits of the committee, however, the speaker seemed unwilling to commit himself. The speaker took exception to the oft-repeated remark heard with great regularity at these annual repasts that their "object was to promote good feeling, brotherly love and harmony among the members of the staff, and to bring them in closer relations with our officials," because the motive could not be any other than to excite attacks of indigestion in the human anatomy accustomed to daily menus of "beef and," or tea and toast. The "brotherly love" phrase might, he said, be all right, but he thought it found a more correct expression in enabling the diners to place themselves on view with a clean shave and dressed in their Sunday clothes.

He concluded by hoping that the annual dinner would become a permanent institution.

Mention should be made of the piano playing by L. S. Fisher, who accompanied all the singers except Mr. Sinnott.

During the progress of the dinner the orchestra played all the latest popular airs, in which the assemblage joined, and it was well past midnight when "Auld Lang Syne" was sung and the affair passed into history.

The Railroad.

C. S. Rhodes, of Indianapolis, superintendent of telegraph of the Big Four lines, has had the Lake Erie and Western telegraph lines added to his jurisdiction. Heretofore it has been under the Lake Shore supervision.

The New York, New Haven and Hartford Railroad Company has opened a school of telegraphy at the terminal station, Boston, and it is under the direction of former Chief Train Dispatcher Thomas F. Ryan. This school was opened for fitting young men for operators on account of the new law which becomes effective March 1 next, making shorter hours for railroad telegraphers, which will necessitate a larger number of these employees.

The Burlington system of railways has recently adopted a telephone system of train despatching between Aurora and Mendota, Ill., a distance of forty-six miles. Business is heavier in this section than anywhere else on the Burlington division and there has been considerable difficulty in handling the trains as quickly as desired, but with

the telephone system the danger of all misunderstandings between the train despatcher and operator has been minimized, says the Telephone Journal, and a much clearer understanding is to be had telephonically than has been possible telegraphically, with a corresponding decrease in the liability of accidents. This idea in relation to the despatching on the Burlington system has been original with F. C. Runnells, the chief train despatcher at Aurora, and is the first experiment of the kind that has been attempted on that system.

RAILWAY SIGNAL ASSOCIATION.

The regular meeting of this association was held at the United Engineering Societies Building, New York City, on January 14, President A. H. Rudd in the chair.

The first discussion was that on specifications for the installation of automatic block signals, taking up the report which was presented at the Milwaukee meeting last October, but which was not then discussed.

In the afternoon the association listened to a paper by T. R. Cook, an electrical expert of the Pennsylvania lines west of Pittsburg, on "Economy in the Use of Storage Batteries in Operating Signals and on the Details of Caring for Such Batteries." Statistics of service and of experiment were presented, showing the cost of operating signal motors by power derived from a power house conveyed by a line wire, and by primary batteries situated at the signals; and the principal conclusion was that for the average double-track road the cost by the power line will be thirty per cent. less than with the use of gravity batteries.

In the discussion Mr. W. H. Elliott thought that Mr. Cook had figured the cost of using gravity cells too high, and that the saving by using the power line would be greater than he had shown. Besides this there is a marked advantage in using a power line, with storage batteries, because of the greater freedom from failures.—The Railroad Gazette.

Obituary.

William M. Mallett, of Sharon Springs, N. Y., formerly manager of the office of the Western Union Telegraph Company, at Syracuse, N. Y., from 1880 to 1884, died of cancer in New York on January 12.

C. W. McReynolds, aged sixty-five years, an old time telegrapher and a member of the Society of the United States Military Telegraph Corps, while in a despondent mood recently shot and killed himself at his home in Denver, Colo.

Richard Fischer-Treuenfeld, engineer and Paraguayan consul-general, died at Dresden, Germany, December 29, 1907, aged seventy-three years. The deceased was an authority on military telegraphs, and at one time was major-commanding the Paraguayan military telegraph corps. For many years he was associated with Messrs. Siemens Brothers. A short time ago he published an interesting article entitled "Twenty-five Years' Progress of Military Telegraphy."

Frank Hughes, aged forty-five years, for many years an employee of the Western Union Telegraph Company, and formerly manager of the Houston, Tex., office, which he relinquished in 1906 on account of impaired health, died in that city on January 11.

Job Anderson Munson, aged sixty-six years, manager of the Western Union office at Herrs' Island stockyards, Pittsburg, for the past thirty-five years, and a well known operator in Western Pennsylvania, died in that city January 14. He served in the United States Military Telegraph Corps throughout the Civil War. He was a member of Duquesne Commandery, K. T., Syria Temple of Shriners, Hailman Lodge No. 321, F. and A. M., Pittsburg Consistory, and the Friendship Avenue Presbyterian Church.

Robin D. Weeks, aged thirty-one years, wire chief of the Western Union Telegraph Company at San Francisco, Cal., died in that city on January 19 from blood poisoning, the result of a puncture by a rosebush thorn. Mr. Weeks has been in the employ of the Western Union company for a number of years, working his way up from the key to traffic chief, wire chief, and rumor had it that another promotion was in sight had he not been taken away. He leaves a wife and a daughter, four years old, besides many friends to mourn his loss. He was the agent at San Francisco for Telegraph Age and was held in high regard by its publisher.

George F. Randolph, a member of the operating staff of the Postal Telegraph-Cable Company, New York, died of pneumonia at his home in Brooklyn, on January 15. He was born at Plainfield, N. J., October 13, 1858, and entered the telegraph service at that point as a night operator. In 1878 young Randolph was placed in charge of a branch office of the Western Union Telegraph Company at Harlem, New York City, afterward entering the service of the American Rapid Telegraph Company. Later he became manager of Western Union interests at Asbury Park, N. J., subsequently entering the employ of the Baltimore and Ohio Telegraph Company at New York. When this company was absorbed by the Western Union Mr. Randolph opened the office of the New Jersey Electrical Company, at Newark. Returning to New York, he entered the service of the Postal company, in which local employ he had since remained, except for a year or more spent at Denver, Colo., in the same interests. Funeral services were held in Brooklyn, Saturday evening, January 18, the burial being at Plainfield, N. J.

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

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

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

Electrical Engineer Canadian Pacific Railway's Telegraph Names Telegraphers Who Have Risen to High Official Position in That System.

Editor TELEGRAPH AGE:

In the issue of Telegraph Age for January 16 appears an item naming several officials of the Chesapeake and Ohio Railroad Company who started life as telegraph operators. The official lists of many other railroads will show similar advances from the key to the occupancy of high positions. Here is a list of them on the Canadian Pacific Railway: Sir William C. Van Horne, chairman of the board of directors; Charles R. Hosmer, director, and J. W. Leonard, assistant general manager.

The record also includes all of the general superintendents of the system, as follows: William Downie, Atlantic division; H. P. Timmerman, Eastern division; F. P. Brady, Lake Superior division; R. R. Jamieson, Central division; A. Price, Western division, and R. Marpole, Pacific division. The latter, I understand, was an operator in Great Britain.

Of the thirty-four superintendents and assistant superintendents, sixteen were operators, as follows: D. W. Newcombe, St. John, N. B.; T. Williams, Farnham, Que.; H. B. Spencer, Ottawa, Ont.; R. McCormick, Montreal, Que.; C. Murphy, London, Ont.; A. L. Smith, Toronto, Ont.; G. Spencer and J. H. Hughes, North Bay, Ont.; W. B. Way, White River, Ont.; J. G. Taylor, Fort William, Ont.; A. E. Stevens, Winnipeg, Man.; G. E. Graham, Souris, Man.; J. S. Lawrence, Medicine Hat, Alta.; E. L. Chudleigh, Strathcona, Alta.; J. T. Arundel and J. Goodfellow, Vancouver, B. C.

The other eighteen graduated from the engineering staff—trainmen, stenographers, etc. A fine register, is it not?

W. J. CAMP.

Montreal, January 23, 1907.

One Letter Caused Bad Error.

The New York Times apologized in its issue of January 21 for an inadvertent statement due to a peculiar telegraph error, appearing in its columns some time ago. It appears that that journal printed an article relating to the estate of John H. Sutphen, ex-County Clerk of Queens County, N. Y., unintentionally reflecting upon Howard and Harry Sutphen, of Jamaica, L. I.

The Times says: "The article, which was filed in a telegraph office at Jamaica, quoted the estate's lawyer as saying that he held in his possession for the widow 'numerous unpaid notes.' A great many of these notes, the printed article went on, 'were given by her sons now living in Manhattan and Queens Borough.'

"The regular correspondent of The Times filed a despatch at the Jamaica telegraph office, which said that a great many of these notes 'were given by persons now living in Manhattan and Queens Boroughs.' In the telegraph code four dots stand for h, and five dots stand for p. Through a mistake in sending or a mistake in receiving this message the 'p' was changed to 'h,' thus transforming 'persons' into 'her sons.'"

Censorship of News from the Battleships.

The rules that guide the newspaper correspondents who embarked with the Pacific fleet of war vessels are thus laid down in a letter to them from Admiral Evans:

"While the commander-in-chief is glad to welcome you to the fleet, he is obliged, in the interests of the government, to impose certain restrictions upon you during the time you are on board ship.

"These restrictions are that you will bind yourself:

"(a) To submit all matter that you may desire to send to your press associations to Commander Chandler, U. S. N., and not send out anything which he thinks should not be sent.

"(b) To refrain from giving out for publication either while still with the fleet or later any information that might be of value to a possible enemy, such as detailed descriptions of mechanisms or of methods of drill, method of handling fire control, tactical maneuvers, score at target practice, etc.

"(c) To conform to all regulations and customs of the service in so far as they may apply to your life aboard ship and your associations with the officers and men of the navy.

"(d) To send nothing of any kind to any other destination than the press association you represent, with the understanding that all such matter is to be equally available for all members of such association. This will be construed to forbid you mailing or sending any special matter to any newspaper, periodical or magazine so long as you remain with the fleet.

"The commander-in-chief relies upon your patriotism to insure that no information of value to an enemy in time of war shall be allowed to become public as a result of your presence on board ship."

What Is a Bond?

The "Wall Street Summary" in answering this question says:

"What is a bond? The simplest way to answer this direct and elementary question is, perhaps, to show the difference between a share of stock, a bond and a mortgage. The owner of a home worth, say, $2,000 wishes to borrow $1,000 and requests a savings bank to loan the amount on the home. The money is advanced by the bank and an instrument styled a mortgage is executed by the owner (mortgagor) and given to the bank (mortgagee) as collateral for the money advanced. In case of default in the interest payments this mortgage may be foreclosed at sheriff's sale, and the property sold to satisfy the original debt, interest and costs. A real estate mortgage is, therefore, a debt secured by real estate. Suppose, however, a railway company owning 10,000 miles of road, terminals and equipment wishes to borrow $100,000,000. The operation is obviously not so simple as borrowing $1,000 on a little homestead. An individual or institution willing to make a permanent loan of $100,000,000 is hard to find. The company, therefore, mortgages its property for $100,000,000, but divides this loan into pieces, denominations or units of say $1,000 each. These denominations or slices of the corporation's large debt are called bonds. Bonds are, therefore, debts of the issuing corporation secured by a mortgage on the company's property.

"A stock, however, does not represent a debt, but is a certificate showing that the owner is a partner in the enterprise. A stockholder participates in the profits and shares the losses. Bonds, whether secured on real estate, mines, factories, railroads or other assets are debts, the principal and interest of which must be paid when due. Stocks, however, are equities and receive no returns unless profits are distributed in the form of dividends."

Business Notice.

The Weston Electrical Instrument Company announces that they are offering two new patterns of goods, for use as ammeters and voltmeters on direct current switchboards, under the distinguishing name of "Eclipse." They are of the "soft-iron" or "electro-magnetic" type. In presenting these instruments the company states: "In the accuracy of their indications under all the widely varying conditions of practical use, they very closely approach the Weston permanent magnet switchboard instruments, but, of course, these Eclipse instruments do not have evenly divided scales. The scale divisions are, however, excellent for soft-iron instruments. They necessarily take more power to operate them than do the Weston permanent magnet instruments; but they nevertheless require very little power. In sensitiveness, or power to promptly respond to minute changes in potential difference, or to minute changes in current strength, they also closely approach the Weston permanent magnet instruments. In their dead-beat qualities they also closely approach the Weston permanent magnet type of instrument."

These instruments afford another addition to the high grade goods manufactured by this company

Magnetic Oscillators as Radiators in Wireless Telegraphy.

Oscillators of the open or Hertzian type are usually called electric oscillators since the effects produced in the external field are to a large extent determined by the potentials of the free electric charges which alternately make their appearance at the open ends. If, however, the oscillator consists of a metallic circuit completed by a condenser, the plates of which are very near together, the effects on the external circuit are mostly or largely determined by the current in the circuit, and little, if at all, by the condenser-plate charges, because these, being of opposite sign and near together, neutralize each other's effects in the field. Such a closed, or nearly closed, circuit is called a magnetic oscillator.

Orrin S. Wood, Sender of the First Newspaper Dispatch from Washington.

Few men are better equipped with facts relating to the telegraph and to the personnel of newspaper life as it has existed at Washington during the last fifty years and more, than William H. Young, night chief operator at the capital of the Western Union Telegraph Company. A frequent contributor to the press, he is generally pretty sure of the statements he makes for publication, yet Orrin S. Wood, the veteran telegrapher, who reached his ninetieth year on December 14 last, and who consequently possesses a memory based on personal experience antedating other telegraphic authorities, points out an error in Mr. Young's very interesting article appearing in the January 16 issue of Telegraph Age. Mr. Wood says:

"In the article, 'Old Newspaper Row,' Mr. Young, one of our old-time telegraphers, states that the first dispatch by wire from Washington to a newspaper was sent in 1853 by William B. Shaw, to the New York Herald. This is an error of nine years, for in 1844 I sent most of the news received at Washington of President Polk's election to the Baltimore American; and through the following winter I sent reports of the proceedings of Congress to the same paper during the session of 1844 and 1845, for which, I may add, nothing was paid for transmitting. On the fifth of March, 1845, I left Washington to meet the late Hon. Ezra Cornell in New York to arrange for building a telegraph line between New York and Philadelphia."

To Show Time of Filing and Receipt of Telegraph Messages.

The state railroad commission of Georgia on January 10 passed an order requiring that the exact time of filing and receipt in the delivery office shall be shown on all telegrams delivered in that state. While the order does not so specifically state, it is understood its application will be only to telegrams between Georgia points. It is not expected that any effort will be made to make it cover interstate business. The order will go into effect after due notice has been given by publication of the commission's circular. It is not stated whether or not the telegraph companies will obey the order.

The Telegraph in Hungary.

At the end of 1905 the telegraph system in Hungary comprised 23,718 kilometers of line, and 128,315 kilometers of wire; 82,785 of the latter were the property of the state, and 42,245 belonged to railways, while two hundred and seventy-four were owned by private undertakings. The system represents an increase over 1904 of 282 kilometers of line and 4,181 of wire. Two new circuits were opened, one between Budapest and Berlin, and the other between Budapest and Bukarest. The number of offices increased by one hundred and six, from 3,707 in 1904 to 3,813 in 1905, there being one office for every 5,049 inhabitants; 1,871 were owned by the state, 1,918 by railways, and twenty-four by private undertakings. Inland traffic showed an increase of 220,184 telegrams over the previous year, the total number being 5,927,643, as against 5,707,459. International traffic claimed 3,073,369 telegrams, of which 1,602,171 were dispatched, and 1,471,198 received. There were also 532,850 telegrams in transit, making a grand total of 9,533,862 telegrams, or an increase over the previous year of 418,642 telegrams. Increases occurred in all classes of traffic mentioned.

The Telegraph in China.

At the end of 1906 the imperial Chinese telegraph administration had a system of 22,419 miles, with 34,473 miles of wire and 946 nautical miles of submarine cable. There were 379 offices, of which sixty-two were open day and night, the others during the day only. The number of instruments in actual use was 768. The general operating staff consisted of 3,175 men, while the inspectors and linemen amounted to about 2,400. In addition to this equipment there are many special provincial lines usually constructed by the administration, but worked and managed independently by the provincial authorities. A number of foreign companies have connections with China. There is a French cable at Amoy; a German cable from Shanghai to Kiaochow and Chefoo, and a third cable, partly Chinese, from Chefoo to Port Arthur. The last was cut during the war between Russia and Japan, and is not yet repaired. China also has telegraphic connection with Burma, Indo-China, and Russian Siberia.

War Department Telegraph Staff.

Mr. David Homer Bates, of New York, writes: "I take pleasure in sending you a framed picture of the Civil War department telegraph staff, taken May 31, 1907, which I told you sometime ago was being finished for your sanctum sanctorum."

This picture is a finely executed photograph and bears the tablet giving the names of General Thomas Thompson Eckert, chief; David Homer Bates, manager and cipher operator; Charles Almerin Tinker, cipher operator, and Albert Brown Chandler, cashier and chief operator.

Representative E. W. Saunders, of Virginia, offered a resolution in the House of Representatives on January 22 for the appointment of a committee "to investigate the Western Union and Postal telegraph companies in their relations toward the American people as public utility corporations."

The former president of the American Telephone and Telegraph Company, Frederick P. Fish, tells a Boston audience that "competition, the life of trade in the old days, is almost the ruin of trade under conditions existing to-day."

Important Subjects Treated in Back Numbers.

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

Adjustment of Relays and Sounders .....Oct. 1, 1902
Alternating Current Transformer for Quadruplex, W. H. Jones .....Mch. 1-16, 1904
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Use of Modern Telephone as Applied to Railroads.....Jan. 16, 1905
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Wheatstone Bridge, F. W. Jones .....Nov. 16, 1906
Wright Keyboard Transmitter and Printer, R. Hitchcock..Apl. 1, 1906

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Montreal, Que., June 24, 25, 26, 1908.

Commercial Cable Company meets the first Monday in March, at New York.

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

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at Detroit, Mich. Time to be chosen later.

Railway Signal Association will meet in 1908 at a date and place to be named later.

Old Time Telegraphers' and Historical Association, will meet at Niagara Falls, N. Y., in 1908, at a date to be named later.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Fort Worth, Tex., on June 18, 1908.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

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

Telegraph Age.

Entered as second-class matter at the New York, N. Y., Post Office.

Published on the 1st and 16th of every month.

TERMS OF SUBSCRIPTION.

One Copy, One Year, in the United States, Mexico, Cuba, Porto Rico and the Philippine Islands . $1.50
Canada 2.00
Other Foreign Countries 2.50

ADDRESS ALL COMMUNICATIONS TO

J. B. TALTAVALL, - Editor and Publisher,
253 BROADWAY, NEW YORK.
E. H. BOWEN, Associate Editor.

W. N. GATES, Special Adv. Agt., Garfield Bldg., Cleveland, O.

CABLE ADDRESS: "Telegage," New York.
Telephone: 4143 Cortlandt.

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NEW YORK, FEBRUARY 1, 1908.

Corporate Management.

The pendulum of so-called "reform" has swung so far in the direction of legislative interference with corporate management as to clog the wheels of industry and work injury in the body politic, rather than to confer any compensating means of relief. The disastrous results of much mischievous meddling are unfortunately everywhere apparent. For, not only is legitimate enterprise being checked and operation curtailed, but such unwise interposition as we are witnessing and have experienced at the hands of individual state law-making bodies in placing hindrances and stumbling blocks in the way of railroad corporations, for example, is destroying confidence, the single warrant guaranteeing stability and security in all human affairs. The invective so frequently uttered against corporations, whether railroad, telegraphic or otherwise, with which we are becoming too familiar, is both wrong and uncalled for, and as a rule is the expression of timid, or uninformed or demagogic minds. Because venality has been uncovered in certain fields of corporate business management—and where discovered should be sternly punished—it does not necessarily follow that all management coming under this head is bad. It is monstrous to force the implication as is being done by frequent legislative enactment, that men directing the affairs of corporations are unworthy of trust, for it is not true. Most of them who occupy such positions have reached these high offices because of long and careful training, the gift of capacity and business acumen fitting them to control and direct the vast responsibilities with which they are charged. Such men are not vendible; they are possessed with sterling integrity, and few there are who are qualified to rank as their equals in the world of finance and in the exercise of executive skill.

Corporations in this country—call them trusts if you please, for that is but another name for the united and contributory efforts of men engaged in promoting a common cause, are here to stay. We do not need to be told that in minor form they have long had previous existence. Their further extension is a natural development, conferring still greater benefits, civilizing in influences, for without them but slow progress would be made in the evolution of the world and the advancement of the race. In a word, the combination of many secures results denied to the few or to the individual. But these questions, important as they are, are academic, and should hold intelligent acceptance in the minds of all men. We would, however, in view of much that is current in speech and action to-day impose their further study and careful consideration upon all receptive understandings. For the frequent bitterness with which corporations, as such, are assailed, presents a feature of reactionary thought and purpose, alarming in its power to work injury—a bitterness that is without warrant inasmuch as it is calculated to strike venomously at the root of important business interests and undo much that has been accomplished for good. This feeling is further reflected and intensified in the manifestation of unstatesmanlike qualities governing legislative intellect and deed in dealing with this all-important and fundamental situation.

In the telegraphic field the incessant annoyance that the companies are subjected to by the imposition of municipal, county, state and national ordinances seeking to establish degrees of control and methods of unjustifiable taxation, are of a character with present-day manifestations of interference directed against corporations. It becomes a question, indeed, whether such obstructions placed in the way of the telegraph are not actuated more by motives of greed rather than directed by those of an honorable and disinterested public spirit. It would appear sometimes to the amazed observer to be a question of "stand and deliver"—the obnoxious corporations must be bled!

And yet it should be remembered in the case of the telegraph, as in that of the railroads and

all other corporations as well, that the stock of these incorporated companies is widely distributed, held in the hands of thousands, frequently by widows and orphans, to many of whom it affords the sole source of income. To strike at the companies by adverse legislation is to strike at individual welfare and thereby cause much suffering on the part of innocent persons. It should be the duty of the state to sustain and not pull down or impair the strength of incorporated industries. This would be the exercise of a high-minded form of patriotism.

No solution of existing questions affecting the public mind relative to the betterment of corporate management can be arrived at by any form of governmental ownership, for which we hear an occasional wild and ill-considered demand. What is already bad in management would become worse by the change, and stagnation, which means dry rot, would finish the rest. Fortunately the intelligent and practical thought of the country is not socialistic, and is adverse to any such procedure as government ownership as a means of settling alleged business ills. It is safe to say that public utilities will never become governmental appendages in these United States. Moreover, the attitude of the Congress is that of adamant against any such proposition.

Sir Wilfred Laurier, the Dominion Premier, pointed out in his exceedingly lucid and sane speech on kindred subjects recently brought before the Canadian Parliament that "It was undeniable that corporations had sometimes acted mischievously, but it was also true that corporations had been one of the most potent agents of the creation and distribution of wealth among all classes of the community. It was undeniable that corporate capital, corporate labor and corporate effort would do more than individual capital, labor or effort."

Sir Wilfred also remarked that the man who looked upon the question calmly and dispassionately must come to the conclusion that the interests which were served to-day by private enterprise were better discharged than they could be by the state. The question was as to a remedy, and he apprehended that the remedy was not to entrust the railways to the state. The true policy was to have the corporations subjected to the control of Parliament, which would see they discharged their duties properly.

The question of jurisdiction in this country is one of the highest importance concerning which the government may in the future be called upon to take action. There will be no public ownership, but if within the limits of control or regulation, particularly of interstate carriers, should the subject be taken up, it must be approached only on the broadest plane of philanthropy.

Anti-Futures Bill

The Anti-Futures Bill before Congress makes it unlawful to send or receive a message by telegraph or telephone line relating to foreign or interstate contract for future delivery of grain without intention to actually deliver the grain or both parties being obligated to the delivery of the grain. The violation entails the penalty of $500 to $1,000 for each case.

Section 2 makes it the duty of any party sending or receiving a message relating to a contract for future delivery of grain to furnish upon demand an affidavit to the other party that he is the owner, producer, or is legally entitled to the future possession of said grain by virtue of a contract for its future delivery, made by the owner thereof, also giving the name of the other party to the contract and the time and place where the contract was made, and the price, and has the bona-fide intention to deliver or receive respectively the grain so contracted. The failure to make such requested affidavit shall, in an indictment, be prima facie evidence that the message sent related to a contract without intention to deliver or receive the grain.

Section 3 makes it unlawful for telegraph or telephone companies knowingly to receive from or transmit to another state, territory or foreign country, any message relating to such prohibited contracts, under penalty of fine from $500 to $1,000 for each such message.

Section 4 makes it unlawful for telegraph or telephone companies knowingly to allow the transmission of messages relating to such forbidden contracts from one state or territory to another or to or from a foreign country if presented by a person in a commission or brokerage business or by a produce association unless such party shall have filed with such telegraph or telephone company an affidavit that the message does not and all such messages for the next six months will not relate to the contracts described.

Section 5 forbids any letter or publication containing a record or notice of transaction of an exchange wherein such contracts are described to be carried in the mails or delivered by any mail carrier and makes the party depositing such unmailable matter liable to penalty of $1,000 to $5,000 or imprisonment from one to five years or both.

Section 6 provides for the return of such unmailable matter to the post office from which it was sent.

The framers of this bill, unwittingly, perhaps, would, in the event of its becoming law, confer enlarged scope and power to the telegraph companies, inasmuch as it would give their conductors inquisitorial rights. The logical workings of such a law would be to subject customers to a system of scrutiny and close questioning, and all such would be required to furnish affidavits on demand. Telegrams could not, therefore, be received from clerks or messenger boys, principles only in all cases would be obliged to appear. Telegrams in cipher would necessarily be barred from the wires unless employees concerned in their handling were familiar with the code used. It is hardly likely that legislation of this character will ever be enacted into law.

Address of George Gray Ward at Memorial Services in Honor of Lord Kelvin.

In our issue of January 16 reference was made to the remarks of George Gray Ward at the memorial services held Sunday, January 12, in honor of the late Lord Kelvin. Mr. Ward dwelt at length on what Lord Kelvin had accomplished in his long and distinguished career to make submarine telegraphy the success that it is. Mr. Ward said:

Fifty years ago the world was waiting with profound interest the outcome of that gigantic enterprise which eventually culminated in the completion of the short-lived but all important first transatlantic cable of 1858. Two ships were required to carry and lay the cable, namely, the United States frigate "Niagara" and H. M. S. "Agamemnon." Lord Kelvin, then known as Professor Thompson, was the electrical engineer in charge on board the Agamemnon," and now just as the jubilee of that historic and epoch-making event approaches, we pay homage to his memory as the man whose contributions to the success of submarine telegraphy cannot be overrated, the man who, we may truthfully say without the slightest exaggeration, first made long ocean telegraphy possible.

As early as 1855 he outlined the laws of the speed of signals through ocean cables, and their connection with other natural forces. In 1856 he knew, what no one else seemed to suspect, that two or more insulated wires of any great length under one sheathing would suffer so much from natural induction as to be unworkable and he warned engineers of the danger of constructing such a cable.

He pointed out the great importance of using copper for the conductor of the cable, free from all traces of impurity, on account of the extremely deleterious effect such impurities had on its conductivity. Many scientists at the time were opposed to this theory, but his insistence on its correctness led to the appointment of a special commission under Dr. Matheson for the purpose of making a thorough experimental investigation of the question. The work of that commission is quoted to-day as a basis of comparison, and at that date revolutionized the manufacture of copper for electrical conductors.

Other scientific men of prominence had formed the opinion that the opposition of the cable to the passage of current on account of its great length and high resistance copper, could always be overcome by increasing the battery employed. But, Professor Thomson knew at the outset that to increase the voltage was to attack the subject from the wrong side.

In 1865 his theory of the practicability of only using a minute power, one that could be generated in the bowl of a clay pipe or even in a lady's thimble, was fully demonstrated. He saw the need of a delicate and extremely sensitive apparatus which would respond to such a feeble current, and invented for the purpose that beautiful instrument, the "mirror galvanometer." The mirror galvanometer was employed on the 1866 cable and not only increase its efficiency, but probably has done more to reduce electrical measurement to an exact science than any other instrument ever invented.

In 1869 he made a still further advance by inventing the siphon recorder, which writes every signal passing through a cable. This instrument was introduced on long submarine lines in 1869 and the speaker had the honor of being one of of the first to work it. It was then in a crude experimental form.

Lord Kelvin's early investigations were carried out at a time when no exact standards of measurement existed, and while the world owes him much for the direct results of his work for submarine telegraphy, the placing of these measurements on a permanent and scientific basis is equally important. Remembering all these difficulties his mathematical work inspires one with profound admiration and respect, feelings which are doubly intensified when one thinks of the marvelous ingenuity and versatility which provided all manner of simple and efficient expedients to overcome the many difficulties that arose in his experimental labors.

His marine galvanometer, specially designed for ships, made it possible to accurately test cables while being laid or repaired, the motion of the vessel having no effect upon it. His was the wonderful mind that devised the means of making the submarine cable complete its purpose of linking the hemispheres together.

At the jubilee of his professorship of natural philosophy at the University of Glasgow, in 1896, his own inventions were used to convey messages of congratulations from every quarter of the globe. He acted as electrical engineer during the manufacture and laying of the 1865-1866 and other cables. In 1866 he received the honor of knighthood and in 1892 he was made a peer. He devised many standard instruments for making precise electrical measurements. These have been used in all branches of electrical work. His quadrant electrometer is largely used in submarine cable testing and is a fine example of that care and forethought which provided so fully for all the requirements of a given problem. He taught telegraph engineers the principles of their business.

Lord Kelvin was a profound thinker and a busy worker in many diversified subjects, but his interest in cable telegraphy never flagged. With his death the cable world has lost one of the pioneers and the greatest mastermind of the art, whose work will remain as a prominent and lasting testimony of the exactness and thoroughness in which he carried out everything he undertook. Submarine telegraphy owes so much to the labors and genius of Lord Kelvin that no history of the ocean cable could be written that would not be largely a history of his investigations, researches, discoveries and inventions.

We who have worked submarine cables with his mirror galvanometer and with his siphon recorder, have tested them with his astatic galvanometer and with his electrometer, have calculated their speeds by his formulas, have located their faults by his methods and instruments, have sent out our repair ships guided by his compass, have taken our soundings in new waters by his sounding wire, how can we, who have been associated with him all these years, think of any part of our branch of applied electricity without at the same time thinking of William Thomson—Lord Kelvin. His figure looms so large with us that we deplore his death as an irreparable loss. Those who knew him and had the privilege of his friendship (and there must be many such here to-day), will dwell with deep and genuine regret on the sorrowful thought that his modesty and winning personality have passed into memory and will be seen no more.

After a life devoted with unsurpassed success to physical science and its practical applications, the mind that thought has fled to Him who bestowed it, the body that wrought rests among kings in that sacred pile where Britain lays and guards her illustrious dead, but his name and fame will endure world-wide, never to be forgotten while the sciences flourish.

Enlarging Telegraph Facilities at Denver to Accommodate Democratic National Convention.

General Superintendent Cook and Assistant General Superintendent McKisick of the Western Union Telegraph Company, together with Superintendent A. C. Thomas, of The Associated Press, recently visited Denver for the purpose of completing arrangements for telegraphic facilities for the Democratic national convention, which will be held in that city next June. The visiting officials met with the local committee and went over all of the arrangements thoroughly.

It is the intention to transform the basement of the auditorium into a big telegraph room and to have the operators work there and to arrange a system of pipes to carry the messages from the main floor of the auditorium to the operating room so that telegrams can be transferred without any trouble.

One of the greatest objections urged in the past against Denver as a convention city was that of lack of facilities for handling telegraphic matter. It was claimed that Denver could not handle that feature of the convention because it did not have a sufficient number of wires to carry so large a volume of business. The Western Union and Postal Telegraph-Cable companies propose to overcome this trouble. Wires will be strung from Denver to Cheyenne to connect with the transcontinental wires over the Union Pacific. They will also be strung to Colorado Springs, La Junta and Pueblo in order to connect with the wires running east over the Rock Island, Santa Fe and Missouri Pacific. Additional wires will be run over the Union Pacific to Kansas City and over the other roads to Omaha and also east until they come in contact with the wires running into the northwestern country by the northern route. In this way it is believed that the wire facilities will be ample to handle all business.

Gold and Stock Life Insurance Association Holds Annual Meeting.

The thirtieth annual meeting of the Gold and Stock Life Insurance Association was held in the Western Union Building, New York, January 20, and was well attended.

President Atkins said in his report: "Nineteen members who were on the roll with us a year ago have paid their last dues. This means a payment of $11,200 at $50 per month to their beneficiaries. It is not necessary to dwell on the good that these monthly payments have done during the past thirty years, nor on the good that future payments will do, until the call comes to the last man, but it is necessary that we should realize that it is only by adding to our surplus or reserve fund, that we can provide for the demands of the advancing age of our members."

Treasurer Dresdner's report showed gross assets of $21,179.31, from which deducting $6,900 in process of monthly payments to beneficiaries, leaves net assets of $14,279.31.

Secretary Dealy's report showed a membership of 1,147 at the close of the year, a loss of fourteen from the previous year, the unusual number of lapses being due to the depressing conditions that prevailed for a few months during the year.

The old board of officers were re-elected as follows: George W. E. Atkins, president; Gardner Irving, vice-president; W. J. Dealy, secretary; Lewis Dresdner, treasurer. Executive committee, G. W. E. Atkins, Gardner Irving, Herbert Smith, Lewis Dresdner, W. J. Dealy, Michael Breslin, Charles Shirley, T. A. McCammon and Albert J. Driver. Auditing committee, M. J. O'Leary, F. J. Nurnberg and J. J. Frederick.

The meeting concluded with congratulatory and enthusiastic addresses on the work already done, and on the prospects for future extension, by Messrs. C. P. Bruch, M. Breslin, M. J. O'Leary, G. Irving, W. L. Ives, and others.

Mr. J. C. Browne, of St. Louis, general foreman of telegraph of the Missouri Pacific Railway system, places this estimate on Telegraph Age: "The grand old Telegraph Age has been my standard bearer during the most active part of my life. Its columns have decided many problems for me, and it is a paper that I peruse with more interest than any periodical of the day. I do not wish to impress you with a burden of compliments to your paper, but I state candidly that it has been without question a strong adjunct to whatever success I have made in the telegraph business."

Representative Canadian Telegraphers.

ROBERT F. EASSON.

Robert Farmer Easson, superintendent of the commercial news and press department of the Great North Western Telegraph Company, Toronto, Ont., was born in Prinlaws, Leslie, Fifeshire, Scotland, in 1838. He went to Canada at an early age with his parents, and in 1849, entered the service of the old Montreal Telegraph Company at Toronto, as messenger and office

R. F. EASSON.
Superintendent Commercial News and Press Department, Great North Western Telegraph Company, Toronto, Ont.

boy, under John Parsons, manager, who, during the following season, resigned and was succeeded by H. P. Dwight, now president of the Great North Western Telegraph Company. In 1853 Mr. Easson, having become a full-fledged sound operator, removed to Chicago and engaged with the late Ezra Cornell, founder of Cornell University, to work in Chicago, making one of the half dozen operators then employed in that city. Subsequently he was transferred to La Porte, Ind., later to Plymouth and then to Logansport, that state. Upon completing a six months' term at the latter point, Mr. Easson returned to Chicago, where he remained until the fall of 1855, when, at the solicitation of Mr. Dwight, he returned to Toronto and again engaged with the Montreal Telegraph Company.

When Mr. Easson first arrived at Chicago the Morse system of telegraph was a crude and uncertain problem, having hardly emerged from the experimental stage. It certainly had not yet become a necessity, and it was far from a success in commercial and social life. Several of the operators in the Chicago office read by sound, but old-fashioned registers, with running tape were used on some of the lines. Mr. Cornell was indefatigable in his endeavors to keep his lines working, but as these ran along the highways, through the woods and across the prairies, they were frequently interrupted. Mr. Cornell spent much of his time in Chicago, and Mr. Easson, therefore, saw a great deal of that remarkable man. J. J. Speed, Henry O'Reilly, Judge Caton and other notable figures in the early history of the telegraph, were also frequent visitors to Chicago.

In 1859 Mr. Easson was appointed operator and Associated Press agent at Father Point, Que., his duties being chiefly to procure and forward to New York the foreign news despatches brought out by the ocean steamers, this being eight years prior to the successful operation of the first Atlantic cable. On leaving Father Point Mr. Easson returned to the Toronto office, and in 1864 became chief operator. This position he held until 1882, about which time the Great North Western Telegraph Company, having taken over the Montreal and the Dominion telegraph companies, he was appointed superintendent of the commercial news and press department, which position he still holds. Mr. Easson some years ago wrote a series of interesting articles on the early history of the telegraph. He has been fifty-nine years in the service.

DONALD E. HENRY.

Donald Eugene Henry, chief clerk to Isaac McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont., was born at Napanee, Ont., April 23, 1877. He entered the telegraph service at Toronto in the employ of the company with which he has since remained, in April, 1899. His first position was that of stenographer and general clerk in the office of H. P. Dwight, president and general manger, from which he was promoted in September, 1901, to be assistant to Mr. Dwight. Four years later, in September, 1905, Mr. Henry

D. E. HENRY.
Chief Clerk, General Offices, Great North Western Telegraph Company, Toronto, Ont.

was appointed to the post he now holds, the duties of which he is discharging so acceptably. With characteristic modesty Mr. Henry in referring to his career describes it as being "prosaic and uneventful," emphasized only by "honest, hard work."

So sad, so fresh, the days that are no more.

How a Banker Was Entrapped by an Alleged Wire-Tapping Game.

William F. Walker, the defaulting treasurer of the New Britain (Conn.) Savings Bank, whose defalcations amounted to nearly $500,000, told the following remarkable story to W. L. Rose, of the New York World, of his inveiglement and subsequent downfall by means of the too familiar wire-tapping game, by which he lost $300,000. One of the race wire-tapping swindlers, Whitney by name, "Big Al," who had make the acquaintance of Walker, said to the latter one day:

"I have a brother-in-law in charge of the racing department of the Western Union who can give me advance results on the races. He will hold up the returns to the poolrooms until he lets me know the result of a race and gives me time to lay a big bet. Then he lets the result of the race go in, we cash our bet and nobody is the wiser.

"Nothing could be simpler, but unfortunately all of my money is tied up and, for reasons which I cannot even tell you, I don't dare let my brother-in-law know how I am fixed. He gave me a tip on a real estate deal when the Pennsylvania Railroad was buying property for its terminal and I made $80,000 out of it. I am supposed to have that money now, but I lost it with all the rest of my ready cash in the stock market, and I can't take advantage of the chance."

Whitney went on to tell Walker in detail how easy it would be to beat the poolrooms with the co-operation of his brother-in-law, who, he said, was Mr. Mitchell. They would, he said, get the results of a race six minutes ahead of the poolrooms. All they had to do was to find a place where they could place bets large enough to make it worth while to take the risk.

It was arranged that Walker should meet the man described as "Mitchell." The next day, Tuesday, February 5, 1907, Whitney met Walker at the Grand Central Station at 12.20 P. M. They went to the Western Union Telegraph office, at No. 195 Broadway, and as they entered the lower hall they came upon an important looking man in his shirt sleeves.

"Why, hello, Al," said this man. "What do you want here at this time of day?"

Whitney introduced Walker, explaining that he was a friend of whom he had spoken.

"Well, we can't talk here," said the important looking person. They are holding a meeting of the board of directors up in my room now, but if you can wait and meet me over at Haan's cafe in an hour we can have a drink and a bite of lunch together and talk things over."

The man who posed as "Mitchell" was "Chicago Dutch," almost as notorious a swindler as Whitney and Gondorf. While Whitney and Walker were waiting for the man whom Walker supposed to be Mitchell, Whitney explained the terms on which they would have to do business. He told Walker he would have to be satisfied with one-quarter of the profits, as "Mitchell" would have to have one-half, and he, Whitney; would keep one-quarter for himself. But because of the certainty of making big winnings he told Walker that he ought to be satisfied as he ran no risk of losing anything.

"Chicago Dutch," posing as Mitchell, kept his appointment. It was explained to him that Whitney had his ready cash tied up in a real estate deal, but that Walker was a man to be depended upon and trusted under all circumstances—as good as gold and, incidentally, treasurer of a bank.

At first "Mitchell" made a pretense of being greatly disturbed because his brother-in-law had taken an outsider into their confidence. He refused to talk business until he had looked Walker up. They parted with the understanding that Whitney was to let Walker know as soon as arrangements had been made to put through their scheme.

Walker by this time was becoming enthusiastic over the easy money in sight and his only fear was that he would not be let in on the good thing. Whitney calmed his fears by telling him that "Mitchell," not knowing him, felt a little uneasy because he was not sure whether Walker could raise enough money to make the deal worth while.

"You go home and get $50,000 and bring it down here, and I'll see that you get a chance to place it," Whitney told Walker. "Come back tomorrow and I'll arrange another meeting with my brother-in-law. We'll let him see that we have the ready cash, and he'll go ahead and do business with us."

Walker, elated at the prospects, went back to New Britain, drew the money out of the bank and returned the next morning to New York. He met Whitney at the Hotel Belmont. An appointment was made with "Mitchell" and the three met again at Haan's. Walker showed him that he had the money with him and after some apparent hesitation "Mitchell" agreed to do business.

He told Whitney and Walker to find some house which would take any sized bet and as soon as they found such a place to let him know. Whitney was to call up his brother-in-law and give him the number of the telephone nearest to the place where the wager was to be laid. "Mitchell" suggested Canfield's, "Lou" Betts's and Frank Farrell's as likely places.

Whitney took Walker first to the places named by "Mitchell" as the banker supposed, but at each one there was found a "lookout" on guard who warned them away, saying the places were closed. These "lookouts" were, of course, in the employ of the gang and the houses at which they were posted were vacant buildings.

Finally, Whitney succeeded in learning that a place at No. — West Twenty-seventh street was open, but he was warned to be exceedingly careful, as the place was closely watched by the police. After many seeming difficulties they at last got into the house. They found a dozen men

playing faro and roulette. Whitney had a whispered conversation with the supposed proprietor and told the anxious banker it would be all right for that afternoon, but they might have to look for another place next day.

Whitney called up "Mitchell" and gave him the number of a telephone in a cigar store across the street, as Walker supposed, telling Walker that his brother-in-law had agreed to send them in the winner of one race that afternoon ahead of the poolroom returns, so as to see whether everything was all right.

Walker and Whitney waited in the cigar store until the latter was called to the telephone. "Mitchell," Whitney said, had given him Coltness as the winner in the sixth race at New Orleans. Whitney gave Walker $100 and told him to hurry across the street and get it down on the horse before the race was "closed."

Walker rushed up to Charley Gondorf, who played the part of the bookmaker, and tried to lay the bet, but was told that he must have made a mistake, that they did not take such small bets there. Whitney, however, came to Walker's rescue and persuaded Gondorf to accept the $100, "just for this time." He explained that Walker was a close friend of his and was accustomed to make larger bets, but didn't happen to have any more ready cash with him just then.

Coltness was a 10 to 1 shot. The horse won, of course, and Gondorf handed Walker $1,100, at the same time warning him not to trouble the house again unless he was prepared to make a bet worth while. Walker was told that bets of any size would be taken and that if the house found that it could not carry as much as was offered it would lay a part of it off with other rooms.

They notified "Mitchell" of the good news, and he told them to call him up the next morning and he would make arrangements with them for that day. They spent the night together in New York and early the next afternoon they were waiting at the cigar store across the street from the poolroom. "Mitchell" this time gave Whitney Molo B as winner of the second race at New Orleans at 15 to 1. He told Whitney, so the "steerer" said, to have Walker get his $50,000 down on the horse. They hurried across the street and had no difficulty this time in laying the wager.

Two minutes later the returns came in, and it was announced that Molo B had won. Walker was almost crazy with joy and excitement. He fell on Whitney's neck and kissed him on the forehead. He was waiting in line to cash his bet when it was announced in the poolroom that Molo B had been disqualified. Walker dropped into a chair as if he had been shot.

Whitney, of course, already knew that the horse had been disqualified, having been so informed by "Chicago Dutch" who was stationed in a real poolroom, and was fully primed as to what he should tell Walker. He sympathized with the banker and finally they made an appointment to meet "Mitchell" at dinner at the Hotel York that evening.

Whitney bought a racing edition of an evening paper and there, sure enough, they found the account of the disqualification of Molo B after it had won the race. Walker's suspicions were fully quieted by Whitney and "Chicago Dutch," but his experience cured him for the time being of a desire to plunge as heavily as he had done that afternoon. "Mitchell" agreed with him, and it was arranged that only $10,000 should be risked the next day.

Walker went back to New Britain and returned the next noon with $10,000. He was told that there might be trouble in the house in Twenty-seventh street, but that possibly they might be able to do business on the last race of the day. This was done so as to get a short odds horse and let Walker win, as they did not care to tie up too much of their money. They were playing him for a bigger game and wanted to inspire him with enough confidence so that he would risk all he had on one play.

As on the other days, Whitney was called to the telephone in the cigar store and, as Walker believed, was instructed to play St. Valentine, a 2 to 1 shot. With $20,000 in his pocket, $2,500 of which was his profit on the transaction, Walker of course only regretted that he did not bet more than the $10,000. Whitney also seemed to be despondent, telling Walker that perhaps every poolroom in the city would be closed in a day or two and their chances lost.

The three had dinner together that night to celebrate their winnings, and "Mitchell" took advantage of Walker's enthusiasm to warn him of the foolishness of taking such chances day after day when they might have cleaned up $300,000 that afternoon just as well as not.

Walker agreed with him and when he came back from New Britain the next day he had $125,000. Whitney took him to the Twenty-seventh street house as usual, but they found it closed and were told that every poolroom and gambling house in the Tenderloin was likewise shut up. There was one house, however, so Whitney told Walker, where a few select patrons were admitted to play the races only. They were directed to No. — West Fifty-second street, which Walker, in his ignorance supposed to be Canfield's.

They found the parlor of this house fitted up in the manner of a poolroom with Charlie Gondorf there making books. Whitney found a telephone, No. 5250 Columbus, at the corner of Eighth avenue. This time Walker himself answered the telephone and was told to risk everything on a horse named Minnie J. He lost no time in laying the wager at odds of 15 to 1. The race was at the Hot Springs track. When the returns came in it was announced that Ina Gray had won.

The banker was furious and Whitney appeared to be equally enraged that their scheme had so

miscarried. They rushed out to tell "Mitchell" how things had gone wrong, only to be accused of having bungled the job. "Mitchell" told Walker that he had mistaken the name over the telephone and that if he was not sure of the name he ought to have repeated it back. The whole blame was laid on Walker, and when they met at a hotel that night "Mitchell" went so far as to draw a revolver and threaten to kill Walker for his bungling.

"If I were sure you had bet that money right and were holding out on me, I would kill you on the spot," he told Walker. This threat was made in the grill room of the Hotel York.

Strange as it may appear, Walker was fully satisfied that his failure to win was due entirely to his own stupidity. He told the swindlers that night he was ready to take one more chance, but that he did not have any more ready cash and would have to negotiate some bonds. They told him they would fix that all right for him. Walker's only stipulation being that his name should not appear in the bond deal.

He returned the next day with a bunch of bonds and turned them over to Whitney, Fred Gondorf and Bob Nelson. The proceeds of their sale, as Walker supposed, were turned over to him, and the next afternoon, February 9, they got the name of Lens as the winner of the fifth race at New Orleans at 4 to 1. This time they used a telephone in the St. Paul Hotel, and to change their luck, as Whitney said, they went to another house, this time in Sixtieth street, a place given to them by "Mitchell."

Whitney here used the name of Jesse Lewisohn to inspire Walker with confidence. When they tried to enter the house at No. — West Sixtieth street, they were at first denied admittance, and when asked if they knew any one in the club, Whitney spoke of "Davy" Johnson and Lewisohn.

"I think Mr. Lewisohn is in," said the doorkeeper, and a moment later a man appeared who was addressed by Whitney as "Lewisohn." The "steerer" was greeted cordially and they were admitted. The man who posed as Jesse Lewisohn was "Mike" Farrell.

Walker was introduced to half a dozen well-dressed men in the house, and after they had had a few drinks together he was presented to the man who posed as bookmaker, who was "Johnny" Atkinson, a man well known in the betting ring at the tracks. He was told that he could make a bet of any reasonable amount, and happy in the thought that everything was arranged, they went out to wait for the tip from "Mitchell."

The banker risked $140,000 on Lens, after being almost forced to fight his way up to the cashier's window. He got 4 to 1, which he figured would give him enough money to make good all his losses and leave him independently rich for life.

"Lens wins!" was the announcement.

Walker was overjoyed. It meant that he would have $560,000 winnings, less what he would have to divide with Whitney and "Mitchell." But, as happened when he risked $50,000 on Molo B, something went wrong.

Before he had a chance to cash his bet it was announced that there had been a mistake in the "colors," that Lens, instead of winning, was not even in the money. Whitney rushed Walker out of the house, slamming the door behind him, and they hurried down to the Hotel York to meet "Mitchell."

While they were waiting Charley and Fred Gondorf dropped in and joined them at dinner. Charley Gondorf asked Walker in a casual way how he was getting on. Walker told him that he was done for; that he could not face his family and never expected to see New Britain again.

"I know I have been fleeced," he said, "but I am willing to take my medicine and end everything."

Gondorf took Walker to one side and talked alone with him for a long time, trying to cheer him up and promising to do everything possible for him, as he seemed to be a nice old man. Walker told him that even if he had back all he had lost it would not do him much good. Gondorf tried to induce him to go home, but Walker absolutely refused.

It was then arranged that Walker should send word to New Britain that he had committed suicide, which he did, but all the time his friends were mourning his death he was safe in the Hotel York.

The next day Gondorf took him to the barber shop under the Herald Square Hotel, and in the fourth chair from the front his beard and mustache were shaved off and his right eye was decorated with a patch. His hair was closely trimmed, and when he was provided with a new suit of clothes his best friend would not have recognized him.

Accompanied by Charley and Fred Gondorf Walker started the next day for Cuba, and with $20,000 in his pocket he was left in a little gambling house about two miles out of Havana, which was kept by a friend of the Gondorfs. Whitney went to London. Bob Nelson to Chicago and Mike Farrell disappeared.

The rest of the gang remained in New York, but so far none of them except Charley Gondorf has been arrested. Gondorf, as will be recalled, was arrested in the latter part of April and held in $20,000 bail for complicity in the swindle.

We desire to state that back numbers of this paper, those issued more than six months 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.

The Care of Callaud Batteries.

John C. Barclay, assistant general manager and electrical engineer of the Western Union Telegraph Company, has issued instructions for the care of callaud batteries by employees of that company. These instructions cover the subject so thoroughly that we give them space, inasmuch as they afford information to many of our readers who stand in need of just such instructions here imparted. Mr. Barclay says that an inspection of the callaud batteries used by his company has disclosed the fact that many of the battery men and others in charge are ignorant of the proper manner of taking care of these batteries, or are wilfully careless. In many cases the jars, shelves and floors have been found covered with sulphate of zinc, the battery interspersed with cells containing no sulphate of copper whatever, and connections badly corroded, thus offering a high resistance.

These conditions indicate a waste of material and an insufficient current furnished to the lines. For the information and government of battery men, the following instructions are given:

When new battery coppers are received, they should be placed where they will not be exposed to extreme heat, or to the sun, whether they are in a box or not. They should be kept in a temperature that will not dry out and crack the insulation on the stem. In extreme dry climates, it may be necessary to immerse the coppers in water.

Place the copper plate, unfolded, in the bottom of the jar, carrying the copper wire to which it is attached upward and out at the top. Fill the jar with water to a joint about one and one-quarter inches from the top. For a new cell put in six ounces of sulphate of copper (blue vitriol) and place the zinc in position as directed. This should cause the water to be about one-half inch above the zinc. If no zinc solution is at hand to start the battery, connect on a short circuit until fit for use.

The zinc and copper solutions in this battery are separated by their own gravity, and this separation is easily maintained if not overcharged or interrupted. The blue solution should not be permitted to come in contact with the zinc, but should be separated by a clear white color line. When this rises to the zinc it indicates too great a quantity of sulphate of copper for the amount of work done by the battery. As the water evaporates more or less rapidly it will be necessary to add a little more from time to time, to keep the zinc entirely covered with the solution.

When the zinc solution approaches full saturation the sulphate of zinc creeps over the zinc hanger and par to the shelving; at the first outward indication of this the solution should be reduced by drawing off about one inch of the white portion of it. The degree of saturation may be indicated by the hydrometer, and should not be permitted to rise above twenty-five degrees. If the inside rim of the jar is occasionally coated with oil or paraffine, this spreading of the sulphate of zinc is in a measure prevented.

In large offices, where a thousand or more cells are used, the labor of filling up the jars with water is considerable, and as a small quantity of oil poured on top of the solution prevents to a great extent the evaporation (thus economizing labor), a small portion of oil may be used.

Ordinary batteries from which four or five lines are worked should be thoroughly cleaned once in three weeks.

The average life of a No. 1 Crowfoot zinc is about one year. The average consumption of blue vitriol is about eight pounds per annum for each No. 1 cell. Coppers are not consumed, and their life depends largely on the manner in which they are used.

Carefully remove the zinc, scrape off the adhering matter and wash well. Save the clean part of the solution, and pour it back into the jar after the latter has been thoroughly washed. In replenishing the cells with vitriol none of the crystals or crushed vitriol should be allowed to remain in contact with the zinc. Examine all connections, making each one right and perfect. The shelves should be thoroughly cleaned before the cells are replaced, and care taken not to splash the water when refilling the jars.

The temperature of the battery room should never be permitted to fall to the freezing point, and, on the other hand, should not be kept so high as to produce rapid evaporation.

The Development of Wireless Telegraphy.

During the reading of a paper on "Wireless Communications Over Sea" before the Institution of Engineers and Shipbuilders of Scotland, remarks the Electrical Review, the author, Dr. J. Erskine-Murray, who is a wireless telegraph expert, gave some interesting figures regarding the use of this new method of communication. From data which he had been able to get together, he found that there are now 1,550 wireless telegraph stations in operation. Of these, 195 are in commercial land stations, 170 are on merchant vessels, 150 are installed in lighthouses, 670 are naval installations, and fifty-five portable military installations. These are all intended for actual service, with the possible exception of the military stations. The remaining 310 are experimental stations. There are, therefore, nearly 1,200 wireless telegraph stations in actual service, which is an excellent showing when one considers that the art is only about ten years old, and progress was necessarily slow at first.

Another significant statement was that a vessel can always keep in wireless communication with England as long as she is not more than seventy miles from the coast. We used to be told that a vessel sailing around Great Britain need never lose sight of a lighthouse, but to-day she can make a much larger circle and still keep in communication with land, which is more than mere seeing.

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

BY JAMES F. GORMLEY, OF BOSTON.

(Continued from issue of January 16.)

Wall street, in that part near to Broadway, in the late fifties and at the time of the breaking out of the Civil War, was the headquarters of the telegraph in New York. To one who is able to recall the appearance of the offices of that date, the receiving department sometimes being located on an upper floor, and compare all such with the immense and well equipped operating rooms with their great staffs of operators busily employed day and night, and housed in large buildings, especially designed for the purpose, the old conditions, viewed down the vista of retrospect, dwindle into small proportions. The period referred to was, so to speak, the provincial days of the telegraph. It was, however, destined soon to play an important part, and on a large scale, aside from its commercial uses, in providing a highly effective yet hitherto unknown quantity in aiding the operations of war. While up to this time the extension of the telegraph had been rapid, yet its advance had been, and naturally so, fragmentary in character, and its interests were divided. In this respect it lacked homogenousness. The business had, however, attracted to it men of intelligence and character, and the personnel of its operating forces ranked deservedly high. Many of the men of that day engaged at the key afterwards rose to distinction in the service. Neither ambition or opportunity were lacking to bar advancement. At 21 Wall street the New York and Washington House Printing Telegraph Company, where I was employed as an operator, had its headquarters; the receiving office of the Sandy Hook line was also located at this point, and here, too, was situated the office of the New York, Albany and Buffalo Telegraph Company. One of the operators attached to the latter, who afterwards attained recognition and place, was the late A. S. Brown. He subsequently became a superintendent of the Western Union Telegraph Company, general superintendent of the Mutual Union Telegraph Company, and later still electrical engineer of the Western Union Telegraph Company, a position he retained for many years, retiring from active service in 1902 on account of ill health. Mr. Brown died about a year ago. On still another floor of the building was found the National Telegraph Company, of which E. G. Ely was the manager. A Mr. Fish and a Mr. Porter were operators, and the line extended to Philadelphia, Pittsburg, Cincinnati, and so on to New Orleans. There were other telegraph offices further down Wall street.

At the time of which I write I worked the Washington wire. As it led to the national capital the circuit for those days was a heavy one. I had a temporary assignment to Baltimore to relieve Mr. Filer, and while in that city I worked alongside of John Lombard, between whom and myself developed a fast friendship. After my return to New York, political events preceding the memorable outbreak of the Civil War, were moving in rapid succession, and the wires were becoming more and more burdened with important despatches relating to the same. I remember with vivid clearness the John Brown episode at Harper's Ferry, Va., and how the occurrence fairly electrified the country, adding to the already excited state of public feeling. At the breaking out of trouble Governor Wise, of Virginia, with a company of state militia started for the seat of disturbance. In those days the business of the telegraph was usually suspended during the night time, as a rule the wires were not worked during the mid-hours of darkness. The John Brown tragedy provided an exception; it was an emergency case, and D. H. Craig, the general manager of The Associated Press at New York, instructed Mr. Fulton, the agent at Baltimore, to hold a wire open for the transmission of the expected news of the arrival of Governor Wise at Harper's Ferry, for the morning papers. When at length it was believed there was no chance of getting such a report, Fulton gave Craig "good night," and the message so received was delivered, the only remaining boy carrying the same being instructed that it would not be necessary for him to return. Shortly after, however, Baltimore called up the office with the request not to close, as news of a highly important character was coming through. Then followed a message announcing the arrival of Governor Wise and the soldiers at Harper's Ferry, the surrounding by the military of the barn in which John Brown had taken refuge, etc., all of which is a matter of history. It was startling information; something which the papers must necessarily have. I was alone in the office sitting with one boot on and the other off. Without waiting to adjust my foot gear, and grabbing up the despatch, I rushed down several flights of stairs to the street and then down Wall street, to The Associated Press office, my mad cap appearance of one foot booted and the other protected only by a stocking, creating asonishment to the few pedestrians I encountered on the way.

After I was transferred permanently to Baltimore, I used frequently to go over to Washington to help out on New York business. One night after closing the office, quite a party of us, including several newspaper correspondents, A. B. Talcott, the manager, "Pop," as we familiarly called him, and myself, called on the Hon. Anson Burlingame, the then newly appointed minister to China. He was a man then much in the public view, prominent in political life and highly esteemed. He was to leave Washington to start on his foreign mission on the following day. There was nothing especially memorable in this visit except the fact of the personal pleasure the call afforded me to meet so distinguished a citizen. I remember the interest expressed by Mr. Bur-

lingame on the subject of telegraphy, in which he showed knowledge, when he learned of Mr. Talcott's and my occupation.

(To be continued)

Book Review.

The "Manual of Wireless Telegraphy," by A. Frederick Collins, must be accorded a position in the front rank of works of this kind. As every one interested in wireless telegraphy is aware, there are numerous books on the subject; but while this is true, there is, as a rule, very little information available for those who are, or who desire to become, operators. In preparing this manual the purpose of the author has been to give detailed and explicit instructions for wiring the various types of sending and receiving apparatus now in general use, the adjustment of the instruments, tuning and syntonizing the circuits, testing the devices, and finally the management of ship and shore stations. If this book be carefully studied and the instructions followed, it may be said that many of the difficulties usually encountered can be overcome by the operator, and he will be able to send and receive messages with a greater degree of confidence and of accuracy and over considerably longer distances than would otherwise be possible. In the preparation of his book, Mr. Collins has sought information from numerous leading authorities on the subject whose names are familiar as household words. The volume is bound in cloth, contains 232 pages and is abundantly illustrated. The price is $1.50, and will be sent on receipt of same to any point in the United States, carrying charges prepaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

The "Twentieth Century Manual of Railway Station Service," by Frederick L. Meyer, author of the "Twentieth Century Manual of Railway and Commercial Telegraphy," treats its subject matter with the same clear perceptions of what is needed by those who wish to become station, freight, ticket and baggage agents, such as distinguish the latter work in discussing the question of telegraphy in its application to both commercial and railway needs. The telegraph operator who also fills the position of station agent, will find in this book an unusual amount of information not otherwise readily available. It contains a great number of blank forms, covering all phases of the business, general laws, classification of freights, and special methods, all of which are helpful to the agent, it being the kind of enlightenment he requires. The subject of the telegraph is not treated in this work, but the book, together with the volume by the same author devoted to telegraphy, together constitute a source of direction and aid of pronounced value, which the railway telegrapher and station agent seeking knowledge, will find it advantageous to possess. The book is bound in cloth and embraces 216 pages; price $1.25, on receipt of which it will be sent to any address in the United States, carrying charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

T. E. Moreland as a United States Military Telegrapher.

Theodore E. Moreland is a member of the operating staff of the Western Union Telegraph Company, at Pittsburg, .Pa. His telegraphic record dates back to 1860, when at the Outer Depot, Pittsburg, he was contemporary with Andrew Carnegie, who at that time was superintendent of the western division of the Pennsylvania Railroad. On the breaking out of the Civil War Mr. Carnegie became identified with the military telegraph, and in September, 1861, sent for Mr. Moreland, who in response to request became a member of the United States Military Telegraph Corps. In this capacity he saw much active service, his first assignment being at the headquarters of General Heintzleman at Fort Lyon, near Alexandria, Va. Later, on the Peninsula, he was stationed at Yorktown, Williamsburg and other points, and before Richmond during the seige of that city. He was at the second battle of Bull Run, an operator at General Fitz John Porter's headquarters, and at the court martial of the latter

THEODORE E. MORELAND.
Western Union Telegraph Company, Pittsburg, Pa.

for treason was called upon to identify despatches which passed between General Porter and General Pope, who then commanded the army. Mr. Moreland was always a firm believer in the loyalty and ability of General Porter and rejoiced when at last that officer was vindicated before his country. Eventually Mr. Moreland was captured by the enemy at Catlett's station, but was held in captivity only twenty-four hours, when, following his parole, he returned to his home. He was soon back again, however, and afterward was in service at the War Department. Mr. Moreland rendered efficient service to his country during the war period, and is remembered by his contemporaries not only as a skilful and resourceful telegrapher, but as a brave man.

When J. D. Reid Was a Telegraph Superintendent.

Sidney B. Gifford, of Syracuse, N. Y., sends us a little brochure, quaint of type and brown with age, which records a "Birthday Presentation to J. Douglas Reid, superintendent, March 22, 1858, by the employees of the New York, Albany and Buffalo Telegraph Company." It appears that in response to a circular note addressed to all offices by A. Cole Cheney, at that time of the Rochester office, inviting co-operation in making a birthday present to the superintendent, a number of beautifully bound volumes, gifts emanating from five separate sources of that telegraph system, were tendered to Mr. Reid. The booklet was issued to commemorate the presentation, a proceeding which was conducted by Mr. Cheney in behalf of his associates, and to preserve the correspondence incident thereto. The occasion was Mr. Reid's thirty-ninth birthday.

In the order given the gifts were made: "Harper's Illustrated Family Bible," from the employees of the Eastern division of the New York, Albany and Buffalo Telegraph Company; "History of the Highlands and of the Highland Clans," four volumes, described as a "birthday token of respect," from the "telegraph offices between Syracuse and Niagara Falls, on the Niagara Falls roads;" "The Republican Court, or American Society in the days of Washington," "with the kindest regards and best wishes of the Rochester office and offices of the Genesee Valley Line;" "Burns' Complete Works," from the Auburn, Seneca Falls, Geneva and Canandaigua offices; "Specimens of the British Poets," which was accompanied by an appropriate note, dated at Syracuse and signed by John D. Stone, E. Payson Porter and Sidney B. Gifford, Syracuse, and William O. Shelley, of Rome. The following resolutions accompanied these gifts:

Whereas, We, the employees of the New York, Albany and Buffalo Telegraph Company, in view of the approaching birthday of our esteemed friend and superintendent, J. D. Reid, deem it an appropriate occasion to express our high regard for him as a friend, and satisfaction with him as a superintendent; therefore be it

Resolved, That since he came among us we have had no cause to regret his official connection; that, while he has been obliging and accommodating in favoring us, we have reason to know that he has been sufficiently strict and exacting to meet the approval of the board and to protect the interests of the company.

Resolved, That it shall be our aim and object to assist him in his arduous labors and, if possible, render them less arduous by a prompt and faithful attention to his orders and wishes.

Resolved, That in the presentation of our slight offering on his birthday, we only manifest in a small degree our esteem for him and satisfaction with his superintendency. May he be spared to hail the recurrence of many birthdays, and many like and greater tokens of friendship from those under him.

Resolved, That we hereby authorize A. Cole Cheney, to attach our several names hereto, and present the same to Mr. Reid, with our best wishes for his health, happiness and spiritual welfare.

Unanimously passed by telegraph, March 19, 1858.

Mr. Reid made this acknowledgement, addressing "A. Cole Cheney, Esq., on behalf of the employees of the New York, Albany and Buffalo Telegraph Company":

My birthday I have usually spent alone, employing its hours in communion with the absent whose affection for me was sweetest, and partly in the quiet review of the years that have passed away. A portion of this one has thus been spent, but you have not allowed it to close with its accustomed uneventful tranquillity. You have come to me laden with gifts as beautiful as they were unexpected, and, I fear, undeserved. And here they are, now that I am left alone again, piled up before me, speaking to me of an esteem which I have truly aimed to secure, but had no conception, until now, was so really and cheeringly mine own.

And how kind and appreciative has been your selection of these tokens, so valuable as gifts and so grateful to my tastes. They are volumes I prized and intended at some early day to secure. I am pleased that my purpose was delayed, for now I shall be able to take them from their shelves with the double joy of their genial company and the memory of your regard. There are few sources of truer sunshine to the heart than a conscious place in the affection of those whom we ourselves truly esteem. Such it is now with me. Those gifts shed a brighter light upon me than does the unclouded moon which now beautifies the night upon which they are bestowed.

What shall I say in thanking you for them? It troubles me to arrange the expression of it. My heart is framing sentences which Webster gives me no aid in uttering. I can only thank you heartfully and sincerely, recognizing in these beautiful gifts not only your own valued kindness and estimation of me as a friend and officer, but also of His hand who embroiders all earthly sympathies with the consciousness that He gives them their chief delicacy and clothes them with their purest delight.

A further note was also addressed by Mr. Reid to Messrs. Stone, Porter and Gifford, of Syracuse, and Mr. Shelley, of Rome, in answer to the one accompanying their gift.

In his communication to Telegraph Age Mr. Gifford, in reverting to telegraphic conditions as they existed in the state of New York a half a century and more ago, says:

"In 1850 the O'Reilly line, using the Bain instrument, and the New York State Printing Line, using the House instrument, were built, each with two wires, between New York, Albany and Buffalo, and opened in the fall of that year, when there were three competing lines along this route. The O'Reilly line was acquired by the New York, Albany and Buffalo Telegraph Company (Morse line) in February, 1854, and the House line in August, 1856. There was no opposition from the latter date until the United States Telegraph Company opened its lines in 1863.

"Upon the consolidation in 1856 Mr. Reid took charge of the New York, Albany and Buffalo system, continuing as superintendent until some time in 1865, when he joined William Orton in the management of the United States system, which, through Mr. Orton's efforts, was merged with the Western Union in March, 1866, the Western Union and New York, Albany and Buffalo company having in the meantime been consolidated.

"The executive offices of the New York, Albany and Buffalo company were located at Utica, but Mr. Reid made his home in Rochester, where he had resided from 1837 till 1845, being associated in business with Henry O'Reilly part of

the time. Mr. Reid came from Scotland originally to Canada and was employed in a bank in Toronto during the so-called Patriot War in 1837, but being dissatisfied there he crossed to Rochester, where his subsequent connection with Henry O'Reilly led to his entering the telegraph field."

The Telegraph and Telephone in the Canal Zone.

W. J. Rodman, superintendent of telegraphs and telephones of the Panama Canal, sends to "Sound Waves" the following report, which shows how important a part the telegraph and telephone is playing in one of the greatest undertakings in history:

"Beginning with practically nothing, the telegraph and telephone department has to-day a line of eighteen wires from Colon to Culebra; twenty-four wires from Culebra to Panama, on iron rail poles along the railroad, and a line of eight to twenty-four wires from Bas Obispo to Pedro Miguel on creosoted wooden poles along the Canal prism. These wires are for the use of the excavation force in the Culebra cut, practically every steam shovel or other important unit in the cut being connected by telephone with engineering headquarters. It has established eleven telephone exchanges; installed eight hundred telephones, opened twenty-four new telegraph offices, making a total in all of thirty-two; erected twenty four-arm, iron mast, semaphore signals, with which has been established a manual block system with stations about two miles apart, with telegraphic communication from block to block.

"The wires are divided into uses as follows: eight for telegraph, three of which are used by the Central and South American Telegraph Company, one being in through circuit from New York to Buenos Ayres, leaving five wires for Zone use as follows: One train wire, one block wire, one through wire and two locals. There are also five pairs of telephone wires between Colon and Panama, with three additional pairs between Culebra and Panama.

* * * * * * * * *

"Three trunk lines, six wires, are of No. 9 copper wire: one trunk line, two wires, is of No. 12 copper wire; the telegraph and local telephone lines are of Nos. 9 and 10 double galvanized iron wire.

* * * * * * * * *

"The department has been called upon a great many times to make quick moves and changes in the lines. It has moved thirty-five percent. of the lines at different times and places, practically without interruption to communication. It has been called upon a great many times to have communication established quickly at different points without waiting for permanent work and material. This necessitated temporary work, to be later converted into permanent work without interrupting communication.

"The equipment installed is of the best quality. The instruments in use are the best made and the work done is better than is required in the United States. The weather and atmospheric conditions here are so unfavorable that it is essential to take precautions here that are altogether unnecessary in the states. Hard rubber for terminal strips must be used because wood exposed to atmosphere gathers moisture enough to cause current leakage and crossings.

"The extremely bad conditions here which would naturally cause undue cross talk from induction have practically been eliminated. Wherever possible, electric light wires have been run into the switchboards, placing four wires to six lights inside which are kept burning all night. The heat from the lamps keeps out moisture."

Mr. Tinker's Connection with the Bogus Proclamation Incident.

Editor TELEGRAPH AGE:

Reading the interesting article in Telegraph Age, of January 16, relative to the bogus proclamation, and Orton's account of the events transpiring at the New York end of the Independent Telegraph Company's lines, reminded me that I was "in it" at the Washington end, and, on reference to my journal of that date, I find a brief narrative which I will quote, assuming it may also be of interest to your readers:

"Wednesday, May 18, 1864.

"Great excitement in New York and throughout the country owing to the appearance this morning in the New York World and Journal of Commerce, of a bogus proclamation, purporting to emanate from President Lincoln, calling for 400,000 more troops and recommending a day for fasting and prayer for our country in her weakness. Secretary of State Seward contradicted it and pronounced it a forgery, and the Secretary of War (Stanton) ordered the arrest and confinement of the publishers; also military possession taken of the Independent Telegraph Company's lines over which it is supposed to have been transmitted from this city. Major Eckert with Colonel Wiswell, military governor, went down at noon and took possession of the offices of that company and placed me in charge of the main office on Pennsylvania avenue, between 12th and 13th streets. J. N. Worl, manager; Lock, chief operator, and Lithgon, Jacobs and Kanode, operators, with three clerks, are confined in the Old Capitol prison for examination. I remained in the office all the afternoon."

CHARLES A. TINKER.

Brooklyn, January 18, 1908.

The Dominion Minister of Public Works has stated in the House of Commons, that the receipts of the Yukon telegraph system from March 31 to December 11, were $52,725, the expenses $136,188, and there had been no expenditure on capital account.

This is a good time to begin a subscription to Telegraph Age, $1.50 a year.

Serial Loan Association and Statement.

At the annual election of officers of the Serial Building Loan and Savings Institution of New York, held January 14, in the office of the corporation, 195 Broadway, New York, the following ticket was elected: J. C. Barclay, president; James R. Beard, vice-president; E. S. Butterfield, treasurer; E. F. Howell, secretary; J. B. Sabine and Alexander J. Schem, attorneys. Directors, F. J. Scherrer, J. B. Taltavall, T. A. McCammon, M. J. O'Leary, W. H. Jackson, J. F. Nathan, G. H. Schnitgen, M. S. Cohen, J. A. Hill, M. W. Rayens, T. A. Brooks, E. E. Brannin, G. W. Blanchard, F. C. Leubuscher, J.T. Laidlaw, J. T. Mulhall and W. J. Quinn.

The forty-sixth semi-annual statement of the Serial Building Loan and Savings Institution for the six months ended December 31, 1907, was as follows.

ASSETS.

Cash on hand	$2,057.54
Loans on mortgage	475,956.82
Loans on shares	7,995.00
Land contracts	17,521.67
Real estate	13,250.59
Advances	1,906.36
	$518,687.98

LIABILITIES.

Instalments	$292,231.00
Earnings credited	64,554.73
Juvenile savings	267.89
Matured shares	49,000.00
Prepaid shares	31,200.00
Borrowed money	36,353.80
Due on loans	10,050.00
Reserve	23,000.00
Undivided earnings	12,030.56
	$518,687.98

ELECTRIC BUILDING LOAN AND SAVINGS ASSOCIATION.

The annual election of the officers of the Electric Building Loan and Savings Association, of New York, was held January 10 in the office of that corporation, 253 Broadway, New York, when the following ticket was elected: J. J. Whalen, president; James R. Beard, vice-president; E. S. Butterfield, treasurer; Edwin F. Howell, secretary; John B. Sabine and Alexander J. Schem, counsel and attorneys. Directors, Edward Reynolds, M. J. O'Leary, W. H. Jackson, Eugene P. Tully, J. B. Taltavall, M. W. Rayens, T. E. Fleming, M. M. Davis, F. C. Leubuscher, G. W. Blanchard, G. H. Schnitgen, C. F. Leonard, M. S. Cohen, P. O. Purcell and J. T. Mulhall.

The thirty-fourth semi-annual statement of the Electric Building Loan and Savings Association for the six months ended December 31, 1907, was as follows:

ASSETS.

Mortgages	$37,465.24
Stock Loans	250.00
Land contracts	3,980.84
Advances	94.34
Cash	469.63
	$42,260.05

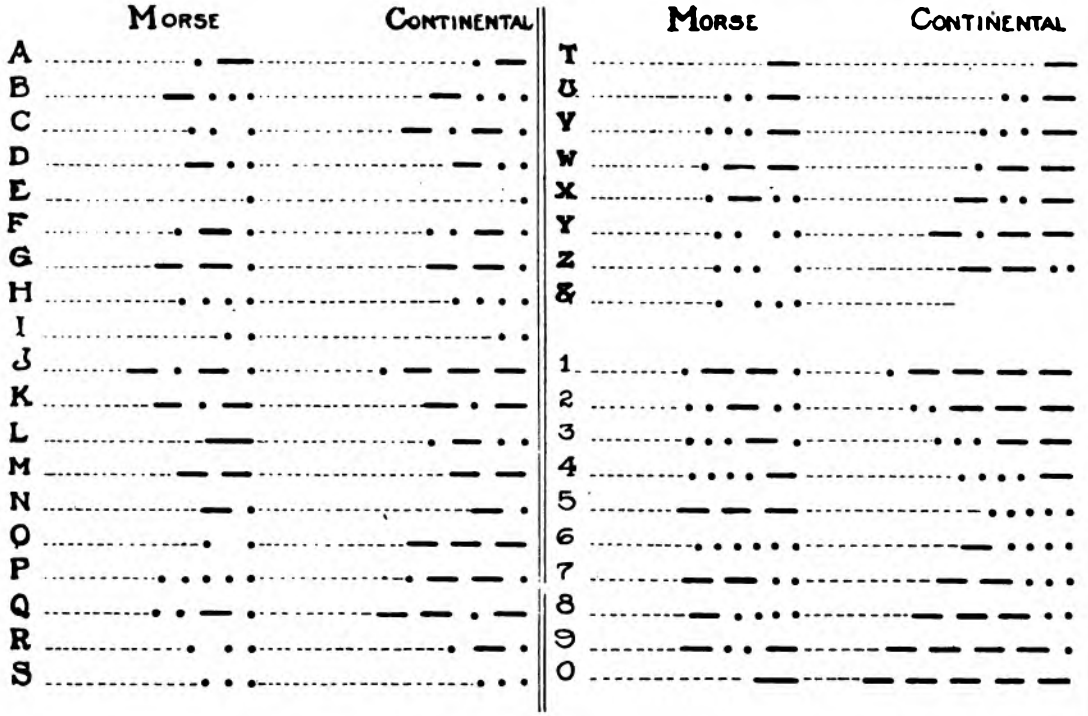
LIABILITIES.

Subscriptions	$36,964.16
Contingent fund	1,217.67
Borrowed money	3,100.00
Undivided earnings	978.22
	$42,260.05

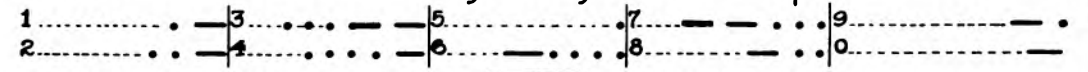
Donald McNicol on the Wireless Telephone.

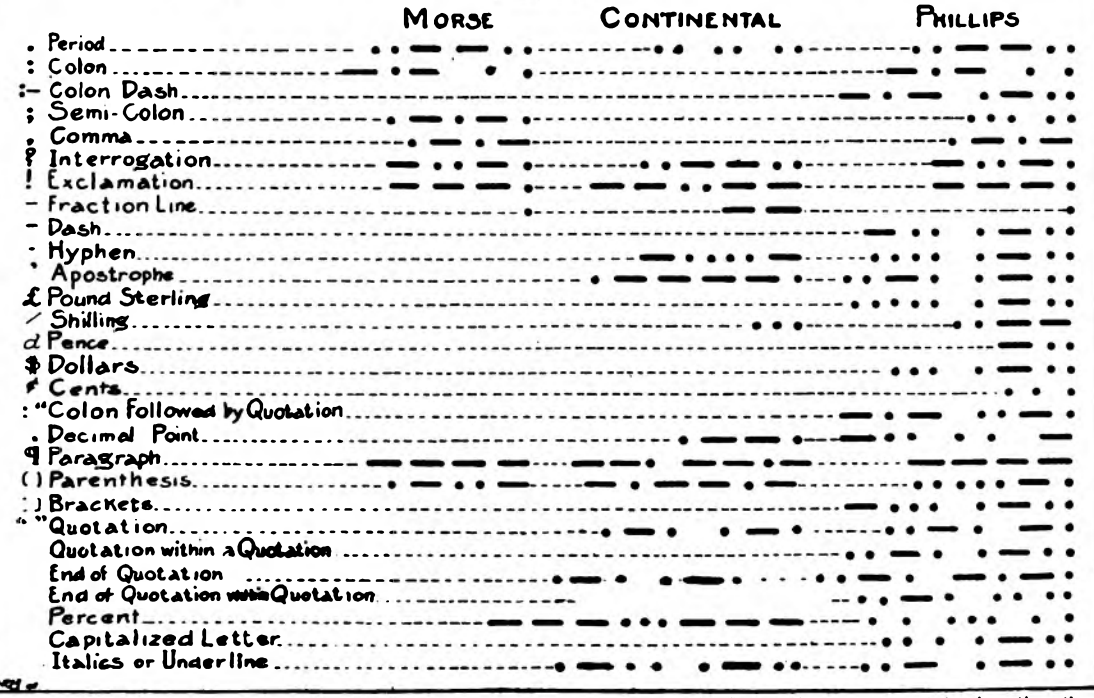
Donald McNicol, manager of the Postal Telegraph-Cable Company at Salt Lake City, Utah, read a paper on the wireless telephone on January 17, before the Utah Society of Engineers, which met in the Physical Building of the University of Utah, Salt Lake. He referred to the experiments of Preece, Bell, Shepardson, Kelsey and others in telephoning by means of induction, electromagnetic and electrostatic, by leakage through the earth's surface and through the air; also referred to the work of Ernst Ruhmer in Germany, taking advantage of the peculiar properties of selenium, when acted upon by means of a beam of light transmitted by the ether from a distant point. Mr. McNicol also spoke of Alexander Graham Bell's radiophone, in which he used the selenium relay. Experiments of Professors Simon, of Erlangen University, and of Dudell, in England, in perfecting the "speaking arc" by means of which ordinary sound waves are superimposed on the arc circuit, were discussed, as was the pioneer work of wireless telegraph experimenters in perfecting means of Hertz wave generation and propagation as applied to wireless telephone development taken up at a later date. The speaker touched upon frequency of the speaking arc increased by operating the latter in an atmosphere of hydrogen gas, and conducted experiments showing methods of generating Hertz waves, and manner of controlling their radiation. He also demonstrated methods employed to detect the presence of Hertz waves at distant points in space. Modifications necessary with wireless telegraph installations in order to transmit spoken words in place of Morse code signals, were illustrated, while a clear description was furnished of the experiments of Majorana in Italy, showing method devised for controlling the length of spark gaps without affecting the frequency. References to late improvements of Lee De Forest, using the audion Hertz wave detector, and to the work of Collins in perfecting wireless telephone for commercial purposes, and a consideration of the commercial applications of the new art, were concluding features of this interesting paper.

TELEGRAPH CHARACTERS



Short Numerals Generally Used By Continental Operators.





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

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

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

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

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

In sending poetry or one or more lines of verse, a paragraph mark (— — — —) should be used at the end of each line.

Radio-Telegraphy.

Dr. Valdemar Poulson says he will this year have his wireless telegraph in perfect operation between Denmark and the United States.

A patent, No. 876,383, for a means for producing electromagnetic waves, has been granted to Joseph Murgas, of Wilkes-Barre, Pa. Complete diagram of circuits, including spark gap directly in aerial.

The Amalgamated Radio-Telegraph Company states that wireless telegrams between Newcastle England, and Copenhagen, Denmark, and Berlin, Germany, and Copenhagen, can be received on an inking recorder.

The Massie Wireless Telegraph Company will install five sets of apparatus in Alaska under a contract with the Signal Corps of the United States Army. It is stated that two of these sets are high-power apparatus, guaranteed to transmit messages over 400 miles of mountainous country.

A patent, No. 876,165, for a wireless telegraph transmitting system, has been issued to Lee De-Forest, of New York. The combination with a transmitting loop antenna constituting a closed oscillating circuit, of a closed oscillating energizing circuit associated therewith and attuned thereto.

Five wireless telegraph messages have been received at Mare Island and Point Loma, Cal., from Sitka, Alaska. This is the record for long distance on the Pacific coast. The distance from Sitka to Mare Island is 1,350 miles, and from Sitka to Point Loma is a little more than 1,906 miles.

A patent, No. 876,281, for a combination sending and receiving wireless-telegraph apparatus, has been awarded to Albert L. New, of Los Angeles, and William N. Hickman, of Avalon, Cal. Two aerial capacities are insulated from each other, one contains the transmitting and the other the receiving apparatus. The transmitter is arranged so that the strength of its impulses can be varied. The receiver is provided with a local battery circuit and means for regulating its power. Ground connections are arranged to be connected to either circuit.

It is stated to be the intention of the Marconi Wireless Company to build at no distant day a new station at some point along the coast or in the vicinity of New York City. It is said that the experimental station at Glace Bay, Nova Scotia, which has been transmitting and receiving transatlantic messages since last October, has proved successful beyond expectation, averaging between 5,000 and 6,000 words daily. A large part of the business has been newspaper despatches, but numerous private messages have been sent, and the increase of business, it is claimed, will shortly necessitate operating the station day and night.

Ambassador Tower has cabled the state department from Berlin in answer to an inquiry as to the number of countries that had undertaken to execute the provisions of the wireless telegraphic convention of 1906, as follows: Belgium, Denmark, Mexico, Holland, Norway and Roumania have deposited with the German government ratifications of the wireless telegraphic convention. Argentina and Brazil have officially approved the convention, and are ready to deposit the ratifications. France awaits the ratification of Great Britain, while the German government has introduced in the Reichstag a bill to authorize ratification.

The system of wireless telegraph stations recently installed on the lower coast of British Columbia by the Dominion government has been successful in communicating over land sections, a thing which Superintendent Doutre, says the Canadian Electrical News, was sceptical about when the system was first installed. It was expected that Pachena and Victoria might have to talk through the medium of the United States station at Tatoosh, owing to the mountains intervening between Pachena and Victoria. This has not been the case, however, as communication is now going on regularly between the points mentioned. News of an unexpected record was received on December 29, however, when the operator at Victoria picked up the following: "This is the steamer Portland, off Cape Mudge, waiting for the tide." This message, sent from a point off Seymour Narrows, on the northeast coast of Vancouver Island, had to cross a high ridge of mountains, which, added to the distance of about one hundred fifty miles, is regarded as very creditable for the limited power of the station.

In the hearing given by the Senate committee on foreign relations on January 15, to John W. Griggs, formerly attorney-general of the United States, who presented the objections of the Marconi Wireless Telegraph Company to certain features of the treaty of Berlin in regard to wireless telegraphy regulations, that company rebels at the provision of the treaty requiring ships of all nations concerned in it to exchange or forward aerograms regardless of the system operating them. Through Mr. Griggs the company set forth to the committee that, through a general interchange of messages, it would not be protected as to its rights to maintain its invention for its own ends, and contended that its patents would be infringed. A further objection was made because the treaty provided no adequate compensation for general services thus rendered. United States Commissioner of Navigation Chamberlain was present at the hearing, as was also General Allen, of the army signal corps. On January 22 the committee listened to the argument of the Fessenden Wireless Company, which also is objecting to these provisions of the treaty.

The Telegraph On the Continental Divide.

An episode occurring near that center of Extraordinary Happenings, Denver, to wit, is referred to in graphic language by the Republican of that city, in its issue of January 12. The seriousness of the affair, the result of which we are awaiting with some anxiety, takes on an especially grave aspect when vouched for by such eminent authorities for strict veracity of statement, actors on the scene, as "Old Farmer" Lawton, a man of local repute, and H. W. Plum, who has a good record as a United States military telegrapher to his credit, and who is a brother of Col. William R. Plum, the historian of that society.

The story runs:

There is a "bear" possibility that the Western Union will have to send a new operator within the next few days to Corona, on top of the Continental divide, if some key talk that came over the wire to "Farmer" Lawton is not resumed again to-day.

The conversation was between "Old Farmer" Lawton, of the Western Union, at a late hour last night and H. W. Plum, the agent at Corona, on the summit of the great Continental divide, where the company's carpenters had to melt the snow last summer in order to find a solid foundation upon which to place the depot, and is apt to change anyone's mind from seeking it as a winter resort.

The key talk was about as follows:

"Hello, there, Denver. Please ask 'Old Farmer' Lawton to the key. Ah, that's you, is it—guess I am a bit nervous, as I did not recognize your fist over the wire. Well, old man, I am glad to feel your familiar touch even at this distance, for, in addition to being boxed up here, I am in serious trouble. 'Old Farmer,' you have known me nigh onto 40 years. Did you ever know me to do anything really bad during that time, or shirk a responsible position? Was I not one of the first volunteers to go south and assist the telegraph companies when operators were dying like hogs with the cholera in the '60s? And did I not follow it up in the '70s by remaining at my post of duty during the great yellow fever epidemic?

The "Old Farmer" acknowledged that all this was true, and, in return, asked Mr. Plum what that had to do with his present troubles. If Plum was being held up by train robbers, he said he would see if assistance could not be sent him.

Mr. Plum took the circuit and said:

"No, no, old man—no tame affair like that. I have been held up so often it would really seem like a good joke now to be able to fool the next chap that shoves a gun under my nose. My present trouble is more serious than holding up my hands. The fact is, your old pard is mighty apt to pass in his checks before the next train pulls in to-morrow noon. I want you to pray for me, if possible, and if you can't, get someone else who can."

"Old Farmer" had just asked one of the messenger boys to repeat the Lord's prayer to him so that he could transmit it over the wire, when Mr. Plum broke in again.

"Old man, the situation is this: Last fall a good intentioned ranchman down the valley sent me a little pig—one of those black and white spotted shoats—thinking I would get lonesome up here among the clouds during the long, dreary winter months. Piggy has made a most congenial companion and I have kept him in the cellar, where the thermometer only goes down to 18 or 20 below zero. To-night I raised the trap door for the purpose of adding a couple of pounds to his frame with the scraps left from my supper, but instead of piggy greeting me with his usual grunt of appreciation, one of the largest grizzly bears that ever climbed a rocky mountain reached out for me and the remnants of my meal. I gave up the latter most willingly, and saved myself by closing the door and placing all the movable furniture in the office on it, but the old chap is not half as easily satisfied as my poor piggy that he has already eaten. If his claws and teeth hold out I see my finish before No. 6 reaches here to-morrow. If you will help me prepare for the final end you will be doing a turn that but few telegraphers ever ask of each other."

At 3 A. M. Mr. Plum was still mourning the loss of his porker, which he had planned to enter in the big Denver live stock show this month, but reported that Bruin had quieted down some in his efforts to relieve the Moffat road of its agent at that point.

The "Handbook of Wireless Telegraphy," by James Erskine-Murray, furnishes another contribution to the study and discussion of wireless telegraphy of a character such as to place this volume in the front rank of works dealing with the subject. It is a dignified and scholarly production. It furnishes a bright picture of the possibilities and the actual accomplishments of wireless telegraphy, yet the entire presentation of the question, comprehensive in its details, is treated in a simple, non-technical manner, well suited to meet the requirements of the student and the general reader. The history of wireless telegraphy is traced and a description of the appliances used for the product of high-frequency currents is given. The author makes a commendable attempt to set forth the problems of the laws governing transmission of signals to long distances and of the losses that occur through atmospheric absorption or other causes. The codes used in this country and those abroad, together with tables of electrical constants, are given. The book is bound in cloth, contains 332 pages, and is illustrated. Its size is 5½ by 8½ inches. It will be sent postpaid on receipt of price, $3.50. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Some Valuable Telegraph Books.

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

POCKET EDITION OF DIAGRAMS.

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

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

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

PHILLIPS CODE.

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

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

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

The price of the book is $1 per copy.

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

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

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

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

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

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

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

The Danish State Telegraph Department has established connections with an insurance company in order to put into effect a new plan for insuring telegrams, says the Western Electrician. The financial loss caused to business through the delay and distortion of telegrams is so considerable that the telegraph department for a long time has tried to find a way of insuring against these risks. The department itself could not take the responsibility for the losses, because that would involve raising the tolls on messages. When the new plan is put into effect any telegram can be insured for any amount, or a whole year's telegraphic correspondence can be insured up to a certain sum. Denmark is perhaps the first country to adopt telegram insurance.

Letters From Our Agents.

PHILADELPHIA, WESTERN UNION.

John C. Becker, manager of the Philadelphia and Reading telegraph office at Boyertown, lost his wife and two daughters in the recent horrible theater fire in that place. The tragedy has awakened a sentiment of profound sympathy in this office.

P. H. Nunan has been transferred from the Third and Chestnut streets office to the main office.

Mr. and Mrs. George W. Uber (nee Miss Anna Heilman) are contemplating a trip to Europe in the near future.

C. B. Wood will also soon leave to make a tour of Europe, visiting his old home in England. Mr. Wood came to this city over twenty-five years ago from London and was one of the oldest printing operators; since their abolition he has been working a Morse wire, at which he is as proficient as on the printer.

NEW YORK, WESTERN UNION.

Mr. T. A. Brooks, timekeeper, has gone South on two months' leave of absence owing to ill health. His place is ably taken care of during his absence by Mr. Tepe.

William Winter, formerly of this office, and lately employed at Ramsey, N. J., died at Liberty, N. Y., on January 20. The funeral was held at the former place.

Mrs. Henry, the wife of Charles Henry, a well-known telegrapher, while en route to New York from Oakland, Cal., with her husband, was taken ill and died in a hospital at St. Louis. Mr. Henry was the Western Union division chief at San Francisco and previously had held a similar position at St. Louis. Mrs. Henry was buried at Jacksonville, Ill.

OTHER NEW YORK NEWS.

The Morse Electric Club will hold its first annual dinner on the evening of Saturday, February 29, at the Hotel Breslin, New York.

Assessment No. 474 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Earl J. Fox, at Telluride, Colo.; Henry C. Derr, at New York; J. Newton Marshall, at Philadelphia; James H. Fleshman, at Philadelphia; Charles W. Wise, at Evansville, Ind., and Charles W. McReynolds, at Denver, Colo.

The New York local of the Commercial Telegraphers' Union of America gave its seventh annual entertainment and ball at Palm Garden on the evening of Monday, January 27. The proceeds were for the benefit of unemployed telegraphers, members of this association.

St. Louis Telephone and Telegraph Notes.

Three new sections of test board, including a Morse and leased wire board have been installed in the American Telephone and Telegraph Company wire chiefs' office at St. Louis. New duplex and repeater equipment is also being installed which will about double the Morse wire facilities of the office.

The second annual banquet and smoker of the Bell Society, an association of the American Telephone and Telegraph Company's employees in that city, was held on the evening of January 10. The occasion was enlivened by speeches, recitations and songs and a mock trial, and was greatly enjoyed.

Fred L. Mounce, late of the wire chief's force here, is now with The Associated Press at Kansas City.

P. G. Trotter, late wire chief at Little Rock, Ark., has been transferred to the St. Louis wire chief's force.

What is known as The Morse Code Telegraphy Instructor, or pianoforte telegraphy, designed for the practice and study of the Morse code on the piano, is the invention of Russell B. Griffin, of Quincy, Ill., an old time telegrapher and member of the United States Military Telegraph Corps. His invention is ingenious. It adapts the Morse code to the keys of the piano by means of musical notation. Mr. Griffin, who suffered a stroke of paralysis some ten years ago, is also placing on the market the "Telegraphic Clicker and Instructor," a telegraph device designed for learners. It operates on the snapper sounder principle, and is sold at twenty-five cents. These goods are being handled by the Morse Art Company, of Quincy, Ill.

Mr. Griffin entered the telegraph service in 1855, and holds a certificate of honorable service during the Civil War as operator and chief operator from April 1, 1862, to November 25, 1865.

Philadelphia Electrical Aid Society Election.

The twentieth annual meeting of the Philadelphia Electrical Aid Society was held on Monday evening, January 13, in Mayer's Drawing Rooms, with an attendance of over two hundred and fifty. The old officers were unanimously re-elected as follows: Andrew S. Weir, president; J. W. Fitzpatrick, vice-president; W. E. Vanarsdale, recording secretary; Robert C. Murray, financial secretary, and H. W. Hetzel, treasurer. Executive committee, F. E. Maize, Miss Anna E. Foster and Miss Mary McFadden. Trustees, George J. Wells, William Miley and H. C. Leahy. The report of the secretary showed a total membership on December 31, 1907, of 701; receipts during 1907, $4,006.52; disbursements during the same period, $3,259.67, a net gain for the year of $746.85. This, with the surplus on hand, places $5,431.41 to the credit of the society, a solid foundation for the good work being done by it. Sixty new members were admitted at this meeting and an amendment to the by-laws was adopted, raising the death benefits from $50 to $100. Ten reinstatements and five new members will be admitted at the regular monthly meeting. After the meeting adjourned supper was served.

American District Telegraph Report.

The American District Telegraph Company of New York, held its annual meeting on January 23. The total revenue for the year amounted to $586,065, a decrease of $17,577. The net revenue amounted to $79,028, out of which $76,888 was paid on dividends, leaving a surplus of $2,140.

Col. R. C. Clowry, the president, said that the telegraphers' strike was responsible for the decrease in earnings. The company reduced expenses very materially as a result of the strike and the business depression. The balance sheet disclosed that old accounts now considered worthless, amounting to $15,381, were written off. In addition $15,895 was charged off for old call boxes. The old directors were re-elected.

General Mention.

The animus of the Commercial Telegraphers' Union toward the telegraph companies, growing out of the strike of last summer and fall, is shown by the fact that a bill is being prepared under the influences of this organization for introduction in the House, requiring telegraph companies to put the time of filing and the time of sending as well as the time of receipt, on all messages handled. This action evidently is in line with a bill providing for government ownership of the telegraphs emanating from the same general sources. There is, however, no prospect that Congress will give this subject much consideration at the present session—the tendency being to shy at everything in the way of new legislation that can be avoided or postponed.

The Western Union and the Postal telegraph companies were made defendants in a contemplated suit instituted January 8, by the Nebraska railway commission, and to be filed in county court asking for the penalizing of the companies on account of the failure to file statements of their business with the commission as required by the statutes and for changing rates without the consent of the commission.

The twenty-third annual ball of the Telegraphers' Mutual Aid Association, of Boston, was held at Odd Fellows Hall, in that city, on the evening of January 31, a large number being present. Thomas F. Clark, chief operator of the Western Union Telegraph Company, Boston, is president of this association, and W. J. Mahoney, secretary.

Mr. James Kent, general manager of the telegraph department of the Canadian Pacific Railway Company, Montreal, Que., expresses his opinion of Telegraph Age in the following complimentary terms: "I am much pleased with the general tone and character of the paper, and trust you may find it as profitable as I find its pages both interesting and instructive."

John R. Walsh, of Chicago, at one time a prominent newspaper man, and formerly the treasurer of The United Press, was recently found guilty of misappropriating the funds of the Chicago National Bank. He was convicted on fifty-four counts.

The hardships imposed by the operation of the eight-hour law in Wisconsin began to be apparent in that state. It is demanded by the state railroad commission that the smaller railroad and telegraph offices within that commonwealth, recently closed, shall be reopened.

Hon. P. V. DeGraw, fourth assistant postmaster-general, Washington, the well-known old time telegrapher and newspaper correspondent, in writing to renew his subscription to Telegraph Age, says: "I should, indeed, be very lonesome without it."

Mr. A. A. Briggs, chief operator of the Postal Telegraph-Cable Company at Cleveland, O., who was stricken suddenly with a mild stroke of paralysis on January 13, is still confined to his bed. Absolute rest has been declared to be necessary for recovery.

TELEGRAPH AND ELECTRICAL TRADES DIRECTORY

CONDENSERS.

William Marshall, 709 Lexington Ave., N. Y.

FIRE-ALARM AND POLICE TELEGRAPH.

Gamewell Fire Alarm Telegraph Co., 19 Barclay St., New York.

INSULATORS.

Specify BROOKFIELD GLASS INSULATORS, THE STANDARD

BROOKFIELD GLASS COMPANY, 220 Broadway, New York.

POLES, ETC.

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PRIMARY BATTERIES.

Edison Manufacturing Company, Orange, N. J.

TESTING INSTRUMENTS.

Weston Electrical Instrument Co., Newark, N. J.

STORAGE BATTERIES.

The Electric Storage Battery Co., Philadelphia.

TELEGRAPH AND CABLE COMPANIES.

Canadian Pacific Railway Co.'s Telegraph, E. M. Bender, purchasing agent, Montreal, Que.

Commercial Cable Co., Commercial Pacific Cable Co., German Atlantic Cable Co., W. D. Francis, purchasing agent, 14 Desbrosses St., New York.

Great North Western Telegraph Co. of Canada, Geo. D. Perry, purchasing agent, Toronto, Ont.

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.

Postal Telegraph-Cable Co. of Texas, S. M. English, general manager and purchasing agent, Dallas, Tex.

Western Union Telegraph Co., Executive Offices, 195 Broadway, New York; purchasing agent, H. E. Roberts, 152 Franklin Street, New York.

DEAM RAPID TELEGRAPH CO.
Cheap Rates : : : : : Quick Service
Accuracy and Secrecy Guaranteed.
General Office : : : : Kansas City, Mo.

TELEGRAPH AND ELECTRICAL SUPPLIES.

J. H. Bunnell & Co., Inc., 20 Park Place, New York.

Central Electric Co., 264-270 5th Ave., Chicago.

Foote, Pierson & Co., 160-162 Duane St., New York.

W. R. Ostrander & Co., 22 Dey St., New York.

TRANSMITTING INSTRUMENTS.

United Electrical Mfg. Co., Norcross, Ga.

Yetman Typewriter-Transmitter Co., 20-24 Vesey St., New York.

TYPEWRITERS.

Hammond Typewriter Co., 69th to 70th St. and East River, New York.

Remington Typewriter Co., 327 Broadway, New York.

Smith-Premier Typewriter Co., Syracuse, N. Y.

WIRES, CABLES, ETC.

W. R. Brixey, 203 Broadway, New York.

Okonite Company, 253 Broadway, New York.

John A. Roebling's Sons' Co, 117-121 Liberty Street, New York.

Rates for advertising on this page will be furnished on application. No advertisement to occupy over one inch space will be accepted for these directory pages.

TELEGRAPH AGE

A Semi-Monthly Journal Devoted to Land Line Telegraphs, Submarine Cable Interests and Radio-Telegraphy

Office of Publication: 253 BROADWAY, NEW YORK

ESTABLISHED 1883

Single Copies 10 Cents | For Yearly Subscription Rates See Editorial Page

No. 4. NEW YORK, FEBRUARY 16, 1908. Whole No. 594.

TELEGRAPH AGE

No. 4. NEW YORK, FEBRUARY 16, 1908. Twenty-fifth Year.

CONTENTS.

SOME POINTS ON ELECTRICITY.

How to Become a Wire Chief.

BY WILLIS H. JONES.

Part IV.

One of the nice points a wire chief is called upon to determine in wet weather is that of the working value of a wire. That is to say, he must be able to tell pretty closely by the existing conditions of the wire whether it will duplex or quadruplex satisfactorily before restoring the same to a multiplex circuit.

On the broad ground that, as a rule, nearly every merely watersoaked wire that will permit of single line conversation with the terminal station will duplex fairly satisfactorily, a careless or inexperienced wire chief may make the mistake of letting it go, only to learn later that a closer test was required.

One cannot measure the value of a wire with any great degree of accuracy by the mere volume of current that flows into a conductor purposely opened at the distant terminal; that is to say, by the amount of "escape" as indicated by the ammeter. Everything depends upon the nature of the leak. As a matter of fact, it often happens that of two similar wires showing two different values of escape the one showing the greater leakage will "duplex" while the one of lesser volume will not. Furthermore, the conductor which will not duplex may possibly show up best, measured by the single line conversational test.

Now, an investigation of the matter will probably disclose the fact that the "escape" on the circuit which will not duplex, is the resultant of two different values of electromotive force and would therefore be inconstant in volume in a duplex circuit operated by two different polarities of battery.

In other words, it will be found that the "escape" in the unworkable conductor is due to a light or high resistance cross and represents that volume of current which flows down the wet poles from the home battery plus, or minus, as the case may be, the current created or opposed by a foreign electromotive force in an adjacent circuit, via the wet crossarms; that is to say, possibly a wet-weather cross. A wet-weather cross differs from an ordinary cross only inasmuch that there is no metal or other actual contact between the two wires other than that due to the high resistance film of water on the wooden crossarms.

It is obvious, therefore, that such a wire restored to a duplex circuit would be useless because the two polarities of battery belonging to the apparatus would cause different volumes of current to flow in the wire according to whether the electromotive force was opposed or aided by the foreign pressure, hence one's inability to adjust for both.

The other wire mentioned might "duplex" satisfactorily with a small working margin, despite its greater leakage, simply because the escape is due to the even pressure of the home battery alone, and for that reason would show even values of current with either polarity of the duplex battery to line. One adjustment of the apparatus, therefore, suffices and duplex operation becomes possible. To determine whether a slight cross of this kind exists or not ask the terminal station to open the circuit temporarily and then alternately place positive and negative battery to line and note the deflection of the needle of the ammeter. If there is no wet-weather or other cross between it and another live circuit, the amount of escape shown will be practically the same with either polarity of battery connected, provided the pressure of the latter is identical, as is supposed to be.

If the wire is crossed the ammeter will show a difference in the volume flowing when one polarity is substituted for the other. When such inequality of conditions is found to exist in a conductor in a marked degree, it is hardly advisable to restore the same to a multiplex circuit, especially if the latter is a quadruplex circuit.

As previously remarked it is not always necessary to use an ammeter to ascertain these facts for the reason that in time an observing wire chief is able to readily detect the discrepancy by means of his single line test relay alone. There are times, however, when the discrepancy between the two values is too small to detect by means of the test relay, yet sufficiently marked to interfere with rapid automatic operation. In fact, a milliammeter itself often fails to show anything particularly wrong with a conductor, while at the same time a voltmeter will disclose quite a marked unsteadiness in the condition of the circuit. Hence, in using these instruments indiscriminately allowance should be made for the greater sensitiveness of the latter, as it seems to readily pick up every legitimate and foreign influence that exists in the suspected wire and adjacent conductors. For ordinary tests for insulation, however, the milliammeter is quite reliable and trustworthy and the needle is sufficiently steady to give a readable value. On the other hand, the needle of a voltmeter in the same circuit often varies its position so rapidly that one has to guess at the real value of the deflections.

If proper precaution is taken to get the exact reading of the dial of a voltmeter; that is to say, note even the fraction of a division over which the needle is deflected where the total deflection is not very great, the voltmeter may be satisfactorily substituted for the galvanometer in nearly all cases of ordinary wire testing for conductivity and insulation encountered at the main line switchboard.

A convenient formula for computing such measurements by means of the voltmeter alone is as follows:

$$X = VR\left(\frac{E}{E'} - 1\right).$$

Where X = The resistance to be measured,
E = The electromotive force of the battery used, disconnected from the wire, or first reading,
E' = The electromotive force of same battery with the wire connected, or second reading,
VR = The known resistance of voltmeter.

The formula interpreted means that the known resistance of the voltmeter is to be multiplied by the quotient obtained by dividing the first reading by the figures of the second reading, after 1 has been subtracted therefrom.

Example: What is the resistance of a wire where the voltmeter gives 140 volts for the first reading and 130 volts for the second, and the known resistance of the meter is 42,000 ohms?

In plain arithmetic this would read:

$42{,}000 \times \left(\frac{140}{130} - 1\right) = 3{,}234$ ohms. Or, $140 \div 130 = 1.077$, which leaves a remainder of .077 after 1 has been subtracted; and .077 multiplied by 42,000 = 3,234, the resistance in ohms of the wire measured.

Another and perhaps quicker method of measuring conductivity resistance is to use an ammeter in conjunction with the voltmeter, and then work out the answer by the simple formula

$$\frac{E}{C} = R.$$

The ammeter will give the value of the current C, and the voltmeter that of E. In this case the value of E will correspond with that of E' in the previous formula given. The object of getting this equivalent of the "second reading" value, where the initial pressure of the switch battery is already known, is to eliminate the necessity of finally subtracting the uncertain value of the battery lamp resistance from the quotient obtained, as would be required were the initial value of the battery's electromotive force be taken to represent E in the latter formula.

(To be continued)

Recent Telegraph Patents.

A patent, No. 876,952, for a release mechanism for Morse telegraphs, has been issued to Eugene Ducretet, of Paris, France. A device for automatically or manually arresting the paper feed mechanism of a Morse receiving instrument whereby the paper feed is controlled by the operation of the machine.

A patent, No. 877,002, for a telegraph system, has been taken out by Harry O. Rugh, of Sandwich, Ill. Complete telegraph system having operating battery at each station and means at one sending station and governed at another sending station for preventing the connection of battery thereat with the line.

A patent, No. 877,101, for a clip for fixing wires to insulators, has been granted to Johann Macek, Vienna, Austria-Hungary. A form of cleat for fixing conducting wires to insulation. Has a plurality of wire links which are engaged around the insulators by a thumb-nut.

A patent, No. 877,242, for an insulator pin, has been awarded to Delos V. Snapp, Holdrege, and Charles W. Fraher, Lincoln, Neb. A form of insulator pin having a base bolted to the crossarm and a threaded plug thereon which receives the insulator.

A patent, No. 877,555, for telegraphy, has been obtained by Patrick B. Delany, of South Orange, N. J. Covers a telegraph transmitter having a key movable in a horizontal plane between two contacts and actuating relays which transmit dots and dashes, respectively.

A patent, No. 877,822, for a printing telegraph, has been awarded to John C. Barclay, of New

York. Printing telegraph of a class having finger keys and synchronously operated commutators or "sunflowers" at both the transmitting and the receiving station; covers details of construction.

A patent, No. 877,857, for a telegraph switch, has been taken out by Lewis H. Parcels, of Hiawatha, Kan. Telegraph switch for connecting a resonator sounder into one or more sets of telegraph instruments without disturbing the circuits, but allowing all local circuits to work free and clear when the resonator is cut out.

The following patent has expired:

Patent No. 445,442, for a telegraph key, held by J. Doggett, of Plain City, Mo.

Personal.

Mr. I. McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont., accompanied by his wife, has been absent recently on an extended vacation in Florida.

Mr. David R. Downer, for many years previous to 1880 assistant manager of the Western Union main office in New York, and a brother of Alfred S. Downer, the then manager, who has been seriously ill, has gone abroad for the benefit of his health and will be absent about a year. For the past quarter of century Mr. Downer has been engaged in the business of gold and silver refining in Newark, N. J.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Col. R. C. Clowry, president and general manager of the company, together with his private secretary, F. J. Scherrer, Mrs. Henry D. Estabrook, Frank Jaynes, general superintendent of the company at San Francisco, the latter accompanied by his wife, have returned from Florida, where they spent the month of January. Mr. and Mrs. Jaynes left New York for San Francisco on February 6. Mr. Jaynes, who has been ill, returns to his home much improved in health after his sojourn of two months in the East.

The dinner of the Morse Electric Club, announced for the evening of Saturday, February 29, at the Hotel Breslin, promises to be an enjoyable affair. Col. R. C. Clowry will be the guest of honor. An interesting programme of entertainment has been arranged for the occasion. Mr. John B. Van Every is president of the club. The committee of arrangements consists of P. J. Casey and R. J. Murphy, F. J. Scherrer being the secretary.

Barclay printers have recently been installed on the following additional circuits: New York and Washington, New York and Cleveland and Washington and Chicago.

Mr. Charles W. Holmes, executive messenger, reached his seventieth birthday on Monday, February 10, and was the recipient of numerous congratulations on the part of office associates and other friends.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Mr. Edward J. Nally, vice-president and general manager, who, with Mrs. Nally, spent two weeks at Atlantic City recently, is again at his desk.

Mr. Edward G. Cochrane, general superintendent, who is absent on leave because of impaired health, is rapidly regaining his strength.

Mr. W. S. Wood, a prominent lawyer, who was for many years the local counsel for the Pacific Postal Telegraph-Cable Company at San Francisco, died January 30.

Mr. J. T. Needham, formerly identified with the electrical engineer's department of this company, now engaged in other business, was a visitor in this building a few days ago.

C. F. Leonard, Postal City Superintendent.

Christopher F. Leonard, who an January 1 was promoted to be superintendent of city offices, from the position of assistant superintendent,

CHRISTOPHER F. LEONARD,
City Superintendent Postal Telegraph-Cable Company, New York

of the Postal Telegraph-Cable Company, New York, is a gentleman yet young in years, who has won preferment in the service because of intelligent and diligent application to duty. Mr. Leonard was first employed by this company as an operator. He has since filled the post of assistant traffic chief; has held the managership of a number of different local branch offices, also serving for two years as manager of the Buffalo, N. Y., office, and another two years at the head of the Brooklyn district. He was called to the main office in May, 1907, and assigned to the position from which he has been recently advanced. His record has been an exemplary one, and his marked executive capacity is responsible for his recent promotion. Mr. Leonard is a native of Flushing, L. I., the date of his birth being September 29, 1870.

The Cable.

The Direct United States Cable Company (Limited) declared an interim dividend of 4s. per share, being at the rate of four per cent. per annum for the quarter ended December 31, 1907, and set aside £5,000 ($25,000) to reserve, carrying forward about £6,396 ($31,980).

The Commercial Cable Company's steamer Mackay-Bennett was in New York Harbor recently after effecting cable repairs thirty miles off shore. Owing to the continued illness of Captain Ernest G Schenck, her former chief officer, Captain F. H. Larnder has been appointed to command the vessel. Captain Larnder was formerly first officer of the cable steamer Restorer, of the Commercial Pacific Cable Company, stationed at Honolulu. He has had extensive experience in cable repairing.

Cable communication was interrupted February 10 with:

Venezuela — Jan. 12, 1906.
Hayti — Jan. 18, 1908.
All offices closed to International traffic except Cape Hayti, Mole St. Nicholas and Port au Price.
Ahvaz, Persia — Jan. 26, 1908.
Messages must be addressed "Ahvaz, Post Bushire," until further notice.
Madura Island (Dutch East Indies) Feb. 3, 1908.
Demerara — Feb. 3. 1908.

The fourteenth annual dinner of the cable companies in London took place at the Florence, Rupert street, W. One hundred and forty diners sat down under the chairmanship of T. Bullock, of the Eastern Telegraph Company, who was supported by J. C. Denison-Pender and Mr. Youngson, of the same company; E. G. Phillips, of the Commercial; H. H. Allingham and G. Crighton, of the Western Union; Mr. Preddell and N. A. Boex, of the Direct Spanish, and numerous others. The programme of entertainment which followed the dinner, embraced several speeches, instrumental and vocal music and numerous recitations by members of the cable fraternity.

The cable steamer Relay, belonging to the Mexican Telegraph Company, formerly the prop- of the Central and South American Telegraph Company, arrived at New York on January 28. She left Callao, Peru, December 7, 1907, passing through the Straits of Magellan, subsequently calling at Montevideo and Barbados for coal. The steamer had a rough voyage, but reached New York in good condition, all on board being well. The Relay is to take the place of the Mexican company's cable steamer Mexican, which is considered too small for the work that may be necessary on the New York-Colon cable and the Mexican Gulf cables. The Central and South American Telegraph Company's steamer Guardian, which was built by Swan-Hunter, of Walker-on-Tyne, at a cost of $300,000, and which arrived at Callao, November 25, 1907, takes the places of the steamer Relay.

The mystery surrounding the fate of Thomas Pain London, familiarly known as "Tom" London, the well-known submarine cable engineer, has at last been definitely solved. As stated in our issue of January 16, he was sent by his company, the Telegraph Construction and Maintenance Company, of England, to Mombasa, on the east coast of Africa, to superintend the laying and repair of cables at that point. He went on a shooting expedition, from which he failed to return. Extended search was made for him, but without avail. It now appears from a despatch received from Mombasa that the body of Mr. London has been found and that certain natives have been arrested for the murder. Believing him to have been murdered, however, notice of his death as occurring on December 19, 1907, published by his family, had previously appeared in the London papers. Mr. London was in New York, where he had many friends, but a short time previous to being ordered to Africa. The steamer Colonia, to which he was attached, laid the cable of the Central and South American Telegraph Company, from New York to Colon, last summer.

Obituary.

Peter N. Uken, an operator of the Western Union Telegraph Company at Kansas City, Mo., died at that place on January 20.

William J. Bradley, aged twenty-nine years, an operator employed by the Postal Telegraph-Cable Company, in New York, died at Saugerties, N. Y., on January 28.

The Railroad.

Mr. G. A. Dornburg, chief lineman of Pennsylvania Lines West of Pittsburg, and Mr. Leroy Behner, identified with the same interests, both of Pittsburg, were recent New York visitors, coming in the interests of the service.

A bill has been introduced in the New York state legislature by Assemblyman Frederick Northrop, of Poughkeepsie, which provides for the creation of a state board of telegraph examiners, to be appointed by the governor, whose duties shall be to examine all applicants for positions as railroad telegraphers, none being permitted to serve unless having a license from the state board.

Municipal Electricians.

A patent, No. 877,067, for an automatic transmitter for fire-alarm and sprinkler systems, has been issued to James Fiddes and John F. Watt, of Aberdeen, Scotland. A fire-alarm and sprinkler system designed to communicate automatically with the fire brigade station or other point and indicate when automatic sprinkler or fire-alarm in a building has been brought into action.

Former Fire Commissioner Lantry, of New York, applied for an appropriation for the purpose of replacing the old electrical equipment with entirely new wires, new alarms, new instruments and, finally, a new fireproof building for the headquarters. About $2,500,000 will be required. The New York Board of Fire Underwriters first called the attention of the department to the conditions when Nicholas J. Hayes was commissioner. Commissioner Hayes saw the conditions were dangerous, and so reported to the mayor. This was in September, 1905, but no actual steps were taken for the improvement of matters until John H. O'Brien obtained, when he was fire commissioner, an appropriation of $25,000 for the preparation of plans and specifications for a new system. These plans were submitted to the engineers of the Board of Estimate and Apportionment and of the Department of Finance on their completion in September, 1907, and were approved. Commissioner Lantry was to ask for an appropriation, but unless the temper of those who control the municipal pursestrings changes there will be difficulty, as Chief Croker testified before the Commissioners of Accounts that the cost of the new system would be at least $2,500,000. Chief Croker said on the stand that the new alarm system was almost as necessary as an immediate supply of good hose. Messrs. J. J. Carty and K. B. Miller have given technical evidence as to the sad condition of the electrical system.

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

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

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

The Railroaders' and Telegraphers' Aid Society of Cleveland.

In a little brochure just at hand the proceedings of the twenty-second annual meeting of the Railroaders' and Telegraphers' Aid Society, of Cleveland, O., held on December 9, 1907, are fully set forth. The reports of the secretary and of the treasurer show that while the membership had fallen off somewhat during the year just closed, the finances of the association are in excellent shape. There are now 160 members, and a cash balance on hand of $1,374.08. The officers of this society are: T. S. Bradley, president; F. E. Rudenauer, first vice-president; George K. Ingersoll, second vice-president; N. G. Underwood, secretary, and John H. Cox, treasurer. The executive committee is made up as follows: Paul C. Hamel, J. T. Williams, Isaac Morris, A. J. Freeh, A. J. Black, J. P. Mullen.

The telegraph system of the Dutch East Indies in 1905 comprised 14,147 kilometers of line and 19,179 of wire, the latter being composed of 13,858 of aerial wire, 5,221 of submarine and 99 kilometers of underground wire. In 1905 there were 586 offices, an increase of eleven over the previous year five hundred were owned by the government; fifty-six by railways and thirty by private undertakings.

The telegraph system of Indo-China owned a total mileage of wire of 27,129 kilometers on October, 1906, this being an improvement of 1,872 kilometers on the previous year; one hundred and fifty-nine kilometers of lines in Tonkin were transferred from wooden to iron poles, and there are now 2,021 kilometers of wire on iron and 1,529 kilometers on wooden poles. Cochin China's totals are 2,164 and 503; Gamboge, 821 and 1,519; Annam, 934 and 197, respectively, while Laos owns 2,030 kilometers on wooden poles only. The total mileage of line on October 1, 1906, was therefore 11,619.

Ask Delay in Telegraph Law.

Delegations of railroad officials recently appealed to the President to use his influence to defer, and afterwards asked the House Committee on Interstate and Foreign Commerce to so amend, the hours of service law as to permit the Interstate Commerce Commission to make exceptions in the time of the beginning of the enforcement of the telegraph nine-hour law. A lack of a sufficient number of telegraph operators, the officials explained, will make it impossible to enforce the law, which becomes operative on March 4. The President stated that he was without jurisdiction, and the House Committee has taken no action on the matter. In the meantime the railroad telegraphers, acting in accordance with official request of the Order of Railroad Telegraphers, are importuning Congress not to grant the petition of the railroads. H. B. Perham, president of the order, who is watching events at Washington, declared in contradistinction to the statement of the railroad men, that there are 15,000 operators idle in the country.

The "Twentieth Century Manual of Railway Station Service," by Frederick L. Meyer, author of the "Twentieth Century Manual of Railway and Commercial Telegraphy," treats its subject matter with the same clear perceptions of what is needed by those who wish to become station, freight, ticket and baggage agents, such as distinguishes the latter work in discussing the question of telegraphy in its application to both commercial and railway needs. The telegraph operator who also fills the position of station agent, will find in this book an unusual amount of information not otherwise readily available. It contains a great number of blank forms, covering all phases of the business, general laws, classification of freights, and special methods, all of which are helpful to the agent, it being the kind of enlightenment he requires. The subject of the telegraph is not treated in this work, but the book, together with the volume by the same author devoted to telegraphy, constitutes a source of direction and aid of pronounced value, which the railway telegrapher and station agent seeking knowledge, will find it advantageous to possess. Particularly is this true at this time, when many thousands of commercial telegraphers will doubtless seek to avail themselves of the opportunities afforded by the railroads for employment this coming season. Many commercial men need only a little training in respect to freight, passenger, baggage and express accounts to fit them for the railroad service, and this volume explains very fully what they are required to understand concerning these duties. The book is bound in cloth and embraces 216 pages; price $1.25, on receipt of which it will be sent to any address in the United States, carrying charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Mr. Good Retires as Agent of Telegraph Age at Philadelphia.

Mr. D. Good, of the Western Union Telegraph Company, Philadelphia, who has been succeeded at that office as agent of Telegraph Age by I. D. Maize, faithfully and with pronounced success served the interests of this journal continuously for nearly fifteen years. During that long period Mr. Good not only secured many subscribers for this journal within the city of Philadelphia, the state of Pennsylvania and a half dozen other states as well, a list which he was also constantly enlarging, but was equally successful in retaining these subscriptions. In a letter explaining why he was obliged to retire from the agency, Mr. Good says: "In all these years I found the pages of Telegraph Age clean and filled with interesting matter both to the professional and to the layman, and always fair in its dealings toward the company and the men. It is a journal which the profession may well be proud of. * * * My relations with it have been of the most cordial character, and it was with regret that I severed my connection. I cherish nothing but the most kindly feelings for it, and wil labor for its success, using my influence in its behalf, just the same as I always have done."

A correspondent who expresses interest in the very full and comprehensive list of telegraphic code characters of the Morse, Continental and Phillips systems, printed in Telegraph Age in its issue of February 1, notes that differences in several particulars are observable therein as compared with those occasionally appearing elsewhere. We welcome the communication, for it indicates that the very purpose we had in view is being accomplished, namely, to direct attention to the evident need that exists of correcting errors that have been made in defining telegraphic characters that carelessly have been allowed to creep into some of the current books treating on telegraphy. The list as published by Telegraph Age is correct, and may be confidently accepted as being strictly accurate. It might be advantageous to many to cut out the page in question and preserve it for reference. Its value in this respect is apparent.

Senator La Follette, of Wisconsin, has introduced at Washington a bill to regulate the interstate transmission of telegrams. He believes that the interstate business of telegraph companies should be under the Interstate Commerce Commission, as interstate railroad rates are regulated. The bill also prohibits government employees from accepting telegraph franks.

Orders have been received at Mare Island, California, for the installation of a wireless telegraph outfit aboard the hospital ship Relief.

Representative Canadian Telegraphers.

EDWIN POPE.

Edwin Pope, superintendent of the Eastern division of the Great North Western Telegraph Company, at Quebec, has been identified with the telegraph in Canada since an early period of its history. He was born at Kingston, Ont., his education being acquired at Quebec, at which point he entered the service of the Montreal Telegraph Company in 1855. At this time but one

EDWIN POPE,
Superintendent Great North Western Telegraph Company, Quebec, Que.

wire was worked from the office, connecting Quebec with Montreal, and the paper register was in use. Mr. Pope's advancement was rapid and he was soon acting in the triplicate capacity of cashier, bookkeeper and operator. In 1862, Orrin S. Wood, the general superintendent of the company, nominated Mr. Pope to the charge of the office at Buffalo, N. Y., but while on his way to that point he was detained at Toronto by Superintendent H. P. Dwight. The result was that he remained at the latter place for a year, when he was appointed superintendent of the Northern New York division of the company, with headquarters at Watertown, N. Y. Here he did good work in extending the lines of the company through that section. One of these extensions was carried up the valley of the Black River, and connected with a line of the Western Union company from Utica. In order to make arrangements for the working of this line Mr. Pope was asked to visit Rochester, N. Y., then the headquarters of the Western Union Telegraph Company. This visit resulted in his being appointed a superintendent of that company, a position he held in conjunction with that in the foreign corporation. At this time Colonel Anson Stager of the Western Union, proposed to Mr. Pope an exchange of the Western Union lines in New Brunswick and Nova Scotia for those of the Montreal company's in New York state, but the offer was not entertained at the head office in Montreal, the governing reason being that the success of the Atlantic cable was still problematical, while under the reciprocity treaty, then in force, there was a much larger business between Canada and New York state than between Canada and the Lower Provinces. The decision may have been wise for the moment, but an opportunity to round off their territory was lost by the Montreal company. In 1866 Mr. Pope was moved to Quebec and placed in charge of the Eastern division of the company's lines and has been continuously in charge there ever since. He has served the Montreal company and its successor, the Great North Western Company, for over fifty-two years, forty-four years as superintendent.

Two years ago the company, in further recognition of Mr. Pope's abilities and long service, extended his district so that now he has charge practically of the Province of Quebec and of the company's lines in New Brunswick, Maine, Vermont and New Hampshire.

Mr. Pope is the patentee of several telephone improvements which have been acquired by the Bell Telephone Company. He is also the inventor of an ingenious printing telegraph system.

The New Treasurer of the Gamewell Fire-Alarm Telegraph Company.

Watson W. Bowes, the new treasurer of the Gamewell Fire-Alarm Telegraph Company, 19 Barclay street, New York, who succeeds to that office the late Harry F. Bender, deceased November 6, 1907, is a Nova Scotian, and was born August 1, 1861. He received a common school education and entered the Bank of Nova Scotia

WATSON W. BOWES,
Treasurer Gamewell Fire-Alarm Telegraph Company, New York.

at Halifax as a clerk. Afterward he was promoted to the position of teller at their agency, Chatham, New Brunswick. Later he entered the service of the Bradstreet Mercantile Agency as superintendent of their Denver, Colo., office. For the past eighteen years Mr. Bowes has been connected with the Gamewell Fire-Alarm Telegraph Company in different positions, including that of assistant treasurer at their factory, Newton Up-

per Falls, Mass., and his present appointment is due entirely to merit. Mr. Bowes brings to his latest position the excellent qualities of experience and capability, combined with an attractive personality.

Western Union Improvements.

The expenditures for additions and improvements to the Western Union Telegraph Company property during the last seven years have amounted to $26,561.768 has been. This expense met in part from the proceeds of bond sales and partly from net earnings. The amounts expended for improving the property, such as the construction of new lines and wires and for the payment for stock and interest in other companies, from July 1, 1900, to September 30, 1907, were as follows:

Construction	$18,242,192
Stocks and properties purchased	7,947,984
Patents	208,000
Real Estate	163,592
Total	$26,561.768

The results of part of this expenditure can be seen from the following table, showing the miles of cables and poles, miles of wire placed, and the offices established in the last seven years:

	Miles of Poles & Cables.	Miles of Wire.	Offices.
1907	205,646	1,321,199	24,760
1906	202,959	1,256,147	24,323
1905	200,224	1,184,557	23,814
1904	199,350	1,155,405	23,458
1903	196,517	1,089,212	23,120
1902	196,115	1,029,084	23,567
1901	193,589	972,766	23,238

During these years the mileage of the poles and cables increased over 12,000 miles, wire mileage increased 348,433 miles, and there were established 1,522 additional offices.

Purity of Rubber as an Insulating Compound.

Probably no form of insulating material for wires has been so frequently discussed as india rubber and its component ingredients, known commercially as "rubber," according to Henry W. Fisher. Very many tests have been devised to determine the percentage of rubber and other materials, and especially the amount of fine para.

In a compound containing both pure para and other grades of rubber, it will probably never be possible to tell the relative percentages of each. If the amount of inferior grades of rubber is considerable, an indication of the fact can be obtained from some of the various tests now used.

Specifications have been devised with a view to securing, by the application of certain well defined tests, an absolutely certain percentage of pure para. In some of these cases the manufacturer could have furnished a better compound containing wax or similar solid hydrocarbons mixed with the dry mineral filler, but the presence of such materials would make it impossible to tell how much of the rubber was fine para.

In view of these rather complicated conditions, several of the manufacturers of rubber-covered wire framed a set of specifications which would ensure thirty per cent. para and give at the same time latitude to the manufacturer to use such other ingredients as in his experience would make a compound having toughness, elasticity, resistance against high voltages, and other desirable qualities.

The Wireless Telegraph of the Togo Negroes.

A German colonial official writing from German East Africa says: "During a journey in Togo I noticed particular bell-like tones coming from a distance. I asked my 'boy' what that meant. He said that it was the 'ehu,' a remarkable instrument consisting of two wrought-iron cow-bells, one large, the other small, which are welded to a common handle and struck with a stick. According as the tones are at shorter or longer intervals apart, words and sentences are formed, and these are thus conveyed from village to village. Almost every native in the party seemed to understand the ehu language. As the sounds were sent out far into the distance, the boy said smilingly: 'Sir, that is about you; the ehu has said: "The white man comes. He has no soldiers. He is going to Woga."'"

It is, however, questionable whether the instrument conveys words and sentences as such; for this would imply a written language. It could, however, be used to convey ideas, just as does one form of the deaf and dumb sign language.

Carnegie Institute Studies.

The marine observations in the Pacific Ocean, conducted by the Carnegie Institute, of Washington, during the last year, lead the officials to believe they can save the great ocean liners from $1,000 to $2,000 on each voyage. According to the year-book of the institution, just issued, measurements of magnetic declination, dip and intensity were made, and a new magnetic chart, correcting errors in former charts, has been made, and mariners, it is said, will now be able to steer much straighter courses. The Galilee, the vessel employed in the survey, according to the year-book, has traversed over 50,000 miles along courses where few magnetic observations have been previously made.

Important Subjects Treated in Back Numbers.

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

Adjustment of Relays and Sounders ..... Oct. 1, 1902
Alternating Current Transformer for Quadruplex, W. H. Jones ..... Mch. 1-16, 1904
American Cable Across the Pacific ..... July 16, 1903
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Atmosphere and Earth Electrical Conditions, E. C. Walker, Dec. 16, 1904
Barclay Combination Quadruplex Rheostat ..... July 1, 1903
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Direct Polar Relay Repeater of the Postal Telegraph-Cable Company ..... Oct. 16, 1903
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Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines ..... June 1, 1904
Random Recollections of 145 Broadway, W. P. Phillips ... Feb. 1, 1905
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Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Montreal, Que., June 24, 25, 26, 1908.

Commercial Cable Company meets the first Monday in March, at New York.

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

Great North Western Telegraph Company meets the fourth Thursday in September, at Toronto, Ont.

International Association of Municipal Electricians meets at Detroit, Mich. Time to be chosen later.

Railway Signal Association will meet in 1908 at a date and place to be named later.

Old Time Telegraphers' and Historical Association, will meet at Niagara Falls, N. Y., in 1908, at a date to be named later.

Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.

Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.

Train Despatchers' Association meets at Fort Worth, Tex., on June 18, 1908.

The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

Telegraph Age.

Entered as second-class matter at the New York, N. Y., Post Office.

Published on the 1st and 16th of every month.

TERMS OF SUBSCRIPTION.

One Copy, One Year, in the United States, Mexico, Cuba, Porto Rico and the Philippine Islands . $1.50
Canada 2.00
Other Foreign Countries 2.50

ADDRESS ALL COMMUNICATIONS TO

J. B. TALTAVALL, - Editor and Publisher,
253 BROADWAY, NEW YORK.
E. H. BOWEN, Associate Editor.

W. N. GATES, Special Adv. Agt., Garfield Bldg., Cleveland, O.

CABLE ADDRESS: "Telegage," New York.
Telephone: 4143 Cortlandt.

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NEW YORK, FEBRUARY 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.

Important Supreme Court Decisions.

The Supreme Court of the United States has recently delivered three opinions construing laws adversely to the contentions of organized labor. The first decision was rendered on January 6 in the case of some railroad employees who sought damages under the employers' liability law, making railroads responsible for injuries resulting from the negligence of fellow servants. This law the court held to be unconstitutional. The second decision was announced on January 23, when the Erdman arbitration act, forbidding the discharge of employees because they are members of labor unions, was declared invalid. This decision is published in part on another page. The third decision was delivered on February 3, and involved the applicability of the Sherman anti-trust law to boycotting conspiracies by labor unions.

These decisions are highly important, and are all the more significant coming, as they have done, in rapid succession, inasmuch as they determine definitely hitherto complex conditions in industrial relations, and give power, direction and clarity to thought and understanding in regard to the same.

The Effect of the Nine-Hour Law on the Railroad Telegrapher.

The bill passed by Congress providing a nine-hour law for all railroad telegraphers, and which becomes operative on March 4, while enacted ostensibly in behalf of telegraphers, many of whom were advocates of the measure, appears likely to prove a boomerang in its operation. For, apart from what may be deemed the ethics of the case, nice points not always admitting of a practical interpretation, and anyway which are not now under consideration, the facts are that while the burden inflicted by the situation bears heavily on the railroads themselves, the telegrapher as an individual at many points will also come in for his share of hardship rather than betterment. This, it would appear, is an unexpected and must be a disappointing outcome of the agitation resulting in legislation curtailing the hours of railroad telegraphic labor to eight and nine-hour daily periods by state and nation, respectively.

At many of the smaller country stations, where but a single person is employed as agent and joint railroad and commercial operator, the effect of the new law will be to cause the closing of such stations because the employment of two or more men at these points is not warranted by the narrow amount of business handled.

The railroads cannot be blamed for discontinuing such service in the smaller offices and it need not be surprising if they find that they can install a telephonic service which will practically eliminate the telegrapher. No one can blame the telegraphers for desiring shorter hours, as the hours of work in many instances have been undeniably long. The hand of almost every man has been against the public service corporation during the past few years and the end is not yet. It is well that a halt should be called upon the interference of legislation with the affairs of the public and semi-public corporations. The result will be shown in reduced earnings for stockholders and in badly crippled service for patrons, both of which are to be deplored.

Lack of Efficiency in the Telegraph Service.

Old time operators who manifest pride in their occupation, and who have been accustomed to bring to the performance of their duties the spontaneous free will effort and conscientious desire to meet required service, frequently lament over the want of efficiency too often exhibited on the part of the modern operator. It is a common remark on the part of the elders in referring to their present day successors, that the gentlemanship of deportment, keenness of observation, good judgment and the exercise of practical common sense necessary to the successful handling of public

messages, is measurably lacking as compared with the period of, say, twenty-five years and more ago. And the question is asked, Why is this so? It would not be fair nor would it be true to arraign the entire brotherhood of telegraphers and declare their inferiority to those of a previous generation. That, of course, would be a libel on the intelligence and high character of large numbers of men who are faithfully serving the telegraph in their day and generation. And yet, the old timer notices a difference in the personnel taken as a whole, even if he is unable to exactly define it, and comments upon the circumstance, almost sadly at times. In the endeavor to arrive at a solution of the matter, he is moved to ask whether operators are as well educated as formerly; whether their school training has been sufficient, or, for that matter, their early home training; or whether it is because the advancement of the messenger boy, not of the old-fashioned type but of the more modern genus, to a place at the key, has introduced into the service material which it were better had been excluded. Whatever the reason, the old timer, himself of skilful attainments, honest, of sobriety of manner and truth of statement; with elevating domestic attachments and with a reverence for and devotion to the telegraph, his long time connection with which, appealing to his self-respect, is troubled with the outlook in the field in which he has so long held an honorable place, and when he appeals to Telegraph Age with mind disturbed, he engages at once an attentive and sympathetic listener.

The telegraph service of to-day offers to the intelligent and progressive operator who will embrace all of the advantages his position offers him, better prospects for attaining success in life than were held out, or were possible, to the old time operator. This is true because the opportunities afforded the individual, whether he remain in the service or determines to make use of it simply as a school of preparation for other work, are more numerous and better to be desired than previously existed. At the same time, much as we regret to say it, it is true that there are fewer men in the service, comparatively speaking, who are doing really good work and seeking future success, than was formerly the case. The strength of this statement may be modified somewhat when the improvement noticed in the late rearrangement of personnel is considered; but in a general way the remark will stand.

Character will always make its impress; it is character that impels the individual to study and application; it is the influence of character that finally enables one to reach the higher places in this world's achievements. Very much of the work performed to-day in large telegraph offices is of an indifferent quality. Pride in working the wire has evidently vanished from the threshold of many offices. Twenty-five years ago the operator having charge of an important circuit did his utmost to keep business moving smoothly without error, and in a manner that reflected creditably on the individual as a man of experience and good judgment. It is the exception, perhaps, where this is now true. The operator of to-day possesses the advantage of a typewriter wherewith to produce fine looking copy and with much less effort than was necessary in using the pen, yet how few there are who fashion a typewriter message that would do credit to a schoolboy. In a large office we have in mind the manager noting the slovenly prepared copy turned out by his force sought to remedy the matter. It was a mortification to him. He appointed a member of the staff whose duty it was to inspect and point out deficiencies in this respect and endeavor to correct the abuse. The inspection showed that not an operator in the entire force of several hundred employed but what was incapable of or indifferent to the production of proper copy. Such a state of affairs was disgraceful. It is typical, however, of many offices.

It may be said that the turning out of either a well written or of a poorly prepared message is a comparatively small thing. Not so: it is indicative of the mind that governs the action. It is frequently the little things of life that serve as an index of the larger and more complex nature of our being. It is not alone in the use of the typewriter that operators should seek improvement, but in all the work that pertains to a correct understanding of the telegraph they should acquire knowledge. This is their avocation and they owe it to themselves, to their sense of manhood responsibility, to employing interests, to arouse enthusiasm and to stimulate and improve their own minds to greater deeds and nobler purposes. If a man wants to be a groveler all his life that is his privilege, but if he desires place and emolument let him prepare for it by hard work following intelligent lines of application.

The Value of Wireless Telegraphy on the Ocean.

The importance of the uses of wireless telegraphy received forcible illustration a few days ago when by its means information of a wreck at sea was transmitted to land, permitting timely assistance to be sent to the disabled vessel. It was the case of the schooner Mary L. Newhall, of Bath, Me., which was being swept by seas two hundred miles north of Bermuda. The steamship Bermudian, which was standing by, but which had been unable to affect a rescue of the crew because of the gale, reported the plight of the vessel to Fire Island by wireless. The message said that the schooner's sails had been carried away and that boats which had been sent away to aid, were unable to reach her.

Another instance of the value of wireless telegraphy was afforded in the case of the recent burning of the steamship St. Cuthbert at sea, two hundred miles off the coast of Cape Sable, N. S. The news of the disaster, with the information of the loss of a portion of the crew and the rescue of

the survivors, was transmitted by wireless from the rescuing steamer, Cymric, of the White Star Line, and was received several days prior to the latter's arrival at port. While the steamer was actually being destroyed by fire, the news of the burning was being read throughout the world.

The Nine-Hour Railroad Law.

The Interstate Commerce Commission has been deluged with letters and telegrams protesting against the proposal of the railroads that the commission suspend the enforcement of the law providing that railroad telegraphers shall not be permitted to work more than nine hours a day. In two days 1,759 such protests were received by the commission in the form of telegrams. They came from telegraphers employed by the railroads and from union labor leaders. The law in question will become effective March 4. While the commission has made no formal ruling on the application of the railroads that an extension shall be allowed, it is understood that the members of the commission are of the opinion that they have no discretion but to begin enforcing the law on the date named.

The Railroad Gazette, in the course of a recent editorial in referring to the railroad situation, had this to say:

"The railroad, hard pressed to pay moderate dividends, perhaps even to pay fixed charges, tries to retrench. But public sentiment resists the privilege which it concedes to the private corporation. The big factory may close and discharge its thousand hands and there is no public note save one of passing regret. But let the railroad take off a single unprofitable train and public outcry rises. Certain fundamental rights of private capital are denied to the quasi-public capital invested in the railroad."

Press Telegrams in England.

"The history of the English Postal telegraph service is a long record of mismanagement by unsympathetic Postal officials," says the Telegraph Chronicle, of London, "who resented the decision of the government of the day to acquire the telegraphs, and who by their inept conduct at the time of the transfer and maladministration since, have failed to develop the electric telegraphs as they should have done. The worst illustration of the consistent blunderings of men who were ignorant of the possibilities of the esteem, and indifferent to the needs of the community is to be found in the manner in which the press telegrams have been managed. The climax has been reached by a departmental committee practically advising the postmaster-general to abandon the rights of the state, bought by a huge sum of public money, to hold the telegraphs as a government monopoly."

The Telegraph Chronicle follows up this introductory of the subject by a severe arraignment of the postal service in which a long array of authoritative facts and figures and testimony of those prominently interested therein are given, and concludes with the following summing up of the case, which affords suggestive information for those who are clamoring for governmental ownership of the telegraph in this country:

(a) Post Office administrators made a bad bargain for the public when the original press tariff was agreed upon, if revenue was the sole object of consideration.

(b) Instead of admitting (1) that the telegraphs existed for public need, irrespective of revenue or (2) increasing the tariff, the Post Office adopted two methods of dealing with press messages.

(c) Deliberately delaying press messages on public wires in order to diminish the quantity.

(d) Renting private wires to big financial concerns, squeezing out small capitalists, and breaking the Act of Parliament of 1868.

Mr. Buxton, on the advice of incompetent officials, now proposes to:

1. Hand over the public powers to newspaper proprietors, thereby giving away the monopoly of the transmission of telegrams secured by Act of Parliament to the state, and in defiance of the opinions of Mr. Fawcett and Lord Eversley.

2. Suggesting sub-contracting and the recruitment of telegraph operators without inquiry into their pay or conditions of service.

We charge the Post Office officials with a great breach of public trust. We charge them with having deliberately tried to force down the wages of state telegraphers (vide 1894 departmental report and 1902 report dual workers), and failing that, suggesting to outside capitalists that outside operators should be obtained.

The position is a serious one. The Post Office officials blundered during the telephone arrangements, but on the present occasion they have made themselves subservient to the demands of the wealthy newspapers of this country, and it is imperative that Parliament should demand a complete investigation into this ugly business.

Telegraphic Brevity.

Some recent notes from Europe remark that the word "Eisenbahnbetriebstelegrapheninspektionassistenten" would suggest German humor were it not recognized in the census of all the professions, trades and occupations which were covered in the German Empire in June last. The calling in question is that of assistant inspector in the railway telegraph service, and is one of 15,016 different occupations specialized by the census taken in that month.—Electrical World.

President Roosevelt in his recent message urges legislation to curb bucket-shop operations on exchange by forbidding the use of the mails, telegraph and telephone wires, as is done now in lottery transactions.

It is astonishing how many wireless telegraph stations there are in these days which report having picked up wireless messages from stations located at points distant anywhere from 2,000 to 12,000 miles. We may soon expect to hear that someone has reached Mars by wireless communication.

George Gray Ward on the Proposed Change of the Telegraph Alphabet.

In a recent interview with George Gray Ward, vice-president and general manager of the Commercial Cable Company, with a representative of Telegraph Age, on the question of proposed changes in the American form of the telegraph alphabet, he stated that he thought it a mistake to consider any change in the American alphabet unless the Continental code was substituted therefor.

He said: "The latter system is used exclusively all over the world except by the landline companies in the United States and Canada. The adoption of a universal alphabet is much to be desired, inasmuch as it would establish uniformity of action and purpose and promote mutual helpfulness and convenience. All the cable companies in this country use this continental alphabet and so work in harmony with the European governments, administrations and companies.

"Many operators are able to work both codes with equal facility, sometimes changing from one circuit, on which they were working Continental code, to another on which they work American Morse. This shows that there is no difficulty for the American Morse operator to adapt himself to the Continental code.

"In discussing the question of the difference of speed between the Continental and the American Morse signals with the late Lord Kelvin, during a visit of the latter to this country some years ago, he stated that he could mathematically prove that the Continental code was quite as fast and much safer than the American Morse. Those who have worked both codes must realize this, especially in transmitting the difficult cipher cable messages which makes it unsafe to send American Morse signals at a high rate of speed.

"The American navy has recently adopted the use of the Continental code in connection with wireless telegraph on board their war vessels, and should Congress confirm the Wireless International Treaty all wireless systems will have to employ a universal code, which will undoubtedly be the Continental.

"The spaced and long dash letters prevent the American Morse being used on long submarine cables.

"It is difficult to make comparison from actual traffic of the relative speeds and liability to error of these codes. The electrical condition of the line and capability of operators and class of traffic must all be taken into consideration, but instances are known where lines worked so sluggishly as to make it practically impossible to distinguish the spaced and long and short dash letters of the American Morse alphabet, while the Continental code was read without much difficulty.

"A logical view of this subject must show that the Continental code dealing in only dots and dashes is not so exposed to error as the American Morse, which deals in dots, long dashes, short dashes and spaces, but in any case, many errors occur by reason of the split and long and short dash letters, which would be eliminated by the adoption of the Continental code. I have often discussed this question with telegraph officials and have yet to find one who does not favor the introduction of the Continental code."

The International Telegraph Conference.

The International Telegraph Conference, which was to have opened at Lisbon, Portugal, on April 4, has been postponed until May, at a date to be yet announced, owing to the assassination of the Portuguese king. The king had issued invitations to the various governments, tendering the hospitality of that country to the delegates. Among those who will represent American telegraph interests are George Gray Ward, of New York, vice-president and general manager of the Commercial Cable Company; General James Allen, of Washington, D. C., chief signal officer, United States Army, and T. W. Goulding, of London, England, the European general manager of the Western Union Telegraph Company.

At an international telegraph convention held at at Brussels in 1858, was laid the foundation upon which has since been built up the present existing system of holding international telegraph conferences. The succeeding convention met at Paris in 1865, when more definite arrangements were perfected for the holding of periodical conferences in various European capitals.

The International Telegraph Convention prescribes, among other things, for the priority of government and service telegrams; the strict serecy of messages, their prompt despatch and delivery, and the regulation of accounts between the contracting parties. But the states adhering to the convention do not accept any responsibility on account of the service of international telegraphy, and reserve the right "to stop the transmission of any private telegram which may appear dangerous to the security of the state, or which may be contrary to the laws of the country, or to public order or decency." Each adhering government also has the power to suspend its telegraphic service "for an indefinite period, if it judges necessary, either generally or only upon certain lines for certain classes of correspondence," the sole condition being that notice shall be given to the other contracting states in order to facilitate the proper working of the convention. Any state can adhere to the convention on request. Also any state may renounce its adhesion. The convention remains in force indefinitely, or for a period of one year from the date of its denunciation by any state, its general renunciation by the contracting states.

A full history of the International Convention was published in Telegraph Age in the issue of October 16, 1907.

A despatch from Peking announces that China has appointed delegates to represent her, for the

Erdman Law Declared Unconstitutional.

[It has been dicided by the United States Supreme Court that an act of Congress known as the Erdman Law, passed June 1, 1898, is unconstitutional and "an arbitrary interference with the liberty of contract which no government can legally justify in a free land." This decision is of importance to telegraphers, inasmuch as the Order of Railroad Telegraphers is also engaged in testing the constitutionality of the act growing out of the discharge of operators on the Louisville and Nashville Railroad, because of their membership in the order.]

The tenth section of the Erdman law, enacted by Congress in 1898, forbidding railroads or other carriers engaged in interstate commerce to discriminate against or discharge employees because of their membership in labor organizations, has been declared by the Supreme Court to be void as contravening the Constitution. The decision is one of the most important announcements ever delivered by the court on the rights of employers and employees and the principles laid down are far-reaching in their effect on present-day labor conditions, says American Industries.

The decision was rendered on a test case brought by the Louisville and Nashville Railroad. William Adair, master mechanic of the road, for the purpose of attacking the law, discharged O. B. Coppage, a fireman in the employ of the company, because he belonged to the Order of Locomotive Firemen. That organization took the matter up. Adair was indicted under the Erdman law, and convicted and fined $100 by the Federal Court in Eastern Kentucky, which upheld the constitutionality of the act. Carriers and their employees, the court held, being adjuncts of interstate commerce, the law was a proper regulation thereof, and it denied the pleas of the company that it was void because it interfered with the liberty of contract and was class legislation, which were the principal grounds upon which the appeal to the Supreme Court were prosecuted.

The opinion of the United States Supreme Court was delivered by Justice Harlan, who said in part:

"The first inquiry is whether that part of the Tenth Section of the Act of 1898, upon which the first count of the indictment was based, is repugnant to the Fifth Amendment of the Constitution declaring that no person shall be deprived of liberty or property without due process of law. In our opinion that section, in the particular mentioned, is an invasion of the personal liberty as well as the right of property guaranteed by that amendment.

"As agent of the railroad company and as such having control of the business of one of its departments, it was the defendant Adair's right—and that right inhered in his personal liberty, and was also a right to property—to serve his employer as best he could, so long as he did nothing that was reasonably forbidden by law as injurious to the public interests. It was the right of the defendant to prescribe the terms upon which the services of Coppage would be accepted, and it was the right of Coppage to become or not, as he chose, an employee of the railroad company upon the terms offered to him.

"While, as already suggested, the rights of liberty and property guaranteed by the Constitution to every person within the jurisdiction of the United States against deprivation without due process of law, are subject to such reasonable restraints as the common good or the general welfare may require, it is not within the functions of government—at least in the absence of contract between the parties—to compel any person in the course of his business and against his will to accept or retain the personal services of another, or to compel any person against his will to perform personal services for another.

"The right of a person to sell his labor upon such terms as he deems proper is, in its essence, the same as the right of the purchaser of labor to prescribe the conditions upon which he will accept such labor from the person offering to sell it. So the right of the employe to quit the service of the employer, for whatever reason, is the same as the right of the employer, for whatever reason, to dispense with the services of such employee. It was the legal right of the defendant, Adair, however unwise such a course might have been, to discharge Coppage because of his being a member of a labor organization, as it was the legal right of Coppage, if he saw fit to do so, however unwise such a course on his part might have been to quit the services in which he was engaged because the defendant employed those who were not members of some labor organization. In all such particulars the employer and the employee have equality of right, and any legislation that disturbs that equality is an arbitrary interference with the liberty of contract which no government can legally justify in a free land."

"But what possible legal or logical connection is there between an employee's membership in a labor organization and the carrying on of interstate commerce? Such relation to a labor organization cannot have in itself any bearing upon the commerce with which the employee is connected by his labor and services. Labor associations, we assume, are organized for the general purpose of improving or bettering the conditions and conserving the interests of their members as wage-earners, an object entirely legitimate and to be commended rather than condemned. But surely those associations as labor organizations have nothing to do with interstate commerce as such.

"One who engages in the service of a carrier will, it must be assumed, faithfully perform his duty whether he be a member or not a member of a labor organization. His fitness for the position in which he labors and his diligence in the

discharge of his duties cannot in law or sound reason depend in any degree upon his being or not being a member of a labor organization. It cannot be assumed that his fitness is assured or his diligence increased by such membership, or that he is less fit or less diligent because of his not being a member of such an organization. It is the employee as a man and not as a member of a labor organization who labors in the service of an interstate carrier."

Discussing the relationship of the law to interstate commerce, Justice Harlan said:

"The power to regulate interstate commerce is the power to prescribe rules by which such commerce must be governed. But, manifestly, such rules in order to be within the competency of Congress under its power to regulate commerce among the states must have some real or substantial relation to or connection with the commerce regulated. But what possible legal or logical connection is there between an employee's membership in a labor organization and the carrying on of interstate commerce? Such relation to a labor organization cannot have in itself any bearing upon the commerce with which the employee is connected by his labor and services. * * * Looking alone at the words of the statute for the purpose of ascertaining its scope and effect and determining its validity, we hold that there is no such connection between interstate commerce and membership in a labor organization as to authorize Congress to make it a crime against the United States for an agent of an interstate carrier to discharge an employee because of such membership on his part."

Justice Harlan considered briefly whether the law had its origin in the apprehension of Congress that it did not show enough consideration to members of labor organizations, but he closed that branch of the discussion by saying that he would not indulge in any such conjecture or make it the basis of the decision.

Transmission Line Crossings Over Railroads.

The rapid increase in the number of electric transmission lines and the distributing circuits therefrom, is rendering every day more important and more perplexing the question so frequently encountered as to the protection, if any, which should be provided at railroad crossings.

The fear which the steam railroad operator has in regard to such crossings arises from two sources. He fears the damage which might result through mechanical agencies, in case the transmission line should fall upon the track. He fears, also, the damage which he thinks might result through electrical agencies. The fear of the electric current is usually the greater, probably because of the fact that most steam railroad operators have had little, if any, experience with electricity, and they attach to it more or less of the mysterious dread which people have for it generally.

The protection for which the railroad man generally asks, is a steel bridge constructed underneath the transmission line for that portion of its length which is across the railroad company's right-of-way; or at least for that portion of its length which is across the tracks. In some cases, it has been required that the transmission line be carried on insulators attached to this structure; such a requirement is an undesirable one from every standpoint.

There can be no question that a transmission line can be made as strong as any steel protecting bridge that can be installed, and, in general, strength can be obtained at a great deal less expense than is involved in installation of the bridge. A simple span of wire or cable supported at each side of the right-of-way, on steel structures if necessary, can be made as strong, both as to supporting structures and as to the cables, as any bridge which can be erected. It seems foolish, therefore, to insist upon the installation of a bridge below a transmission line for fear that, through mechanical agencies, the transmission line may be thrown down.

Probably no railroad operator would make special objection to have built across his tracks a construction similar to that of a well designed transmission line, if he knew no current was to be put upon it; but, in some instances, the mere idea of having current on the wires seems to introduce immediately a fear of the construction—both mechanically and electrically. In such cases, the ultimate source of the fear and objection to the transmission line crossings may be said to lie in the fact that the lines carry an electric current; and it is well, therefore, to examine into the possible ways in which the existence of an electric current on the lines may affect the safety of the property or employees of the railroad.—Ralph D. Mershon in the Railroad Gazette.

Annual Dinner of the American Institute of Electrical Engineers.

The annual dinner of the American Institute of Electrical Engineers will be held at the Waldorf-Astoria, New York, on the evening of Wednesday, February 19, at 7 o'clock. Carrying out the idea established upon former occasions, the feature of the dinner this year will be the tribute rendered by the speakers to the relation of the electrical engineer with public service corporations. The occasion will be designated as the "Public Service Dinner," and among the speakers who have promised responses to toasts are many men prominently identified with public service utilities, either as members of commissions or operating heads of large utilities organizations.

The dinner committee is composed of Robert T. Lozier, chairman; A. A. Gray, Frederick C. Bates and George H. Guy.

The Education of the Electrical Engineer.

Charles P. Steinmetz, consulting engineer of the General Electric Company, Schenectady, N. Y., in an address before the American Institute of Electrical Engineers, New York, on January 24, gave utterance to the following thoughts on the education of the electrical engineer, embodying truths so fundamental in character that they should have the widest possible reading:

When I dwell more on those features of our electrical engineering education which appear to me unsatisfactory, it is not that I overlook the many good points, but rather that a criticism of the few defects appears to me more important, for the purpose of urging their elimination.

The great defect of the engineering college is the insufficient remuneration of the teaching staff; the salaries paid are far below those which the same class of men command in industrial work, and as a result the college cannot compete with the industry for its men, but most of the very best men are out of reach for the colleges. It appears to me that a vast improvement could be made in electrical engineering education if a large part of the sums which are now devoted to marble engineering buildings and fancy laboratory equipments could be devoted to offer such salaries as to make available to the colleges the undivided time and interest of the best men in the field.

To the subjects taught and the methods of teaching very grave objections may be made. The glaring fault of the college curriculum is that quantity and not quality seems to be the object sought: the amount of instruction crowded into a four years' course is far beyond that which even the better kind of student can possibly digest. Memorizing details largely takes the place of understanding principles, with the result that a year after graduation much of the matter which had been taught has passed out of the memory of the student, and even examinations given to the senior class on subjects taught during the freshman and sophomore years, reveal conditions which are startling and rather condemnatory to the present methods of teaching.

It stands to reason that with the limited time at his disposal, it is inadvisable for a student to waste time on anything which he forgets in a year or two; only that which it is necessary to know should be taught, and then it should be taught so that at least the better student understands it; that is to say, so thoroughly as never to forget it. That far better results would be obtained if half or more of the mass of details which the college now attempts to teach, were dropped; if there were taught only the most important subjects—the fundamental principles and their applications—in short, all that is vitally necessary to an intelligent understanding of engineering, but this taught thoroughly, so as not to be forgotten.

The better technical colleges realize that the first requirement of an electrical engineer is a thorough general education, and begin to realize that for this purpose it is not sufficient to require general subjects for college entrance and relegate their study to the high school; for even if the average high school were what it should be, and not what it actually is, much of the general knowledge required by an educated man cannot be taught in the high school, since during the high school years the intelligence of the boy is not sufficiently ripened for its grasp, and a review in the college is necessary.

However, even if an attempt is made to teach or to review general subjects, the work is not carried sufficiently far. Mechanical engineering, physics, chemistry, and some civil-engineering subjects are recognized as legitimate subjects of teaching in the electrical-engineering course in many colleges, together with literature, some history, etc.; but physiography, physical geography, meteorology, mineralogy, astronomy, etc., are also of importance in a general engineering education.

To illustrate in the case of chemistry: The electrical engineer should have a knowledge of the laws of chemistry, a familiarity with the elements and their compounds, and a general knowledge of the methods of analysis and synthesis. Such a course must, therefore, necessarily be largely descriptive, and the experimental work largely illustrative.

Astronomy is one of the most interesting and fascinating of subjects. But where taught as a part of the general educational programme, it frequently is all mathematics, and so hopelessly dry and repellent. It should be given descriptively, for in a short course on astronomy it is just as ridiculous to delve deeply into mathematics as it would be to start the teaching of geography with a course in spherical trigonometry.

In conclusion, the main defects in the present electrical-engineering training in some of our colleges appear to me as follows:

1. The insufficient remuneration of the teachers, which makes most of the best men unavailable for educational purposes, and is, therefore, largely responsible for the other defects.

2. The competition between colleges, which leads to a curriculum marked more by the quantity of the subjects taught than by the thoroughness of the teaching. The graduates are sent out with a mass of half-understood and undigested subjects, quickly forgotten, and deficient in understanding of the fundamental principles and in the ability to think.

3. The tendency of some colleges to teach the trade of electrical engineering rather than educate intelligent and resourceful electrical engineers.

4. The unsatisfactory state of the teaching of allied sciences, which gives instead of general view and understanding of the science, a fragmentary knowledge of some details.

Serial and Electric Directors Meet and Dine.

At a meeting of the directors of the Serial Building Loan and Savings Institution and the Electric Building Loan and Savings Association, held at Shanley's Restaurant, Forty-second street and Broadway, New York, on the evening of January 30, a dinner, with covers laid for twenty-four, was served, after which considerable business of importance looking to the welfare of these associations was transacted. President John C. Barclay, of the Serial, occupied the chair. A committee of six, representing both corporations, was appointed with instructions to report at the next meeting of the directors a plan whereby both organizations may be consolidated. This committee included J. B. Sabine, E. F. Howell and J. R. Beard, for the Serial, and E. S. Butterfield, T. E. Fleming and G. W. Blanchard, for the Electric.

After some discussion regarding the importance of effecting such a consolidation, a number of those present were called upon to address the gathering. J. B. Sabine, the attorney for the corporations, spoke on "The Safety of Savings and Loan Associations Has Been Established by Recent Legislation;" J. B. Taltavall dwelt on "How Properly to Advertise the Institution in Telegraph Circles;" T. E. Fleming, in discussing the question of "How We Built Up the Savings and Loan Associations," said that enthusiasm was the key note of success of the loan associations, as it was the key note of success in all other enterprises; F. C. Leubuscher had for his theme "Esprit de Corps in the Successful Management of Savings Institutions;" J. F. Nathan gave a talk on the "Experiences of a Home Seeker," while J. T. Laidlaw selected as his subject "The Vicissitudes of a Saving Man." Messrs. E. E. Brannin, M. J. O'Leary, E. S. Butterfield, Secretary E. F. Howell, James R. Beard and others made brief but interesting remarks, conveying suggestions having in view the welfare of the association and the expediting of its further development.

The dinner arrangements were in the hands of a committee, of which M. W. Rayens was chairman, and were carried out with a carefulness and attention to detail as to occasion many warm expressions of approval.

At a subsequent meeting held jointly by the directors of both organizations, on February 6, a scheme of consolidation which had been prepared, was unanimously adopted.

J. B. Taltavall, in discussing the subject of "How Properly to Advertise the Institution in Telegraph Circles," said in part:

"The scheme of management presented by the Serial Building Loan and Savings Institution, organized by telegraphers and designed for their benefit, is worthy not alone of the approval of telegraph officials, but also of their earnest and expressed sympathy and practical aid. It should also appeal with profound concern to the individual who would better his condition.

"This institution, like all other business undertakings, must necessarily resort to all proper means to secure its legitimate ends. The question of how best to advertise itself in telegraph circles is a highly important one, and demands careful thought and study, for it means recognition, the practical value of which should spell success. No one man, however great his proved abilities may be, who is charged with the responsibility of management, can accomplish all this unaided. He has a vast amount of detail work to look after. He needs all the assistance that can be rendered him. That is his right, and furthermore, it should be the self-imposed duty of every member of the board of directors, of telegraph officials and of the individual membership to constantly proclaim the advantages this institution holds out to the telegrapher. The esprit de corps should be more pronounced. Praise of the institution should be continually sounded. If all would remember to practice this simple yet effective method of advertising, much resultant good would follow.

"Another thing: the board of directors of this institution should include on its roster the names of heads and of other influential individuals of the various telegraph operating departments. Not only this, but such persons should be expected to personally solicit employees and friends to open bank accounts with this institution; the environment of such a carefully constituted directory would enable its component membership to accomplish much in this direction.

"The question of extending the sphere of the workings of the Serial, giving it a broader national range, should be kept constantly in view, and the subject should receive earnest consideration; also, that members of the profession residing in all sections of the country should be solicited to deposit with this institution their monthly savings. While many persons residing outside of the city already avail themselves of the privileges afforded by the Serial, its benefits might be extended indefinitely were the matter given wider publicity.

"The Serial has been prudently managed, earning its dividends, which have never been less than five per cent., and which have been paid with unceasing regularity, the telegraphic strike and the more recent financial panic in no wise affected its deposits, its earnings or its dividends. We are proud of the record and of the brotherly help and interest this institution has ever manifested in behalf of its membership. It has been the means of providing homes for hundreds of its members during the past quarter of a century. It is a splendid organization, and is so regarded by the banking department of the state of New York, under whose control it is, and which has expressed warm encomiums for the ability and clear-sighted intelligence that has guided its affairs. While this is flattering, a greater unity of purpose and action on the part of the entire membership would constitute a working force of the whole of tremendous momentum—invincible in

strength and power, that would lead to a wider expansion of activities.

"An institution so important as the Serial, which has conferred such benefits in behalf of the telegrapher, and which is calculated to make a very much larger impress upon the telegraphic world, is worthy of and should be able to command the best thought and co-operation of those for whose benefaction it was organized."

A Newfoundland Telegraph Dispute.

Judgment was recently delivered in the case of the Anglo-American Telegraph Company vs. the Reid-Newfoundland Company, in which the plaintiff company claimed an account of commercial messages over the telegraph line between St. John's and Whitbourne, Newfoundland, under an agreement with the Newfoundland Railway Company, dated August 11, 1888, and of which it claims the Reid-Newfoundland Company is the assign. The defendant company held that it was not an assign of the Newfoundland Railway Company in so far as this agreement was concerned.

The judgment states: "The defendant company, however, took the special wire from the government under the contract of 1898, which conveyed an estate comprising the whole of the unexpired term of twenty-seven and one-half years, which the agreement gave in the special wire. If the special wire has not been conveyed by this contract, then the defendant company's occupation of it must be wholly wrongful, and it would be liable for every use made of it. The conduct of the defendant company, as well as its contract, shows it to be in the position of an assign. It conformed to the terms of the agreement of 1888 and took its benefits. From April 1, 1898, it held the special wire with the owner's consent and must be presumed to have done so on the terms set forth in the agreement."

The original agreement with the Newfoundland Railway Company provided that the special wire referred to was for the special and exclusive use of the railway company, and to be so constructed and maintained as to afford the railway company constant communication between each of the railway stations, between St. John's and Harbor Grace, and Harbor Grace and Carbonear. Commercial messages were held to be all business messages paying toll, or contributing to the earnings of the company. It was ordered that account be taken before the registrar of all messages transmitted over the special wire by Sir R. G. Reid, and the defendant company, other than messages connected with, or for purposes incidental to the management, operation or control of the line of railway between St. John's and Harbor Grace, via Whitbourne, and between Harbor Grace and Carbonear.—The Railway and Marine World.

Mr. Edison and the Old Remington Model.

Edwin C. Barnes, western manager of the National Phonograph Company, in addressing recently before the Business Science Club, of Chicago, recounted the connection of Thomas A. Edison with the original model of the Remington typewriter. The inventor, it will be recalled, was G. Latham Sholes, of Milwaukee. The machine wrote fairly well but refused to "line up." So he took the model to Mr. Edison to perfect.

Mr. Barnes, in discussing the incident, said: "When Mr. Sholes invented the typewriter he took it to Mr. Edison to perfect. I have often heard Mr. Edison tell the story of how he first became acquainted with this interesting and essential office assistant. He tells how Mr. Sholes came to him, with an old wooden model of a machine which he said would write letters. He tells how he worked on it ceaselessly for a long time, and discovered that the worst feature of the proposition was to get the letters to line up.

"After perfecting the operation of the wooden model, Mr. Edison set to work to make a metal machine. He built and perfected the first steel typewriter ever produced. The castings were made in his own shop and the parts turned out in his own laboratory. The first machine worked and wrote letters, and he succeeded in securing the alignment that he sought, but he could not understand what use the machine would ever be from a business standpoint.

"In the recounting of this story I have heard him tell how he would ask one of his assistants to take a pen and paper and write a given sentence while he punched it out on the typewriter. The result was that the penman wrote the sentence two or three times while Mr. Edison was writing it once on the typewriter. This seemed to prove to him that it would not go.

"Notwithstanding this test, he continued to build these steel typewriters and the demand steadily increased. All this time Mr. Edison was at work on the Business Phonograph, believing that it was the solution of the detail of correspondence. After seeing the utility and demand created for the typewriter, he saw a possibility for a connection between his machine and the writing machine which would eventually do away with all of the hampering details of carrying on business correspondence."—Office Appliances.

Astral "Telegraphy."

For any gentleman possessing a patent system to open up communication with the moon or other planets by telegraph or otherwise, says the London Globe, the French Academy of Science offers a prize of $20,000. The amount seems trifling, considering the sums that are being offered for mere flying machines, but learned bodies do not possess the wealth of some newspaper proprietors. The prize, it is gravely announced by the academy, will be awarded in 1910 in the event of its being won. It should be added that the planet Mars is barred, on the ground that communication

Arborvitae Poles for Telegraph Purposes.

The United States Government Forest Service says:

Arborvitae, on account of its strength, lightness, durability, and form, is the most desirable telephone and telegraph pole timber. Its use has been extended to regions remote from the base of supply and rapid depletion has resulted. This is indicated by a rise in price for thirty-foot poles of 156 per cent. in the last eleven years. Arborvitae is extremely slow in growth, and under natural conditions does not form a close stand. Hence a supply large enough to meet an annual consumption as large as the present one cannot be expected from future growth. As a consequence it becomes necessary to investigate carefully every possible method of handling the poles to increase their length of service.

In experimental work along these lines, which the Forest Service has been conducting in cooperation with the American Telephone and Telegraph Company, fifty green thirty-foot arborvitae poles were cut every month for nine months. The first fifty were cut April 22, 1905, and fifty monthly thereafter until December, 1905, inclusive.

All poles were peeled immediately after being cut and were then skidded in the woods in single tiers about two feet above the ground. Each pole was numbered, its weight taken, and its circumference at six feet and at thirty feet from the butt recorded. The poles were weighed by means of a "steelyard scale."

After a long period of seasoning the circumferences were again measured at six feet and at thirty feet from the butt in order to determine the amount of shrinkage. A series of circumference measurements was made also at the butt and at successive five-foot points to determine the volume, weight per cubic foot, and taper of an average pole. Note was made of checking during seasoning.

Upon completion of the seasoning experiment different methods of preservative treatment of the pole butts were tried, consisting of brush treatments with carbolineum and creosote and open-tank treatments with creosote. Records were kept of duration of treatment, temperature of oil, and depth of penetration.

The conclusions arrived at in the seasoning process are:

(1) Green arborvitae poles lose the larger portion of their moisture from the sapwood. This is very thin, consequently loss begins immediately after exposure to favorable seasoning influences, and a large per cent. of the moisture is lost during sixty days of fair weather. Spring and early summer offer the best conditions for maximum seasoning in the shortest time.

(2) Poles cut and peeled during late fall and winter and skidded in a single layer well off the ground should be held until the first of May before shipping, thus insuring a decrease in freight weight more than equal to the expense of holding. Poles so held will also gain in strength and durability.

(3) Late fall and winter offer the best conditions for cutting, skidding and hauling, and these operations should be carried on at that time.

(4) The amount of shrinkage during seasoning is too small to be taken into account.

(5) Checking during seasoning has no particular effect on the strength of the pole and is of little assistance in the absorption of the oil. Checking is greatest in the spring and summer cut poles.

The treatment of the poles should be as follows:

(1) If arborvitae poles are properly seasoned the sapwood can be thoroughly impregnated with creosote in the open tank.

(2) Fall and winter cut poles should be in satisfactory condition for impregnation by the following June if skidded according to the plan followed in the experiment. If skidded several layers deep, as is the usual custom, they will probably have to be seasoned for a longer period.

(3) With seasoned poles the sapwood can be thoroughly impregnated by a hot-oil open-tank treatment of three to seven hours between 212° and 220° F. Probably the three-hour period is as efficacious as the seven-hour, the differences in the experimental treatments being due to variations in the amount of sapwood and not to the duration of the bath.

(4) After the immersion in hot oil a bath in the cold preservative is necessary. Unless the oil is changed at the conclusion of the hot bath the fires should be drawn and the poles allowed to remain in the oil until it has approached atmospheric temperature.

(5) Green arborvitae poles show great variation in open-tank treatment. Penetration is neither deep nor uniform and is not sufficient to justify the treatment for this class of material.

(6) Brush treatments of green poles can not be justified.

(7) The penetration on brush-treated seasoned poles is slight. The value of this method of treatment can be determined only by experience.

(8) Seasoned tamarack poles show fairly deep and uniform penetration of the oil when treated in the open tank. Further experiments with this timber are desirable.

In selecting a locality for setting the poles a region will be secured in which normal conditions are represented. The poles will be placed so as to include varying sites and exposures.

The poles will be set in such a manner that each contrasting series will be under practically the same conditions. The following scheme will be followed: (1) Tank treated; (2) carbolineum brush treated; (3) tank treated; (4) creosote brush treated; (5) seasoned, untreated; (1) tank treated, etc.; three tamarack poles will be included in the line. The 489 arborvitae poles will form a continuous line 12.2 miles long, 40 poles per mile.

A Directive System of Wireless Telegraphy.

E. Bellini and A. Tosi recently had an interesting article on the directive system of wireless telegraphy in the Electrical World, from which the following is taken:

A closed oscillator circuit, placed in a vertical plane, does not radiate equally in every direction of the horizontal plane like the open-rod oscillator, or antenna, employed in the usual wireless telegraph system. Lines of electric force detach themselves from the closed oscillator and extend to the earth, such lines being propagated chiefly in the plane of the circuit; the radiation is zero in a direction normal to the plane of the closed circuit.

In consequence of this, a system which makes use of the properties of closed radiating circuits is of itself alone a directive transmitter system. Since, however, the radiation from closed oscillators is weaker than that from open ones, it was necessary to prove that, when such closed circuits are employed, the distances reached in ordinary radiotelegraphic communication could be easily attained. Further, in actually obtaining radiotelegraphic communication by the employment of closed circuits it was also desirable to make certain that the energy required was not excessive.

The experiments were made by the authors, thanks to the kind permission vouchsafed by the French government, between three stations on the Normandy coast. These stations were erected in the neighborhood of Dieppe, Havre and Barfleur, each station being provided with a mast 50 meters in height. Since one mast only was used to sustain the closed radiating circuit, this latter was given a triangular shape in place of the circular form. The symmetrical sides of the triangle were formed of a trellis of nine parallel copper strands, spaced twenty centimeters apart, each strand consisting of seven wires 0.9 millimeter in diameter. The distance between the upper ends of the trellis forming an armature of the condenser was 2.5 meters; that between the lower extremities, ending at two meters from the ground, about 55 meters. The conductors of the trellis were all joined together at the base, and two wires of the same strand of the trellis served to make connections with the apparatus.

The distance between the Dieppe and Havre stations is about 90 kilometers; that between Dieppe and Barfleur about 170 kilometers. The angle enclosed between the directions Dieppe-Havre and Dieppe-Barfleur is about 23 degrees. The line joining Dieppe with Barfleur lies entirely over sea, while the transmission Dieppe-Havre has to pass over land the whole way; in consequence, Dieppe can be considered as being radiotelegraphically equidistant from Havre and Barfleur.

Dieppe was chosen as the transmitting station and Havre and Barfleur as receiving stations. The energy for the transmission was supplied by a storage battery, the current from which, broken by a mercury interrupter of the Foucault type, passed to one or two induction coils of 30 centimeter spark-length. The receiving stations were equipped for the reception with a Ferrié electrolytic detector connected to an ordinary vertical antenna and to earth.

The Arc in Wireless Telegraphy.

The Electrical Review, of New York, in referring to a new telegraph station erected on the east coast of England by the Amalgamated Radio Telegraph Company, says:

This station uses the De Forest spark apparatus which utilizes the oscillating arc for setting up electric waves. It is the description of the latter apparatus, which is of particular interest. Due to the fact that the ordinary commercial supply may be utilized, the apparatus requires very little space, as no special generating equipment is called for. Of course, if alternating currents only are available, a direct-current generator, driven in some way, would be necessary for operating the arc. The remainder of the apparatus consists of a special arc lamp enclosed so that the arc may be surrounded by an inert atmosphere, and a few condensers and inductance coils. The receiving apparatus is also comparatively simple, a resonant circuit being all that is necessary to catch the signals. To render these distinct in the telephone, however, a little device is needed, because the period of oscillation is too high for the telephone diaphragm to respond to. This is a little vibrating switch or relay called a "ticker," which is closed by the oscillating currents set up in the receiving circuit, and which discharges a condenser through the telephone, thus producing an audible signal.

One striking feature of this equipment is the noiselessness with which it operates. In spark telegraphy there is always a more or less loud report with each discharge, and where high-power stations are operated, the noise is very considerable. There is nothing of this kind in employing the arc lamp, for the oscillations set up by the latter are entirely inaudible, and they are impressed upon the antenna continuously. To send out the signals, all that is done is to change the frequency of these oscillations so as to bring them to the proper pitch, which is done by short-circuiting a few turns of the inductance coil by a telegraph key. There is no sparking at the switch, and the whole system seems wonderfully simple and effective so long as the arc itself is maintained in the proper condition.

This method of operation, by simply changing the wave-length of the oscillation, is neat, but it will probably cause some trouble if many stations are to be operated at the same time in any one neighborhood. In other words, electric waves of two frequencies are set up, each of which is capable of producing interference at other stations. On the other hand, if it be shown that the oscillations set up by the arc are more nearly harmonic than those given out from a spark system, tuning can be carried out more accurately, and there should be really less trouble from interference.

Grand Trunk Railroad Pension Fund.

At the last semi-annual meeting of the Grand Trunk Railroad shareholders $200,000 was appropriated as a nucleus of a pension fund for the officials and employes, and it was announced that in addition to the income from this sum, it will be necessary for the company each year to supplement it by an appropriation, now estimated at from $70,000 to $75,000 per annum.

The operation of the fund became effective on and after January 1, 1908, when the rules were published to all the 35,000 or more employees on the rolls. The rules will apply from the highest to the lowest of the staff in Canada, from the general manager himself down to the section-men and gate-keepers. They require absolutely the retirement from active service of every officer or employee when attaining the age of sixty-five years, and if he has entered the service before the age of fifty, and has served for fifteen years, or more, he is entitled with the approval of the pension fund committee to an annuity of one per cent. of the average annual salary paid for ten continuous years, for each year of uninterrupted employment, the basis of calculation being the same as that practically universal on this continent. Thus, if a man has served, say, thirty years, receiving an average of $1,000 a year on the pay rolls for the last ten years—or for any period of ten years during his term of service—he would be entitled to one per cent. of $1,000, equal to $10 by thirty years, or $300 a year. The company, however, have made a provision that irrespective of rate of pay or service, the minimum allowance to be paid under any circumstances will be $200 a year, and this without any counterbalancing maximum. The allowance from this fund will be on the highest average rate of wages for any ten consecutive years' continuous service. Any employee over fifty years of age, after fifteen years of service, if discharged without cause, at any time previous to reaching the pension age limit, becomes eligible to pension in proportion to the number of years of service up to date of discharge. Although it was originally considered desirable to follow the general rules prevailing in Great Britain, of the formation of such fund by mutual contribution from the company and employees, it has been finally decided to follow the practice of companies generally on this continent, of contributing entirely out of their own revenues the necessary funds for the pensioning of their aged and faithful employees.

The pension department will be administered by a pension committee selected by the company from among its official staff (themselves possible beneficiaries), whose decisions will be final in all matters pertaining to the administration of the fund. The benefits of the fund will also apply to worthy employees who may have been injured in the company's service, or who have suffered the loss of faculties which render them incapable of self-support, such employees having served the company the minimum period of fifteen years—whether the age limit has been attained or not.

While the Grand Trunk Railroad established, a number of years ago, what is known as the Superannuation and Provident Fund Association, which is still in existence, its membership is limited to the official and clerical staff throughout its lines in Canada only, whereas the new fund will apply to employees on all lines of the present system, and to all classes of employees. The Superannuation Fund will continue in operation with the registered membership as of December 31, 1907, but will be closed against the admission of any new members after that date. It is anticipated that the pension scheme will form an admirable adjunct to the company's Insurance and Provident Society, which has been so many years in operation; the weak point in which has always been the inability of an aged or permanently disabled employee to keep up his payments to the insurance fund, although privileged to do so. Hereafter a very small deduction from his pension allowance will enable an employee to make provision for his family up to a maximum amount of $2,000.

The pension committee nominated by the directors has elected C. M. Hays, chairman; W. Wainwright, vice-chairman, and H. B. Moore, secretary.—The Railway and Marine World.

Some New Methods in High Tension Line Construction.

H. W. Buck, in a recent paper read before the American Institute of Electrical Engineers, in discussing some new methods in high-tension line construction, said in part:

The great economies in the cost of generating power which have been obtained in the large steam turbine stations and hydroelectric plants, are leading to the general abandonment of small generating stations and the increase in transmission distances in order to distribute power over a large territory. In other words, 100,000 horsepower can be generated in one station and transmitted 100 miles cheaper than it can be generated and distributed from ten 10,000-horsepower stations near the center of load. On account of this tendency toward the concentration of generating units, the overhead transmission line has assumed a position of great importance in electrical installations, and the same permanency and reliability is demanded of it as of the generating station itself. The wooden pole line of the past has been practically abandoned and steel construction has been substituted.

The long distances covered by many of the modern lines, the large amounts of power to be transmitted, and the very high price of copper and aluminum—all have combined to force up the transmission voltage to the highest practicable limit. In consequence the demand for high-voltage overhead line insulators has outgrown the present standard practice, and some new systems will have to be introduced to meet the new conditions.

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

BY JAMES F. GORMLEY, OF BOSTON.

(Continued from issue of February 1.)

Events transpiring early in the year 1861 were portentious of the coming storm incident to secession and subsequent battle. People were keyed up to the highest pitch of excitement, and this great country rocked in the fearful unrest with which it was seized at that time. The calm of other days had departed, there were huried movements of the military, and armed camps began to appear. In the border states neighbor was arrayed against neighbor, and suspicion and distrust were rife on every side. At this time and in the midst of such an atmosphere I was stationed in Baltimore and was in the thick of the disorder. Much of the sentiment, of the prevailing fear, the hopes, the heart burnings, the business troubles were disclosed to me, revealed in the messages that came under my eye through my occupation as a telegraph operator. So, too, I became cognizant of much that was transpiring of a political character, even though the use of code concealed the most important information.

The tempestuous scenes of which I was a spectator made such a vivid and lasting impress on my mind that nothing has been lost of their distinctness by the lapse of years. Yet restoring changes incident to time have since been so many and so profound, healing animosities and obliterating all traces of war, that as I now recall that stormy period it seems almost like lifting the veil shutting out an unreal and remote past. It is sometimes difficult to realize that within the span of a single life one could have lived through such experiences and now to have the whole four years and more of strife briefly referred to in the simple summing up of the "late unpleasantness." You may be sure it meant much to the individual as it did to the nation while it lasted. The telegraph operator, by reason of his vocation, was "behind the scenes," so to speak. His key reflected closely the pulse of the country. I was in New York, whither I had gone to be married, when the attack on the Sixth Massachusetts regiment occurred in Baltimore. I happened to drop in at the Metropolitan Hotel to see my old friend and chum, John K. Calvert, who has lately been retired and pensioned by the Western Union Telegraph Company, and who was manager of the branch telegraph office at that well-known hostelry, when he greeted me with the remark: "Well, you have been raising ——— in Baltimore!" My superintendent ordered my immediate return to Baltimore, for there was urgent need of the service of every operator. Much difficulty was experienced in transit between Philadelphia and the point of my destination, but at last I managed to reach my post of duty. During the summer of 1861 I was frequently sent over to Washington to help out, and was a witness to many thrilling scenes and transmitted many thrilling messages. In the fall of that year the House printing telegraph instruments were abandoned on our line and the offices along the route from Washington to New York were ordered to be kept open all night because of the heavy demand upon the wires.

Soon after this I was back again in New York. F. O. J. Smith, a shrewd, energetic man, a native of Maine and a power in the early history of the telegraph, and who was the originator of the first eastern telegraph lines, had built a line from Portland, Maine, to New York, known as the Independent, and had opened the New York office at the corner of Nassau and Cedar streets.

At this period there were but few branch Morse telegraph offices in New York located above the main office of the Washington lines, which had been removed from Wall street to 145 Broadway. These offices, as I remember going up Broadway, were located as follows: Astor House, where Augustus Swan was manager; St. Nicholas Hotel, Metropolitan Hotel, La Farge House, New York Hotel, Everett House and the Fifth Avenue Hotel. There was another, situated in a private post office known as Bentley's Madison Square Post Office. Then there were two others still, located in the hotels connected with Allerton's cattle yards, one on the east side and the other on the west side of town.

In considering the local telegraph situation the inadequacy of these few offices to handle what should be the legitimate telegraph business of so large a city as New York, impressed one very forcibly, and I became convinced that it could be measurably expanded. With this thought revolving in my mind, and trying to mature some plan by which a more comprehensive system might be established which would yield corresponding personal benefit to myself, I chanced to make the acquaintance of Frank Smith, a fine, active fellow, the son of F. O. J. Smith. He and another were constructing lines to Albany and so to connect with the West, for the Independent and United States Telegraph companies. I thought I saw my opportunity and suggested that I start a city line to be operated in conjunction with their system. My proposition was that I build the line, they furnishing wire, instruments and stationary, and work the main office end. I offered to deliver all their messages above Canal street and to turn in all business I could secure, retaining a commission of twenty-five per cent. My proposition was accepted, and I lost no time in putting my plan into execution. I opened the first branch at French's Hotel, at Park Row and Frankfort street, now the site of the World building, wires thereto being run over the housetops. This was a good beginning, for the location was an excellent one for business, was convenient to the newspaper offices, and French's Hotel at that time enjoyed an excellent reputation.

In those days Broadway from Chambers street to Fourteenth, following the west side of that thoroughfare, was the great promenade of the town. Here were located the best houses in the retail trade. The west side of the street was denominated the "fifty-cent side," while the east side was known as the "twenty-five-cent side." At the northwest corner of Broadway and Franklin street was Taylor's saloon, a famous restaurant, the finest in America, splendid and showy in white and gold, decidedly French in style. The upper portion of the building was occupied as the International Hotel. Taylor's was the resort of the elite of the town. In this gorgeous place I secured the privilege, rent free, of establishing an office. It was a neat little affair, a portion of the counter near the entrance door being surrendered for the purpose. It was fitted with a key and sounder and enclosed by an ornamental rail, and attractive signs were displayed. This office attracted much attention, and the advantages of the location soon became apparent. I was warmly congratulated over so fortunate a selection by those who were connected with me in my enterprise, including Frank Smith, his associate in telegraph line construction, a Mr. Lane; by Mr. Morgan, who was connected with the United States Telegraph Company, and by Col. J. J. Speed, president of the Independent line. The latter expressed his satisfaction by entertaining a party of us at dinner served on a near-by table in the big apartment.

My next move was to run a wire to the Westchester House, at the corner of the Bowery and Broome street. The old hotel is still standing, although shorn of much of its former prestige. There was a good deal of business to be picked up in this neighborhood, considerable originating with the near-by Bowery Savings Bank in maintaining communication with its branch on Wall street. As usual, no charge was made for rent, the desirability of having a telegraph office on the premises being regarded as a full equivalent for the surrender of the space necessary for the purpose. A like arrangement was made with the St. James Hotel, a fine new house at that time, at Broadway and Twenty-sixth street, just above the Fifth Avenue Hotel, with the telegraph office at which my office came into competition. At this point I established a bulletin board on which was displayed many items of current news, the chief feature, however, being the posting of legal information, all of which was attractive to lawyers, and which served incidentally to influence business to our line.

(To be continued.)

Calling Device for Wireless Telegraphy.

An automatic calling device for a wireless telegraph station, constructed by W. R. Carroll, is in use on Yerba Buna Island, San Francisco Bay, under control of the United States Navy Department, and is said to be satisfactory in its operation.

In addition to the wireless telegraph equipment of this station there is a wire telegraph system of the Postal Telegraph-Cable Company, connecting with the Commercial Pacific Cable Company's line to Hawaii and the Orient, and also local and long distance telephones.

The wireless telegraph station communicates regularly with the navy's wireless stations at Mare Island on San Pablo Bay, twenty miles away, and with Farallone Islands, thirty-five miles at sea beyond the Golden Gate. The transmitting apparatus is similar to that in use at all modern wireless stations. The receiving devices include a coherer system with tape recording apparatus; an electrolytic receiver with high resistance double-head telephone receivers and a magnetic detector so arranged that it can be left attached to the transmitting aerial at all times even when sending. By this arrangement it becomes possible for the receiving station to "break" the sending station, just as is true on land lines, and to secure at once a repetition of lost signals instead of waiting until the sending has ceased as is done with all other receivers.

There are four transmitting or type wheels on the auto-sender and a half-wheel or aerial control wheel, as it may be called. The calling wheels bear the call letters of the different stations. All of these wheels and the half-wheel are on a common shaft which also carries the drive wheel of a set of gears which propels the traveling iron core of the magnetic detector and the whole is belted to a small motor. The speed of the motor is controlled by a slide rheostat, and a telephone hook switch in the circuit serves to set the mechanism amoving when the telephone is taken up for receiving or whenever it is desired to start the automatic sender.

Telegraphy in Cuba.

Mr. A. Campbell Turner, charge d'affaires of the American legation at Havana, forwarded copies of three decrees of the provisional governor of Cuba, establishing state telegraph offices, to be connected with the post-offices in the following places in Pinar del Rio province: Orozco, Quiebra Hacha and Cabanas. In these offices the postmaster is to be required to pass an examination as telegrapher and is to fill both posts. It is proposed in the future, in all the smaller towns in the interior of the island where the work of the post-office will so permit, to combine the offices of postmaster and telegrapher and to make applicants for these positions pass an examination in telegraphy before receiving their appointment.

The telegrapher in the hotel lobby asked the customer if she would wait for the reply to her message or wished it sent to her room. "You'd better send it to my room," replied the lady, who had just telegraphed to her husband. "It will take some time to get a reply from Henry; he stammers so."

The Berjonneu System of Electric Transmission of Pictures.

A description is given here of a system of transmitting pictures electrically which has been exhibited in Paris by Pascal Berjonneu. During this exhibition wires were connected up so as to form a loop of telegraph lines from Paris to Marseilles and back, a distance of over a thousand miles. Pictures were transmitted over this at the rate of one each fifteen minutes. Then the apparatus was disconnected from the wires and connected to a number of wireless-telegraph relays, the receiving apparatus, properly connected, was placed in the same room and the pictures were transmitted from one to the other wirelessly, this being the first time that this has been done. The new system does not use selenium, and the apparatus is said to be substantial and small. It is possible to use the system over any line which may be used for ordinary telegraph work or any submarine cable. The line current is small and it is required merely to actuate relays. In brief, the system is merely an adaptation of a Morse key to sending dots and dashes of different lengths. The picture to be sent is etched on metal just as is done to produce a half-tone plate. This metal is thin and is rolled up to form a cylinder which is mounted on a traveling drum similar to that of a phonograph, the feed being one-sixth of a millimetre for each revolution. An insulated platinum point is placed on this, which makes contact only with those portions of the cylinder which stand in relief. As the latter revolves contact is made for a longer or shorter time, causing currents of equal duration to pass over the transmitting wire. In the receiving station a sensitive film is mounted on a similar cylinder, and a ray of light, controlled by a small shutter moved by a magnet through which the line current passes, falls upon the film, thus producing the record. This, of course, consists of lines of dots and dashes one-sixth of a millimetre apart. The intensity of the current does not enter into the operation at all, this acting merely to open or close the window through which the beam of light passes. The system requires, of course, that the sending and receiving apparatus run in synchronism but the method by which this is secured was not described.—New York Electrical Review.

Photographing at a Distance.

A description of an apparatus suggested by S. Sivelli for the purpose of reproducing at a distance the optical image of a photographic objective, is presented in abstract form by the Electrical World. The sending apparatus consists of an ordinary photographic camera, the sensitive plate of which is replaced by a plate made up of a network of small selenium cells, insulated from one another and communicating with a constant source of electricity, the negative terminal of which is connected to earth. From each of these selenium cells there starts an insulated wire, dipping into a small mercury vessel arranged on a horizontal plane. There are thus as many mercury vessels as there are selenium cells. These vessels are arranged round the circumference of a circle, round the center of which rotates a metal index operated by clockwork, which, with a point attached to its end, will come into contact successively with each of the mercury vessels. This index communicates with a wire connected to the receiving apparatus, and insulated from the remainder of the outfit. The apparatus is to be worked in the following manner: After adjusting the focus for the image to be reproduced, the circuit is closed and the index having been set working, will traverse one after another, the mercury vessels corresponding to the respective selenium cells. The electric current from the battery will traverse the selenium cell actually in communication with the metal index, and according to the more or less considerable action of the illumination on the cell, will undergo a more or less considerable alteration in intensity. These alterations in current intensity, corresponding to the illumination of each of the selenium cells, are thus successively transmitted to the receiving station, there to be reconverted into variable light intensities. The receiving apparatus may be of various kinds; the one suggested by Sivelli is based on the following principle: a cylinder performing a translation and a rotation is surrounded by a sheet of white paper, at a short distance from which a style communicating with an electro-magnet is arranged. If everything be adjusted in order to eliminate any variation of current intensity as long as the luminous intensity in all the selenium cells is the same, each current closure will result in the production of a dash of more or less intensity, according as the selenium has been acted upon more or less strongly. The sheet of paper will thus be covered with a set of dashes reproducing with greater or less approximation the optical image by the photographic objective. The method thus outlined is obviously a purely hypothetical one. To produce an image at the receiving end that shall be coherent enough to be intelligible, the number of cells would have to be at least 1,000 to the square inch; and unless vastly more sensitive means than selenium cells can be devised for converting the variations of light intensity into variations of current strength, the idea seems impossible of realization.

The question as to what tests for commercial lightning-arresters might be properly incorporated in the standardization rules of the American Institute of Electrical Engineers has lately been considered by the Standardization Committee. The committee finally decided not to adopt any lightning tests in the new edition of the rules adopted June 21, 1907. However, the sub-committee on lightning-arresters hopes to get a full consideration of the subject for the benefit of a later Standardization Committee.

Radio-Telegraphy.

One thousand reservists attached to the German military telegraph corps have been called up for training in order that they may become familiar with the wireless apparatus.

While the cable connecting Scotland with the island of Shetland, belonging to the English post office, is disabled, communication has been established between Shetland and the mainland by wireless telegraphy.

A patent, No. 876,996, for intelligence intercommunication by magnetic wave components, has been awarded to G. W. Pickard, of Amesbury, Mass. Has closed electrical circuit of large area in inductive relation, and detector circuits, etc.

The recently reported transmission of a wireless message from the Nauen station, Germany, to the steamship Cap Blanco, at Teneriffe, which represents a distance of nearly 2,300 miles, is claimed by a Berlin newspaper to have established a record, and to have surpassed the achievement of the Marconi system between Ireland and Newfoundland.

A patent, No. 877,451, for means for receiving intelligence communicated by electric waves has been issued to Greenleaf W. Pickard, of Amesbury, Mass. This receiver for "wireless" waves comprises two substantially massive individual conducting solids, one of which has low resistivity and the other high resistivity and also thermo-electromotive power. the conductors being operatively connected together in substantially perfect electrical contact.

A bill to organize the business of wireless telegraphy in accordance with the decisions reached by the International Commission, which sat in Berlin in 1903, and the International Congress, which was held in 1906, has been introduced in the German Reichstag by the Minister of Posts and Telegraphs. The fundamental principle is to compel navigation companies, as well as the owners of land wireless stations, to arrange for intercommunication without regard to the system used; otherwise permission for the erection of stations for wireless on board ships will not be given. It is understood that the enactment is intended to give the fullest scope to all systems.

It is stated from Washington that the Republican members of the Senate have reached a virtual agreement to take no action relative to the wireless telegraphy treaty which has been pending before the Committee on Foreign Relations since almost the first day of the session. This conclusion is in spite of the fact that a dozen or more great powers have already approved the treaty and are now waiting for the co-operation of the United States. It is purposed to let the wireless treaty remain in the committee indefinitely while the Navy Department watches the behavior of the wireless companies. If they refuse to transmit distress signals or to show reasonable co-operation the treaty will be taken from its pigeonhole and ratified. The passage of the treaty would place all companies under international supervision.

William Marconi recently said that "the transatlantic wireless system will be opened to the public in February, and that in the beginning the service will be between London and Montreal only via Clifden, Ireland, and Poldhu, Cornwall, on the eastern shore of the Atlantic, and Glace Bay on the western shore. Montreal was chosen as the beginning point for the transmission of business and private messages because Canada has subsidized the wireless system to the extent of $80,000." In explaining the effort of the American telegraph companies to stifle the wireless company, through fear of its competition, Mr. Marconi said: "The telegraph companies placed a grave obstacle in the way of our success by refusing to accept at press rates messages filed in New York for transatlantic transmission via Glace Bay, thus adding from three to four cents a word to the cost of an eastbound message, while the regular press rates from New York to Glace Bay were only one cent a word. This difficulty was solved by the New York editors with reference to westbound messages by appointing me their Nova Scotia correspondent. The rate on private messages between London and Montreal will be only twelve cents a word. It is understood that no attempt will be made, at least for the present, to lay private wires to the wireless terminals."

UNITED WIRELESS REPORT.

The United Wireless Telegraph Company has mailed to stockholders the following financial report as of November 30, 1907:

Assets.

Good will and patent rights	$500,000
Treasury stock, preferred and common	6,659,110
Stock and bonds of other wireless companies	12,459,263
Works, Jersey City	23,405
Station, boat and aerogram equipment	229,988
Furniture and fixtures	4,085
Cash, accounts receivable	241,612
Total	$20,117,463

Liabilities.

Capital stock	$20,000,000
Bills payable	2,534
Accounts payable	114,929
Total	$20,117,463

As the company was only formed February 14, 1907, no comparison with a former period can be made. The United Wireless was organized to take over the affairs of the DeForest Company and to unify wireless interests, and the president says the progress made during 1907 was satisfactory. In that time the number of ships equipped with the apparatus of the company has

been considerably augmented, and a chain of coast stations completed from New York to Galveston. On the Pacific Coast a chain of stations from San Diego, Cal., to the Canadian border is practically finished. Land has also been acquired at Vancouver, B. C., for a station, and the erection of the plant at that point will begin as soon as the necessary permit can be secured from the Canadian government. Stations on the Alaskan coast will be established this year. President Wilson reports a number of orders for equipment from ship owners, and says the outlook for 1908 is that several hundred vessels will install the apparatus. Inquiry among shipping people indicates that the service they are receiving from the United Wireless is satisfactory. From this service the company is deriving a good revenue. The company has about 12,500 stockholders.

Mr. Tesla's Contribution to Wireless Telegraphy.

The following letter is a part of a communication from Nikola Tesla appearing in the New York Times under date of January 26:

"I read in your issue of to-day that, according to Lieutenant-Colonel Chales, director of military telegraphs of France, a wireless message 'should theoretically go around the world.' If you will take the trouble of perusing my French patent, No. 354,791, you will find that this has long since ceased to be a theory, for that document, while bearing the date of April, 1905, describes experiments which I made in the fall of 1899, one of which was to pass currents of 100 amperes around the globe, a mere breadth in view of its immensity, but more than necessary to affect a sensitive receiver. You will also notice that in those tests I used 'undamped' oscillations, one of my earliest improvements, which you seem to find pleasure in attributing to other electricians. These facts are mentioned incidentally, merely with the desire of informing you correctly.

"What I wish to bring to your attention relates to certain provisions of the last wireless conference which are now being considered by the United States Senate. Some of the rules were undoubtedly proper and applicable to 'radio-telegraphy' by electromagnetic or Hertzian rays, in view of the impossibility of preventing interference and because many different forms of apparatus were employed. But since that time the Hertz waves have been abandoned by the more advanced experts and a uniform system adopted which permits the simultaneous transmission of any desired number of wireless messages without interference and with a precision and accuracy equal to, if not greater than, that practicable with cables."

Paris was recently cut off from nearly all telegraphic, telephonic and cable communications by a storm of great violence which descended upon the northern coast of France.

The Plan of S. M. English to Promote Efficiency.

S. M. English, general manager of the Postal Telegraph-Cable Company of Texas, at Dallas, Tex., has issued the following circular letter addressed to all managers and which has been posted upon the bulletin-boards of the various offices of that system:

So few operators understand wire and cable testing that I believe it will be a good plan to try again to interest them in this branch of the service. Every manager should have a thorough knowledge of every branch of the service so that he may take up the work of any employe who may be absent from duty, and should see that every employe is taught all he is willing to learn about the wires and apparatus and clerical work, so that he may be in line for promotion or competent to relieve the chief operator or manager who may be absent from the office from sickness or other cause. In this connection I strongly recommend the Telegraph Age, because a series of articles on "How to Become a Wire Chief" was begun in the February 1 issue. Also the book just issued, "Electrical Instruments and Testing," by Norman H. Scheider, containing a chapter by Mr. Jesse Hargrave, formerly chief operator at New Orleans, of the Postal Telegraph-Cable Company, and later assistant electrical engineer of the company at New York, in which readers are given the benefit of his knowledge gathered from actual work at the switchboard.

I shall also be pleased to renew my offer to explain to the best of my ability anything that may not be clear if operators will write me stating what is desired. I might add that when I began to study along this line about all the information I had was from the columns of Telegraph Age and The Quadruplex, published by Maver and Davis. The latter furnishes excellent illustrations and explanations of the fundamental principles of the duplex and quadruplex and should be read by every one interested.

Success comes to the man who knows things, not to the man who thinks it best to learn after he receives promotion. A thorough knowledge of any business is the stepping stone to promotion.

If the individual members of the force of the Postal Telegraph-Cable Company of Texas, do not show themselves to be competent for promotion when the opportunity for advancement arrives, it cannot be said that the enterprising general manager is at fault. A highly competent and practical man himself, who has worked his way up to the top from the bottom, solving and mastering all the problems encountered on the journey, and with a kindly interest in the welfare of others, Mr. English admonishes those with whom he is associated as he himself has been admonished in the past.

New Incorporations.

There has been incorporated under the laws of the state of Delaware, what is styled the Cuban Telephone and Telegraph Company, the object being to operate all kinds of wire lines in the West Indies. The directors are William Lohman, Daniel C. Beerman and William J. Patterson, all of New York.

CATALOGUE OF BOOKS ON THE TELEGRAPH.

Revised to January 1, 1908.

ABERNETHY, J. P.—The Modern Service of Commercial and Railway Telegraphy, in Theory and Practice, including the Railway Station and Express Service; arranged in Questions and Answers; $2.00.

ADAMS, JOSEPH H.—Harper's Electricity Book for Boys. This book will give boys a practical working knowledge of electricity, showing how easily experiments can be made; 407 pages; fully illustrated; $2.00.

BATES, DAVID HOMER.—Lincoln in the Telegraph Office; Recollections of the United States Military Telegraph Corps during the Civil War; 432 pages; illustrated; price $2.17.

CREHORE, ALBERT CUSHING, PH. D.—Synchronous and Other Multiple Telegraphs. Some methods of obtaining independent telegraph circuits on a single wire, both with and without synchronism; 124 pages; 42 illustrations; working diagrams; $2.00.

CROCKER, F. B., AND WHEELER, S. S.—The Management of Electrical Machinery. Has a special chapter by H. A. Foster. Contents: Descriptions and Directions; Examination, Measurement and Testing; Localization and Remedy of Trouble in Dynamotors and Motor Generators. Fully illustrated; $1.00.

HERBERT, T. E.—Electricity in its Application to Telegraphy. A Practical Hand Book Covering the Syllabus of the New Technical Examination. Adopted by the English Post Office Telegraph Department. Fourth edition, with forty-eight illustrations; $2.60.

HOBBS, W. R. P., AND WORMELL, R.—The Arithmetic Electric Measurements; 50 cents.

HOUSTON, E. J.—A Dictionary of Electrical Words, Terms and Phrases; 980 pages; 582 illustrations; $7.00.

HOUSTON, E. J.—A Pocket Dictionary of Electrical Words; leather, $3.00.

JONES, WILLIS H.—Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students. This standard work has been carefully revised and 74 pages and 30 diagrams added, including full descriptions of the newest apparatus lately adopted by the Western Union and Postal telegraph companies. It presents the finest study of the complex subject of the telegraph ever published; it explains clearly the equipment of a modern telegraph office, and is a text-book that no student, operator, engineer or official, no matter what his grade, can afford to be without; 334 pages, 52 chapters, 160 illustrations; $1.50.

LOCKWOOD, T. D.—Electrical Measurement and the Galvanometer and its Uses; 144 pages, fully illustrated with diagrams of connections, engravings of apparatus, etc. $1.50.

LOCKWOOD, T. D.—Electricity, Magnetism and Electric Telegraphy; A Practical Guide and Handbook of General Information for Electrical Students, Operators and Inspectors; 376 pages; 152 illustrations; $2.50.

LYNDON, LAMAR.—Storage Battery Engineering; 360 pages; 178 illustrations and diagrams; 4 large folding plates; $3.00.

MARSHALL, PERCIVAL.—Small Accumulators; How Made and Used; an Elementary Handbook for the Use of Amateurs and Students; 50 cents.

MAVER, WM., JR.—American Telegraphy and Encyclopedia of the Telegraph. This fine work, revised and enlarged, treats of the systems, apparatus and operation of telegraphy; 656 pages; 490 illustrations; $5.00.

MEADOWCROFT, WM. H.—A B C of Electricity. This book begins at the very root of electrical science, and contains a vast amount of useful information; 50 cents.

MEYER, FRED L.—Twentieth Century Manual of Railway and Commercial Telegraphy. This work embraces all kinds of commercial messages, train orders, phrases, etc.; 240 pages; illustrated; $1.00.

MEYER, FRED L.—Railway Station Service. A text-book for those who wish to become properly equipped station, baggage, freight or ticket agents; 216 pages; fully illustrated; $1.25.

MONELL, DR. S. H.—The Cure of Writers' Cramp, and the Arm Troubles of Telegraphers. This valuable treatise should be in the possession of every telegrapher suffering from this common annoyance; 50 cents.

OFFICIAL DIAGRAMS of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines. This book has been produced by authority of the Postal Telegraph-Cable Company, and under the personal supervision of John F. Skirrow, associate electrical engineer. All of the engravings are made from the official blue-prints of the Postal company, and are therefore absolutely correct; 134 pages; 105 full-page illustrations; 50 cents.

PHILLIPS, WALTER P.—Phillips Code. A popular, generally used and thoroughly tested method of shorthand arranged for telegraphic purposes, and contemplating the rapid transmission of press reports; also for general newspaper and court reporting; flexible leather cover, pocket size; $1.00.

PRIME, S. IRENAEUS.—Life of S. F. B. Morse. The only work authorized by the family and executors of the great inventor, compiled from original data. This is the finest, most accurate and complete life of Prof. Morse, and includes the history of the invention of the telegraph and the many important business connections with those who were interested with Prof. Morse in the development of the telegraph, that has ever emanated in any shape or at any time from the press; sheepskin; 775 pages, illustrated. The regular price of $6 has been reduced to $3.

POPE, FRANKLIN LEONARD.—Modern Practice of the Electric Telegraph; a Technical Handbook for Electricians, Managers and Operators; 234 pages; 185 illustrations; $1.50.

PREECE, W. H., AND SIVEWRIGHT, J.—Telegraphy. A description of every telegraph system and apparatus used in the English telegraph department; ninth edition; with appendix; 504 pages; 272 illustrations; $2.50.

PRESCOTT, G. B.—Electricity and the Electric Telegraph; eighth edition; 2 volumes; $7.

REID, JAMES D.—The Telegraph in America. A complete detailed history of the telegraph, including the organization of the various telegraph and cable companies; 804 pages; illustrated; full morocco binding. Reduced from $7.00 to $5.00.

SCHNEIDER, N. H.—Electrical Instruments and Testing; with new chapters by Jesse Hargrave, assistant electrical engineer Postal Telegraph-Cable Company, on testing wires and cables and locating faults in telegraph and telephone systems; how to use the voltmeter, ammeter, galvanometer, potentiometer, ohmmeter, the Wheatstone bridge, and the standard portable testing sets; 256 pages; 133 illustrations; cloth, $1.00; full limp leather, $2.00.

SCHNEIDER, N. H.—Model Library, comprising 4 books, viz.: Study of Electricity for Beginners; Dry Batteries; Electrical Circuits and Diagrams; Electrical Bells, Alarms, etc.; bound in one volume; cloth, $1.

SMITH, E. W.—Electricians' Manual of Diagrams; 93 pages; 50 cents.

TALTAVALL, JOHN B.—Telegraphers of To-Day. Biographical and historical sketches of more than 900 leading telegraphers, living and dead; published in 1894; 354 double-column pages, 7 1/2 x 11 inches; gilt edges; imitation morocco binding; only work of the kind; of much practical value to those who would keep in touch with the personnel of the profession; reduced from $5.00 to $1.00, express charges collect.

THOM, CHARLES, AND JONES, WILLIS H.—Telegraphic Connections; Embracing Methods in Quadruplex Telegraphy and other Apparatus; 20 plates with circuits distinguished by being printed in three different colors; $1.50.

WEBER, W. L.—Handy Electrical Dictionary; 224 pages; 32 illustrations; cloth, 25 cents.

WILKINSON, H. D.—Submarine Cable Laying and Repairing; $5.00.

YOUNG, J. ELTON.—Electrical Testing for Telegraph Engineers; $4.00.

TELEGRAPH SKETCH BOOKS.

LIGHTNING FLASHES AND ELECTRIC DASHES.—A book made up of bright, ably written stories and sketches, telegraphic and electrical, that should find a place in the home of every telegrapher; 160 large double-column pages; profusely illustrated; reduced from $1.50 to $1.00.

PHILLIPS, WALTER P.—Sketches, Old and New, by the author of Phillips Code, containing a number of telegraph stories, told with all the charm of that delightful story-writer; 200 pages; illustrated; $1.00.

BOOKS ON WIRELESS TELEGRAPHY.

BOTTONE, S. R.—Wireless Telegraphy and Hertzian Waves; diagrams and illustrations; $1.00.

COLLINS, A. FREDERICK.—A History of Wireless Telegraphy, its Theory, Experiments and Results Obtained; 300 pages; 332 illustrations; $3.00.

COLLINS, A. FREDERICK.—Manual of Wireless Telegraphy; 232 pages; 90 illustrations; cloth, $1.50; leather, $2.00.

FAHIE, J. J.—A History of Wireless Telegraphy; illustrated; $2.00.

KENNELLY, A. E.—Wireless Telegraphy; illustrated with 68 diagrams and pictures; $1.00.

LODGE, PROF. OLIVER J.—Signaling Across Space Without Wires. A description of the work of Hertz and his successors. Contains numerous diagrams and half-tone illustrations; $2.00.

MAVER, WM., JR.—Maver's Wireless Telegraphy; Theory and Practice; 216 pages; 123 illustrations; $2.00.

MAXWELL'S THEORY AND WIRELESS TELEGRAPHY; price $2.00. (See Vreeland.)

MAZZOTTO, DOMENICO, PROF.—Translated from the original Italian by S. R. Bottone; 416 pages; 252 illustrations, $2.50.

SEWELL, CHARLES H.—Wireless Telegraphy, its Origin, Development, Inventions and Apparatus; 229 pages; illustrated; $2.00.

STORY, A. T.—The Story of Wireless Telegraphy; 215 pages; 56 illustrations; $1.00.

TREVERT, EDWARD.—A B C of Wireless Telegraphy; 7 chapters; 20 illustrations; $1.00.

VREELAND, F. K.—Maxwell's Theory and Wireless Telegraphy; 250 pages; illustrated; $2.00.

BOOKS ON THE TELEPHONE.

ABBOTT, ARTHUR V.—Telephony. Six volumes; $1.50 per volume; the set, $6.

DOBBS, A. E.—Practical Features of Telephone Work; new edition about ready; $1.00.

DOLBEAR, A. E.—The Telephone. An account of the phenomena of electricity, magnetism and sound as involved in its action, with directions for making a speaking telephone; 50 cents.

HOMANS, JAMES E., A.M.—Telephone Engineering; 375 pages; profusely illustrated; $1.00

MILLER, KEMPSTER B.—American Telephone Practice; fourth edition; entirely rewritten and greatly extended. This comprehensive study of the subject explains in detail every piece of telephone apparatus; 904 pages; 304 illustrations; $4.00

PRESCOTT, G. B.—The Electric Telephone; 795 pages; $6.00.

WEBB, HERBERT LAWS.—Telephone Handbook. A practical treatment of telephone working and management; 160 pages; 138 illustrations; $1.00.

CABLE CODES.

A B C CODE, fourth edition; $5.00.

A B C CODE, fifth edition. This book is entirely different from the work known as the "A B C Code, Fourth Edition," and the two should not be confounded; $7.00.

A 1 UNIVERSAL COMMERCIAL ELECTRIC TELEGRAPHIC CODE; $7.50.

LIEBER, B. FRANKLIN.—Telegraphic Cipher Code; $12.00.

MCNEILL, BEDFORD.—Code; $7.50.

MOREING, C. A., AND NEAL T.—Telegraphic Mining Code; $5.00.

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Letters From Our Agents.

WASHINGTON, WESTERN UNION.

The sudden death by heart failure on February 8, of Laurence Parker, a member of the operating force of this office for a number of years, came as a distinct shock to his associates, by whom he was highly esteemed.

Another death, that of Mrs. Bender, the wife of Robert W. Bender, of this office, and the mother of J. Wilber Bender, himself an invalid and formerly of this office, occurred after a lingering illness on February 8. Her funeral on the 10th inst. was very generally attended by telegraphers, whose contributions of floral offerings were many.

OTHER NEW YORK NEWS.

Joseph F. Ahearn, telegrapher, eschewing the dots and dashes, has embarked in journalism, his name appearing as editor of the Bronx Star. This is a new weekly publication, the initial number of which made its advent on Sunday, January 26, its slogan being "For a Great and Greater Bronx." To further this worthy purpose Mr. Ahearn will bend all his energies. His long experience gained in the telegraphic field, should serve him well in this new undertaking, and like many another who has exchanged successfully one profession for the other, it is hoped that Mr. Ahearn has entered upon a congenial career.

The International Vailograph Company, of Minneapolis, Minn., manufacturers of the "Vailograph," the transmitting instrument, the advertisement of which has appeared lately in this journal, under a recent date, write: "We are well pleased with the results we are getting through the medium of Telegraph Age!"

General Mention.

The meeting of the New York Electrical Society of February 5 was held on board of the steamship Lusitania on the evening of that date.

A wireless telegraph typewriting machine was on exhibition in Chicago during the two weeks of the Business Show just concluded.

Mr. D. B. Mitchell, a well-known telegrapher, now in other business, in renewing his subscription states: "Your paper is about my only means these days of keeping track of my old friends and associates."

A partridge was recently killed by flying against the wires of the Postal Telegraph-Cable Company in a Connecticut town. Now the authorities are anxious to bring suit against the telegraph company for violation of the game laws.

Mr. John Fitzpatrick, assistant superintendent of the Western Union Telegraph Company, Chicago, Ill., in renewing his subscription for the current year, remarks: "Your paper is always interesting and instructive, and I look eagerly for my copy every two weeks. I wish Telegraph Age the continued success it deserves."

Miss Ella S. Tarr, daughter of W. A. L. Tarr, manager of the office of the Santa Fe railroad telegraph system at Manuelito, N. M., and the night operator at that point, recently started on a vacation of five or six weeks. She will visit a number of points in New Mexico and extend her trip to Denver, Colo.

The New England Telephone and Telegraph Company announces the restoration of a night rate service which was abolished a short time ago. It will apply between the hours of 10 P. M. and 4 A. M. instead of between 6 P. M. and 6 A. M.

Mr. J. B. Coggins, manager, Postal Telegraph-Cable Company, Denver, Colo., has this to say about Telegraph Age: "I have taken the paper for so long a time that it has become a part of the routine of my life, and if it is not delivered on time I feel that I have missed something."

It would have been singular to the telegraph profession of a quarter of a century ago to have had brought to their attention the fact that a telegraph office had been opened on board of a steamship from which messages might be transmitted virtually to any part of the world. Such, however, is a modern realization, for it is announced to telegraph managers that a wireless telegraph office has been opened on board the Italian steamer Duca Degli Abruzzi. The opening of such offices is of daily occurrence. It is also announced to all managers of telegraph offices that messages may be accepted for all steamers of the Mallory and Clyde lines while they are at sea.

Sir Robert Ball, writing in the Home Messenger, remarks that if a row of telegraph posts, 25,000 miles long, were erected around the earth at the equator and a wire were stretched upon these posts for this circuit of 25,000 miles, and that then the wire would be wound no fewer than seven times completely about this great globe, we should then find that an electric signal, sent into the wire at one end, would accomplish the seven circuits in one second of time. To telegraph, however, to the nearest star it would take four years before the electricity would reach its destination. Sir Robert must have burned the midnight oil when he evolved these compilations.

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—$1.50 a year.

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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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