TELEGRAPH AGE

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TELEGRAPH AGE

No. 3. NEW YORK, February 1, 1906. VOL. XXIV.

CONTENTS.

SOME POINTS ON ELECTRICITY.

The Dynamo.

In Three Parts.—Part I.

Series, Shunt and Compound Wound.

BY WILLIS H. JONES.

The words "series," "shunt" and "compound," so generally coupled with the name of dynamo, the mechanical generator of electricity, seem to have so perplexed an ambitious but evidently juvenile class of students, as to the actual meaning of those terms and the necessity for constructing the three respective types of machines, that we are asked to give an elementary description of each for their benefit.

It should be understood that the three terms, series, shunt and compound, are used with reference to the windings of the dynamo's armature and field magnet coils only; that is to say, the words indicate, respectively, the manner in which the coils are wound and combined.

SERIES WOUND.

In the diagram on the following page, the three methods of winding are clearly shown. The series winding may be traced in the machine on the left. In this dynamo one end of the external line conductor is connected to one of the brushes resting on the armature coil of the dynamo. The circuit is then continued through the armature coil to the companion brush, which latter is in turn connected with one end of the coil encircling the field magnet. The other end of this field coil is then connected to the outgoing leg of the main line wire, thus completing the circuit. Because the two coils in the machine, that is, the field and the armature coils, are connected together in such a manner as to constitute one continuous circuit, they are said to be in series. Hence the term series wound dynamo, to indicate that particular method of coil combination.

SHUNT WOUND DYNAMO.

The middle machine in the diagram shows the connections in a shunt wound dynamo. It will be seen that one terminal of the main line circuit and one end of the field magnet coil are both connected to the bottom brush of the machine, while the outgoing main line conductor and the other terminal of the field coil are in like manner both connected with the other brush.

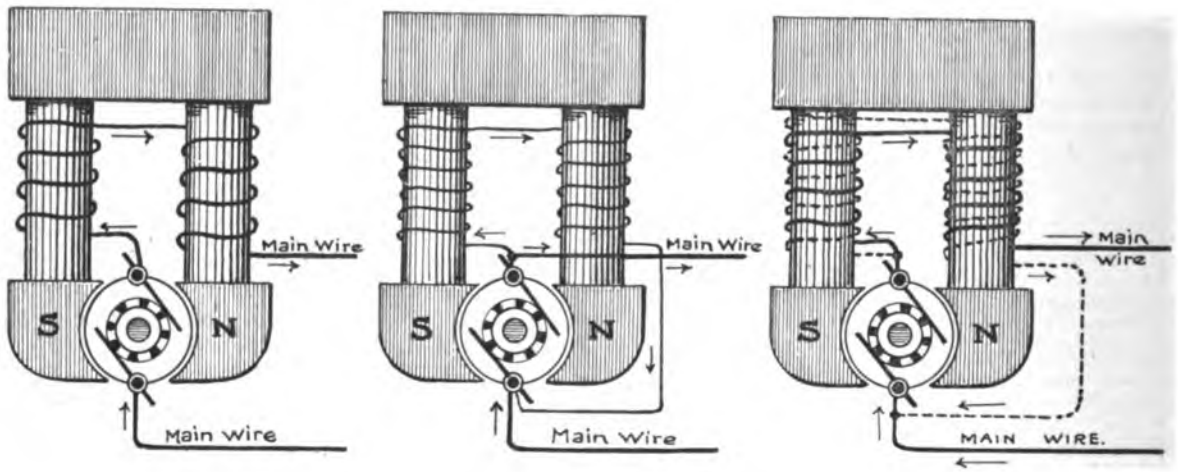
Now, when a current of electricity is generated in the armature of a machine having its coils connected with the brushes in this manner, part of the current will be diverted from the main line and flow through the field coil. A side path of this kind within the machine, or, in other words, the placing of the field and the armature coils thus in multiple, constitutes a shunt wound dynamo.

COMPOUND WOUND DYNAMO.

The figure on the right shows the windings of a compound wound dynamo. It will be noticed that the magnet in this machine is wound with two separate coils instead of one, as is the case with series and ordinary shunt wound machines. One of these coils, shown as dotted lines, is composed of many turns of fine wire, while the companion consists of but a very few turns of coarse wire. The fine gauge coil, as will be observed, is a closed circuit, one terminal being connected to the top brush and the other to the bottom brush. The coarse gauge coil, indicated by heavier marks, is connected in series with the dynamo armature and the main line conductor. The compound machine differs from the shunt wound pattern only by the possession of the additional low wound coil in series with the line and armature. The necessity for different methods of winding and combination of the coils arises from the varying conditions existing in different external circuits.

For instance, electric lamps connected in series require that the strength of the current flowing

through the wire shall remain constant in value regardless of frequent alterations in the number of such lamps that may be burning or extinguished at intervals during the night. Hence we must provide for a "constant current" demand. On the other hand, we have circuits which require a constant potential or unvarying value of electromotive force at all times, regardless of the varying quantity or volume of current the lamps may draw from the machine at different periods, as in the case of lamps connected in multiple and in parallel line circuits. We, therefore, must have "constant pressure" machines. "Shunt"



SERIES. SHUNT WOUND. COMPOUND.

Types of Dynamo Windings.

and "compound" dynamos represent the latter types.

In the next installment the manner in which "constant currents" and "constant pressure" are insured by the method of winding will be explained.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, inc., June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16.]

Recent Telegraph Patents.

A patent, No. 809,762, for telautographic and other electric circuits has been issued to George S. Tiffany, of New York, assignor to the Gray National Telautograph Company, New York.

A patent, No. 808,777, for a telegraph key has been granted to Addison E. Peterman, of Repton, Ala. A base to the key having a number of contacts representing different lines is associated with a turntable mounted on the base and carrying a key lever to operate any one of the lines and means carried by the turntable to hold the other lines closed.

Business Notice

The Sigel transmitter is another telegraphic sending instrument of the universal keyboard type that has lately been added to those now demanding and receiving attention in the telegraphic world. It is the joint product of Benjyman P. Hayes and Sigel H. Gill, of Topeka, Kan., the patent number being 808,366, issued December 26, 1905, and exhibits in its construction a skilful, ingenious and seemingly effective device for the purpose designed. It is advertised in another column, an announcement to which attention is called, particularly as the patentees desire to establish correspondence with reliable parties who will undertake the manufacture and marketing of the machine.

Personal Mention.

Mr. S. C. Mason, storekeeper of the Western Union Telegraph Company, Chicago, Ill., accompanied by his wife, is spending a vacation on the Pacific Coast.

Mr. William Maver, Jr., the well-known electrical expert, contributed to the Electrical Review a lengthy and interesting article entitled, "A Review of Wireless Telegraphy," which appeared in the issues of January 13 and 20.

Mr. W. S. Logue, general sales agent of the Edison Manufacturing Company, an old time telegrapher and member of the United States Military Telegraph Corps, is confined to his home by sickness.

Mr. J. J. Gorman has resigned as an officer of the Manhattan Electrical Supply Company, New York. It is said that he still retains his interests in the company, but will no longer be actively engaged in conducting the business.

Mr. Richard W. Sears, a members of the well-known firm of Sears, Roebuck and Company, Chicago, which is said to be the largest mail-order concern in the world, was at one time a telegraph operator. The last work performed by Mr. Sears at the key was for the Chi Milwaukee and St. Paul Railway Company. ' is a member of the Old Time Telegraphers' and Historical Association.

Mr. W. H. Young, night manager of the Western Union Telegraph Company, Washington, D. C., and president of the Old Time Telegraphers' and Historical Association, who also acts as manager of the Western Union telegraph office at the Capitol during the session of Congress, will this year complete the fiftieth anniversary as manager of the telegraph department in the national legislature. When he took charge he was the only telegraph operator at the Capitol and handled all the press despatches and other messages. To-day this business requires the employment of at least thirty operators. It is stated that the press representatives, among whom Mr. Young is held in high esteem, will take appropriate action in his behalf on the coming anniversary.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mr. Charles W. Benjamin, manager of the office at Meriden, Conn., has resigned.

Mr. Max D. Clark has been appointed manager at Hillsdale, Mich., vice Robert Seitz, resigned.

Mr. O. G. Fisher, a wire chief at Chicago, has been appointed manager of the American Telephone and Telegraph Company at New Orleans, La.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. F. N. Shoemaker, manager at Grand Island, Neb., has resigned.

Mr. B. C. Ansel has been appointed manager of the newly-opened office at Charleston, W. Va.

Mr. Percy S. Durgin, a broker operator of Biddeford, Me., has been appointed night chief in the Portland office.

Mr. William Casey, a Western Union operator at Tonawanda, N. Y., has been appointed manager of the Postal interests at Lockport, vice Charles Farmer, resigned.

Mr. A. T. Post, of Kingston, N. Y., has been appointed manager at Newburg, N. Y., vice Leroy R. Thompson, who has been made a wire chief at the main office in New York.

Mr. F. L. Wood, manager of the Cotton Exchange office, Augusta, Ga., has been appointed manager of the main office at that point, vice M. H. H. Duvall, resigned to become assistant manager of a brokerage concern.

Mr. Charles E. Davies, formerly an operator in the Helena, Mont, Western Union office, has been appointed chief operator of the Great Northwestern telegraph office at Ottawa, Ont.

Obituary.

Frank Corcoran, aged thirty-two years, a telegraph operator at Athol, Mass., died January 16.

Frederick J. Skerritt, well known in Postal and broker circles, died of typhoid fever in Philadelphia, Pa., on January 25.

George S. Hoyt, formerly manager of the Western Union Telegraph Company at New Bedford, Mass., died at Shannock, R. I., on January 19.

John Kelly, aged fifty-eight years, for many years manager of the Western Union Telegraph Company at Oneida, N. Y., died at Albany on January 5.

George F. Lang, aged thirty-five years, a telegraph operator employed in branch and broker offices in New York, died of pneumonia on January 16, at his home in Brooklyn.

Marguerite L. Clark, aged two years, the youngest daughter of Captain Thomas F. Clark, chief operator of the Western Union Telegraph Company at Boston, died January 15.

"Jake" Curtis, formerly the telegraph operator and latterly the telephone operator at Bellevue Hospital, New York, covering altogether a period of more than thirty years' service, died in that institution on January 11.

Elijah L. Bugbee, aged fifty-seven years, a well-known telegrapher and electrician at Washington, D. C., died in that city, January 15. At the time of his death he held the position of repeater chief and assistant wire chief, nights, at the main office of the Western Union Telegraph Company, and during the day was in charge of the Publishers' Press leased wire at the Capitol. Mr. Bugbee, who was a native of Connecticut, went to Washington from Boston in 1872, his first service being with the Franklin Telegraph Company. In 1877 he became manager of the Atlantic and Pacific Telegraph Company and in 1880 was made manager of the Baltimore and Ohio and American Union Telegraph companies. In 1881 he entered the employ of the Western

Union as assistant chief operator. July 1, 1891, he was appointed superintendent of telegraph lines in the Weather Bureau, an office he held until June 30, 1893, subsequently returning to the Western Union employ. Mr. Bugbee was a man of high character, generally esteemed, and his funeral was numerously attended by telegraph men and others.

The Submarine Cable.

The French war cruiser "D'Entrecasteaux" sailed recently from Toulon to make the preliminary surveys, etc., for the French Tamatave-Réunion-Maurice telegraph cable.

W. H. Grant, of the Commercial Pacific Cable Company's Manila office, arrived a few days ago at San Francisco. He will be attached to the staff of the company at that point.

The Commercial Pacific Cable Company's repair steamer, "Restorer," stationed at Honolulu, arrived at San Francisco several days ago, to go in dry dock for overhauling and repairs.

A recent Madrid despatch states that the Spanish government is inviting tenders for a new cable from Cadiz to Teneriffe. The competition is open to the world. The firm offering the best guarantees will be chosen. The conditions have not been settled finally.

It has been learned that at the instance of President Castro the municipal authorities have seized the cable offices at La Guayra, the principal port of Venezuela. This is the cause of the interrupted communication with Venezuela. Under the present circumstances all despatches must be sent to Trinidad, thence to La Guayra by water. This process takes about three days longer than by the cable route.

The recent laying of cables in the Far East, which the Germans claim as a brilliant success for the makers and layers of the cables, has so frequently been referred to that it is now only necessary to mention the depths which were encountered. It is stated that the Commercial Pacific cable in places was laid in 1903 at a depth of nearly four miles, but this record was beaten by the Menado-Yap-Guam cable, which was laid by the Stephen in the spring of 1905 in depths reaching over four and one-half miles. The Shanghai-Yap cable offered even greater difficulties, the depth in the vicinity of the Liukiu Islands being 4.96 miles.

At the recent meeting of the joint army and navy board, which is in charge of the revision of the Endicott project of coast defenses recommendation was prepared and forwarded to Secretary Taft for the construction of a new cable ship at a cost of $220,000, the preliminary plans for which have been prepared. It is pointed out that such a ship would be of considerable service in supplementing the work of the cable ship Cyrus Field, now commanded by Captain B. O. Lenoir of the Signal Corps. Such a ship of 900 tons displacement could go to sea and perform the work which the smaller ship now does frequently at a risk of life.

J. T. Flynn, secretary of the North American Telegraph and Cable Company, of Seattle, Wash., has entered into negotiations with the United States government to lease the Alaska submarine cable and land telegraph lines.

Mr. Flynn states that the outlook for the ultimate disposal of the cable to private persons is hopeful and that in case the government relinquished the operation of the line his company, which is made up principally of Seattle men, would be able to secure the lease.

Mr. Flynn said: "The President, the Secretary of War and the chief of the signal corps have all recommended the withdrawal of the army from the operation of telegraph lines wherever private enterprise makes the same possible. It is our plan to construct a cable line to the Orient, with the western terminus at Vladivostok, and the acquiring of the government cable to Alaska would simply be one of the connecting links. It is to the interests of Seattle and of all of Alaska that this cable fall into the hands of interests friendly to this part of the country. We intend to operate the line and to cut down tolls at least 40 per cent. and to extend and improve the service as much as possible."

Secretary of War Taft, in response to a request from the House Committee on Interstate and Foreign Commerce, has sent a communication to that committee relative to the House bill for the construction of a cable connecting the mainland of the United States with the canal zone. The Secretary incloses a resolution of the Board of Canal Defense, which he says shows that a cable is indispensable to the military control of the Gulf of Mexico and the surrounding regions in time of war. At the present time the only cable connection is that by the Mexican and Central and South American telegraph companies, which extends from Galveston, Tex., via the Isthmus of Tehuantepec and San Juan del Sure, Nicaragua, to Panama. "The maintenance and operation of this system," says the Secretary, "depends in time of peace on the good will of two nations, Mexico and Nicaragua, while its exposed conditions are such that its maintenance in time of war would be practically impossible." The Secretary recommends that the chief signal officer be authorized to construct and operate a military cable, to be opened for commercial purposes, with a maximum rate of 40 cents a word, between Key West, Guantanamo and the canal zone at Panama. The estimated cost is $1,000,000.

The recent completion of the German-Dutch cables in the Far East, says the Electrical Review of London, has been followed by the publication of particulars in reference to the development

of the submarine cables of Germany since the year 1871. It is asserted that Germany now possesses one-fifteenth of the total length of submarine cables in the world, as compared with the ownership of only 1-26th of the mileage about two years ago. The number of German cables which exceed 100 kilometers (62 miles) in length at present amounts to 13, of which the following is a list, giving the year of establishment and length in kilometers.

	Location of submarine cables.	Year established.	Length in kilometers.
1.	Emden, Borkum and Lowestoft	1871	421
2.	Hoyer, Westerland and Arendel (Norway)	1879	472
3.	Emden and Valencia (Ireland	1882	1.585
4.	Emden, Borkum and Vigo (Spain)	1894-6	2.099
5.	Sassnitz and Trelleborg (Sweden)	1898	117
6.	Emden, Borkum, Horta and New York	1900	7.709
7.	Tsintau and Chifu (China)	1900	457
8.	Tsintau and Shanghai (China)	1900	702
9.	Emden, Borkum and Boston (England)	1901	405
10.	Emden, Borkum, Horta and New York	1903-4	7,905
11.	Constanza (Roumania) and Constantinople	1905	343
12.	Menaas, Yap and Guam	1905	3.249
13.	Shanghai and Yap	1905	3.588
	Total length in kilometers		29.112

It will be seen that the total length of the cables reaches 29,112 kilometers, or, say, 18,409 miles. Cables Nos. 3 and 9 belong jointly to Germany and England; No. 5 is the property in common of Germany and Sweden; Nos. 4, 6 and 10 are owned by the German Atlantic Telegraph Company; No. 11 belongs to the East European Telegraph Company, and Nos. 12 and 13 to the German-Dutch Telegraph Company, while the remainder represents national cables of the German government. It should be noted that the Emden-Valencia cable, which is not working now, served exclusively for telegraphic communication with America, but was discontinued when the German Atlantic cables were brought into operation.

Wireless Telegraphy.

A patent, No. 808,832, for a receiver and recorder for wireless and other transmissions, has been obtained by Fred. E. Gallagher, of San Francisco, Cal., assignor of one-third to Simeon L. Phillips and one-third to Walter D. Valentine, San Francisco, Cal. A type wheel having constantly-operative impelling means is associated with a pivoted armature carrying means for locking the type wheel, another pivoted armature carrying a striking hammer, a pair of magnets for each armature arranged respectively at opposite sides of its pivot, a controller circuit which includes one magnet of each armature and a striker circuit which includes the other magnet of each armature.

Recent New York Visitors.

Mr. W. M. Petty, city electrician, Passaic, N. J.

Mr. F. G. Boyer, superintendent of telegraph, Standard Oil Company, Oil City, Pa.

Mr. I McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont.

The Railroad.

Mr. L. C. McIntosh has been appointed manager of the Southern Pacific telegraph office at Los Angeles, Cal., and will have charge of all traffic and operators.

Mr. Edward Mason, chief despatcher of the Northern Pacific Railroad at Tacoma, Wash., and son of J. Q. Mason, formerly assistant superintendent of telegraph of that system, was married on January 23.

The next annual meeting of the Association of Railway Telegraph Superintendents will be held at Denver, Colo, on June 20. Mr. P. W. Drew, of the Wisconsin Central Railway, Milwaukee, is the secretary of the association.

George H. Thayer, for thirty years superintendent of telegraph of the Chicago and Northwestern Railway, died at his home in Norwood Park, Chicago, January 8, on his sixty-second birthday. He was a native of Vermont, and entered the service of the Chicago and Northwestern Railway Company as an operator in 1863.

At the January meeting of the Railway Signal Association held at the Grand Union Hotel, New York City, January 9, as previously announced, President C. H. Morrison in the chair, thirty new members were elected. The change in the constitution proposed at the last meeting was voted upon and adopted, so that the association now has two vice-presidents, the newly-elected officer being Mr. A. H. Rudd. A change in the by-laws was also adopted, as a result of which associate members will have only the privileges accorded to honorary members. The reports of the following committees were heard: Executive Committee, on a digest of the proceedings of the association; committee on storage batteries, the report being presented by I. S. Raymer; committee on rubber-covered wires, reported by Azel Ames, Jr. In the report on storage batteries Mr. Raymer called attention to the great value of these batteries for operating signals. The batteries are charged either by primary batteries or by power supplied from a generating station and are giving excellent service. A paper was presented by G. K. Rodgers describing an improved Sykes block signal. A paper on the care of storage batteries was read by H. W. Lewis, in which the author gives directions for the care and charging of batteries. Mr. F. F. Fowle, of the American Telephone and Telegraph Company, read, by invitation, a paper on specifications for line wire. Both the reports and papers were discussed vigorously and many interesting experiences were brought out.

The Magnetic Club of New York.

Col Albert B. Chandler, president of the Magnetic Club of New York, has appointed committees as follows: Entertainment: T. A. Brooks, chairman; T. L. Cuyler, Jr., Herbert Smith, Thomas E. Fleming, A. E. Chandler. Reception: Gardner Irving, chairman; Gerald Brooks, G. H.

Usher, M. R. Cockey, M. J. O'Leary, M. W. Hamblin, W. H. Mathews, John Costello. Finance: G. F. Fagan, J. W. Connelly, J. P. Clolery. Membership: John Brant, chairman; J. F. Skirrow, D. W. McAneeny. Press: J. F. Ahearn, chairman; J. B. Taltavall, T. R. Taltavall.

Official Diagrams of the Postal Telegraph-Cable Company's Apparatus, Etc.

The volume entitled "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines," issued under authority of the Postal Telegraph-Cable Company, by TELEGRAPH AGE, is nearly ready for delivery, the pages being in the bindery. The large number of orders already received for this important and unique publication will, therefore, soon be filled, and thereafter no delay will be experienced by buyers, all orders being filled on the day of their receipt. The large number of diagrams presented and the excellence of their execution constitutes a feature of the work that, in the perception and guidance afforded of the subject, is sure to win very general commendation. The nearly thirty pages of text covers an explanation of the Postal methods of construction, so explicit and comprehensive in detail, as to possess an interest very general in the telegraph service. The book is 7x4½ inches, a size at once handy and convenient for the pocket. The price is fifty cents, and this amount should be remitted, preferably by Postal or Express money orders, to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

General Mention.

The office of the Postal Telegraph-Cable Company at Santa Fe, N. M., of which J. W. Mayes is manager, has been removed from the Claire Hotel to 309 Washington avenue, on the east side of the Plaza.

On Sunday night, January 21, a severe sleet storm visited Chicago and vicinity, the telegraph and telephone lines in all directions were broken down and for a time the Lake City was entirely cut off from communication with the outside world.

Reviving a former custom a ball was given at Helena, Mont., by the telegraphic profession of the state on January 26, which was largely attended. It is proposed that in future balls be given annually, to be held at different places in the state.

The Commercial Telegraphers' Journal, Chicago, beginning a new volume with the January issue, appears in magazine form. The initial issue in this changed condition embraces sixty-eight pages. It is well made up and shows evidences of prosperity.

During the year ended March 31, 1905, according to the annual report of the postmaster-general of New Zealand, there were sent 4,900,495 telegrams; telegraph lines were extended 7,943 miles, for which $390,000 were expended, the total mileage being brought up to 23,704.

On Friday, January 26, a severe sleet storm in the South played havoc with the telegraph lines all over that section of the country. Poles were down over hundreds of miles in all directions south of Richmond. It was thought that the storm was more severe than the one of a year ago. Poles lines in many instances will have to be practically reconstructed.

The Telegraphers' Mutual Aid Association, of Boston, Mass., gave a ball and reception at Odd Fellows' Hall, in that city on January 26. Two thousand members and their friends participated in this great annual social event. Mr. A. V. Mann was floor director and Daniel Carter and Arthur E. Mason acted as assistants.

The construction party of men in the Signal Corps have completed a new telegraph line along the Highland of the Yukon, between Rampart and Fort Gibbon. This permits the abandonment of the section between Baker and Gibbon, which was exceedingly difficult to maintain in summer, owing to the extensive swamps of the lower Tanana.

Mrs. Hattie Williams, a Western Union telegraph operator at Sherburne, Chenango county, New York, enjoys the distinction of being one of the oldest operators in the state. For more than fifty years, it is said, she has manipulated the key at that point. Another old timer is Albert C. Stebbins, the Western Union manager at Waterville, not far distant from Sherburne, whose term of service is nearly co-existent with that of Mrs. Williams.

A bronze statuette of Samuel F. B. Morse, said to be an excellent likeness, the work of an unknown sculptor, has been presented by the Dutchess County Society to the Metropolitan Museum of Art, New York, through its director, Sir Caspar Purdon Clarke, to be placed among the collection of original Morse telegraphic instruments. The statuette, believed to be of French origin, was discovered by William F. Kanerberg in the cellar of a London art dealer, where it had lain for twenty years, having belonged to the estate of an English nobleman.

George G. Glenn, formerly and for years cashier and the trusted employee of the Postal Telegraph-Cable Company, at Philadelphia, Pa., whose embezzlement of $12,000 of the funds of the company in the spring of 1905 attracted wide attention, pleaded guilty to the charge on January 22 and was sentenced to an imprisonment of one year, the same to date from time of commitment. This comparatively short term was due to the fact that counsel for the telegraph company joined in the request of the prisoner's counsel for mercy. The man had been already punished severely, they said, as his downfall had been published broadcast in the papers, and a brother had died through grief and shame caused by the man's arrest.

The Library of the Postal Telegraph-Cable Company at Chicago.

When the Postal Telegraph-Cable Company established their headquarters in the Stock Exchange Building, Chicago, it was decided to devote space to an employees' reading room and library. To this end a large number of the employees and officials contributed each a book as a nucleus. Meetings were held and a society formed entitled "Postal Telegraph Employees' Library Association" and by-laws and rules similar to those of public circulating libraries were adopted. An assessment of ten cents monthly on each member was levied, the money so obtained being used to purchase books and magazines, the cases and the library room having been donated to the association by the officials of the company.

The success of the enterprise was largely augmented by voluntary contributions of books by persons interested. The company's attorneys in the western division, Messrs. Loesch Bros. and Howell, contributed a fine selection of electrical books, and Mr. George C. Flegel, manager at Westville, Ind., also donated ninety-eight books from his personal library. Periodicals, such as the Ladies' Home Journal, the Delineator, the New Idea, Saturday Evening Post, etc., were, by the courtesy of their publishers, sent free of charge.

Supplementing the circulating feature of the library it was arranged to establish classes for instruction in the various branches of the business, the chief bookkeeper, service clerks and others lending their assistance and instruction in the manner of making up accounts, etc., and the chief operator, wire chiefs and others instructing as to the electrical side of the business. Prof. Woodworth, of Lewis Institute, was also secured to deliver two lectures each week, one Saturday afternoons and one on Tuesday nights on electrical subjects, which he demonstrated with the best machinery and instruments which the institute afforded. The topics of this splendid course were finally arranged in the order of logical sequence and proved to be highly instructive. Other well-known authorities in this special line of education have appeared from time to time, thus adding to the attractiveness and interest of the undertaking.

VIEW OF THE LIBRARY AND READING ROOM OF THE POSTAL TELEGRAPH-CABLE COMPANY, CHICAGO.

As the idea of the enterprise grew other libraries were established in other western division

cities, and a contribution of about one hundred books was sent from the Chicago association to Cleveland, O., to assist in forming a similar association at that point.

At the present time the number of books in the Chicago library is ten hundred and eighty-four, embracing art, photography, science, natural history, biography, social science, history, electricity,, engineering, telegraphy, mechanics, fiction, law, medicine, religion, poetry, essays, language, etc., in addition to the standard monthly magazines, such as the Scientific American, Western Electrician, World's Work, Century, Harper's, McClure's, Everybody's, etc.

The aggregate receipts since the library was established in 1895 amount to about $1,694; the average withdrawal of books, four per day. On January 1 the association had a membership of one hundred and fifty.

J. E. Pettit is the president of the library association and C. Otto, secretary and treasurer.

Fuses and Arresters in Telegraph Wires.

BY FRANCIS W. JONES.

Telegraph companies have a greater enemy than lightning and that is the invasion upon their wires of foreign currents, of almost all voltages up to forty or fifty thousand alternating, and to several thousand volts direct. The quantity in which these currents may visit telegraph offices depends, of course, entirely upon the conductivity, inductance and capacity of the telegraph circuits.

It should be borne in mind that the lightning arresters attached to wires, in various offices, are practically condensers of small capacity, and to the extent of this capacity, furnish conducting paths between the line and earth for alternating currents. If the arrester is placed next to the line an alternating current seeks this path and is apt to break down the insulating barrier and start an arc, that in several cases has resulted in disastrous fires. Some offices have been damaged in this manner, not only the apparatus, but the offices themselves.

Lightning arresters as situated in telegraph service frequently have their insulation very greatly lowered on account of the accumulation of moisture, dust, etc., and arresters in some locations insulated by a hundred mils of mica present no greater resistance to the escape of electric currents to earth than arresters in dry situations having but very few mils of mica.

Much damage is done by what are called "sneak currents," which, as a rule, are low in quantity but are driven by high voltage at the point where the current is impressed upon telegraph wires, and if a breakdown at an arrester takes place the sudden decrease in the resistance of the circuit greatly augments the current under high pressure and a bad fire is likely to be the immediate result.

Sneak currents will frequently pass through one-ampere fuses without blowing them, but if the fuses are ahead of the arrester the fuses will probably blow at the time that the short circuit takes place at the arrester and thus head off a disastrous arc in the arrester.

The menace of foreign currents is a constant one, day and night, and the trouble from lightning is infrequent. In certain localities where thunder storms grow in bewildering luxuriance the lightning occasionally causes serious interruptions to working telegraph circuits for limited periods of time, and in view of this fact ampere fuse-blocks with clips have been placed so that the cartridge fuses may be readily replaced when opened by lightning at terminal offices. Intermediate offices are supposed to have twenty-ampere fuses in the main circuits and half-ampere fuses and arresters in the instrument loops. The latter are cut out when not in use.

If a telegraph company could so arrange its wires as to render them entirely free at all times from contact with electric light or power wires it would be easy to deal with the old enemy "lightning," or if the Lord would be so kind as not to direct his shafts of lightning at telegraph wires we could take care of foreign light and power currents, but when an attempt is made to deal with both of these troubles at the same time we find ourselves between the "devil and the deep sea."

British Honduras Reached by Telegraph.

Belize, the capital of British Honduras, is now connected with the United States by telegraph. Formerly messages were sent to New Orleans, then carried every Thursday by mail to Belize, requiring three days or ten days if the weekly mail was missed at New Orleans. On December 15 the first telegram ever received direct at Belize was delivered at 10.30 A. M., having been dispatched at Louisville, Ky., at 3.30 P. M., December 14. No tariff has yet been fixed, but the probable through rate from the United States will be $1 per word.

The new telegraph lines connect with the Mexican system. The Mexican department of war erected the line from Payo Obispo, via Santa Cruz, to Peto, Yucatan—about 225 miles—solely for official purposes. Last November it was transferred to the department of public works and its use granted to the general public. Payo Obispo, Mexico, is across the Rio Hondo, six miles from Consejo, British Honduras. The gap in the telegrap line requires a boat as yet to carry the messages, but as soon as Mexican authority is granted a cable will be laid under the river. There will then be an unbroken line established from Belize to Galveston. The new line means much for American commercial interests in that region.

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NEW YORK, FEBRUARY 1, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire 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. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

All persons who desire to secure bound volumes of TELEGRAPH AGE for the year 1905, which includes the very full and valuable index, may obtain the same for $3 per copy, orders for which, accompanied by the cash, should be addressed to the publisher of this journal. From no other source can there be obtained so complete a history and record of events of the telegraph, the submarine cable, wireless telegraphy, telegraphic inventions, and general news and information in the telegraphic world, at home and abroad, as is afforded in this volume. In addition to this, its articles on telegraphy, published under the general head of "Some Points on Electricity," present a series of practical studies, fully illustrated by diagrams, that every operator and student should possess.

The messenger boy appears to be an uncertain quantity in the business economy of this town. The other day he went on strike with meteoric suddenness and with all the visible symptoms in performing the act such as are usually displayed by his elders, thus clearly demonstrating his aptitude to grasp the ethics of the situation. According to custom, as too frequently manifested by the class of gentlemen who are wont to go on strike, when his demands were not instantly complied with, he resorted to violence and rowdyism. Of course he disarranged all methods, calculations and schedules observed in the telegraph, cable and district messenger companies, exasperated managers and customers alike, defied the police, and even threatened as part of his propaganda to make the Stock Exchange look like a county fair ground after the fair is over, and to put J. Pierpont Morgan out of business. There were, indeed, savage declarations, and to avert such dire extremities, which, of course, involved the ultimate ruination of Wall Street, certain concessions were granted, the boys abandoned the war path, dropped back into normal business routine, the incident of the strike was closed and peace prevailed.

The success that has attended the efforts of E. J. Nally, the general superintendent of the western division of the Postal Telegraph-Cable Company at Chicago, in establishing a library for the benefit of the operators of his company, is worthy of all praise and emulation elsewhere by others high in authority in the telegraph service. As explained on another page in this issue in an illustrated article, suitable rooms for library purposes have been set apart in the Postal company's main building in the Lake City. These have been attractively furnished and the shelves filled with a carefully-selected assortment of books, both of a technical and general character. The library affords a cosy and delightful place at a purely nominal cost, for it is designed to be self-sustaining, to the operator for study and for intellectual recreation amid quiet and refined surroundings. This scheme of Mr. Nally's, which embodies ideas of fundamental value to the employees of his company, has been well thought out, and is now believed to be established on a permanent basis. Its beneficent influence, carried to the desirable point of imitation, is already beginning to be manifest at other places.

Leasing of the Alaskan Telegraphs.

As showing the evident trend of Governmental thought respecting the control of public utilities, it is observed that a proposition made by company interests to lease the Alaskan telegraphs, embracing the submarine cable and land line systems, is reported to be receiving favorable consideration on the part of the Government. Although the Government took the initiative in this construction, as it did in the building of the first railroad across the continent, such pioneer service in

both instances having in view the early reaching of a desired objective and the development of a country at a time when its accomplishment was urgent, yet difficult of attainment by private enterprise, it apparently, if the report be true, seems willing now, as before, to surrender jurisdiction into the keeping of individual hands.

Other things being equal, we believe as a fundamental proposition that the Government may well relinquish this particular system of telegraph and, standing aside, permit private parties to assume its management, proceed with its development and extension as future necessities and opportunities may suggest.

Gen. A. W. Greely, chief of the Signal Bureau, under whose able direction the entire Alaskan telegraph system, land and cable lines, has been built, is quoted as having declared himself to be in favor of all cable and land line telegraphs whose mission is mainly to serve commercial interests, to be directed by private endeavor. We can but commend such an utterance, for if made by the General, it is in keeping only with his well-known statesmanlike and broad-minded views on all questions of domestic economy. No one realizes more forcibly than the General that the Government should not exercise permanently a direct interest in telegraph and cable systems, except in time of war, when, of course, if necessary, civil right must give way to military needs.

The phrase " to revolutionize the telegraph" appears with such oft-recurring regularity in the daily press, sometimes, indeed, it must be said, in the technical journals as well, in connection with descriptive accounts of inventions designed to overcome the present system of telegraphing—devices not always fashioned by telegraphers, who are supposed to be of practical mind, but frequently by bright young men who have made the "subject a study," as to become mildewy in disquisition and in meaning. It was ever thus, but the Morse system somehow has not yet been displaced. The inventor of the telegraph, who, as time recedes, stands out more and more distinctly as one of the great figures of history, builded even better than he knew. His knowledge and grasp of his subject was absolute and comprehensive. The telegraph may be declared to be old-fashioned in its method of operation, in need of reformation, and so on to the end of the chapter, all of which we have become accustomed to hear with increasing weariness, yet criticism and endeavor thus far seem but to leave its position more and more impregnable. Theory and practice appear to be as widely separated and as irreconcilable as ever.

Canadian Prosperity.

The recent development of Western Canada and the rapid strides that the Dominion is making as a manufacturing nation is of special interest to a large number of telegraphers, as there is hardly a telegraph office of any considerable size on this side of the line that has not one or more men who were born and raised in Canada.

There was a time when salaries and other inducements were such as to bring a majority of the younger operators to the United States seeking better-paying positions in the larger American cities. But the last few years have wrought a radical change in these conditions. Now the wonderful prosperity of Canada is drawing from the United States, both Canadian and Yankee to share in that prosperity, and for the telegrapher there is no place on the continent to-day that offers greater opportunities. A new transcontinental railway is being built; numerous branch roads and extensions are under way or projected; new lands are being opened and the launching of new enterprises of all sorts are of weekly occurrence. All the larger cities and towns are showing a tremendous growth, and no better cities exist than the larger ones of Canada. Montreal, it is claimed, has a population of upwards of 400,000; Toronto, 265,000, and Winnipeg, 100,000, and they are metropolitan in every sense of the word. In the past year hundreds of Canadians have returned to the Dominion to live after an absence in some cases of several years. A great many more, and among them many members of the telegraph fraternity, are planning to return in the near future. The improvement in business conditions has been so manifest that the telegraph companies have been obliged to erect several hundred miles of new lines during the past summer to satisfy the demands of their increased business.

Turned "Y" Into "H."

A firm of bag manufacturers of New York have recovered a verdict of $2,200 in the Supreme Court in Brooklyn against one of the telegraph companies. A western concern telegraphed to the bag company asking for its price on a contract for 25,000 sets of bags. Before sending the bid the bag company telegraphed to a southern company asking for prices on cloth suitable for filling the contract. The company telegraphed in reply that the price for the narrow would be "two-eighth" and for the wide "three-eighth." This, as interpreted by the plaintiff, meant that the price would be "2⅛" and "3⅛" cents per yard for the two widths. Acting upon this telegram, the plaintiff sent in a bid to the concern in the West, who accepted it.

Subsequently the southern company wrote the plaintiff their terms, which proved to be "2.80" and "3.80" cents per yard. The difference in the price between the telegraphic figures and those in the letter, the plaintiff alleged, meant a loss to them of $2,200 on the contract.

Testimony was given to show that the operator had made "eighth" out of "eighty." The plaintiffs could not get the western firm to cancel the contract and the southern house contended that they had not made any mistake. Suit was then

begun against the telegraph company. The latter disclaimed the liability, because the message was not ordered repeated. The defendant will carry the case to the highest court.

An Interesting Reference to the Celebrated Page Patent.

The following letter from Mr. D. H. Bates to Leslie's Weekly, complimenting the latter upon the excellent and unique edition in December last, in commemoration of the fiftieth anniversary of that publication, contains an item not before published relating to the Page patent which should be of special interest to telegraphers, especially those respectively employed at the time, 1880, by the Western Union and American Union telegraph companies. Mr. Bates says:

"Noting the article in the early number on spiritualism, and particularly the lecture of the celebrated scientist, Dr. Robert Hare, of Philadelphia, in Broadway Tabernacle, November 24, 1855, I am reminded of an incident occurring twenty-five years later in which Dr. Hare also played a part in spiritualistic communication with his father. It appears, from Frank Leslie's report of Dr. Hare's lecture, that he was first confirmed in his belief in spiritualism by the results of his experiments with a revolving disk alphabet invented by himself, so operated as, in his opinion,, to preclude imposture, and by means of which he believed he had established direct communication with his deceased parent. In the course of the experiment the spirit first indicated his presence by causing the index on the disk to show "yes" in response to a question, and the initials of the spirit then being called for, the index pointed to "R. H." Dr. Hare then asked, "What, my father?" whereupon the word "yes" at once appeared. His departed father afterward said in reply to questions that he was happy, and that Dr. Hare's mother and sister were with him; but, alas! when the spirit was asked, "Is my brother with you?" the word "no" was spelled out on the disk. We are left to conjecture where the brother was located, and whether or not he was happy. One is led to wonder why communications from the spirit world as uniformly reported in cases of spiritualistic manifestations are so lacking in intelligence and utility, and, as a rule, so silly and inane.

"The latter incident to which I refer was in 1880, and occurred under these conditions: Shortly after the Civil War, Congress ordered the issue of letters patent to Charles Grafton Page, covering a very important invention, which, under the patent law, could not be granted to him because, when he made the invention, or discovery, he was filling the office of commissioner of patents. The patent covers broadly the use in the Morse telegraph of a combination of the armature of a relay magnet and an adjustable spring, the function of which was to pull the armature away from the magnet in the intervals of no current. This principle was all controlling, and, suffice it to say, no telegraph line could be operated without it. The Western Union Company, so it was said, had bought the Page patent for $100,000 for telegraph purposes, and the Gamewell Fire-alarm Telegraph Company had secured the right for fire alarms. An infringement suit against the Holmes Burglar-alarm Telegraph Company had just been decided in favor of the Western Union company, when Jay Gould started the American Union Telegraph Company to compete with the Western Union.

"The latter company promptly sued its new rival, with which I was at the time associated, and asked the court for an injunction, which, if granted, would have thwarted Gould's far-seeing plans. He retained David Dudley Field, John F. Dillon and other celebrated counsel to defend the American Union Company. Stephen D. Field, son of Judge Field, of the Supreme Court, and a noted electrical engineer, devised a plan to avoid the Page patent, and many other inventors submitted ideas, but none of them was wholly effective, and Gould's case seemed hopeless. Our experts searched old books and records, hoping to discover anticipation, and finally unearthed a publication about 1845, giving an account of a demonstration in Philadelphia before a class of students by Dr. Robert Hare, the father of Dr. Hare, the spiritualist, who was present at his father's lecture. The experiment was intended to show the principle of the attraction of an armature by a relay magnet, discovered in 1832 by Professor Joseph Henry, who was the real inventor of the telegraph, Morse's invention, great as it was in its future usefulness and world-wide application, simply covering the well-known "dot-and-dash alphabet." Old Dr. Hare showed his students a steelyard balance with a good-sized magnet on one end of the scale, and by moving the index, the strength of the magnet in pounds was ascertained. Here was, it seemed to us, the equivalent of the Page patent, and an anticipation of his important and useful discovery over twenty years before the date of the patent.

"Inquiry for Dr. Hare resulted in finding that he was then (1880) at Cape May, and we sent our expert, Mr. William Hadden, by first train to interview him and obtain his evidence to submit to the court. Mr. Hadden reported his conference with Dr. Hare, who was then quite old, and who said that he remembered his father's experiments with the steelyards, but not clearly, and if he were allowed a little time he would refresh his recollection. Accordingly, Mr. Hadden waited, with anxiety mixed with hope, and when Dr. Hare sent for him the following day he felt sure of a successful visit. When they met Dr. Hare opened the conversation by saying that since Mr. Hadden's first call he had talked with his (Dr. Hare's) father. This information was a great surprise to Mr. Hadden, who knew nothing of Dr. Hare's spiritualistic beliefs; and when the doctor went on to say that he had asked

his old father about the 1845 experiments, and that he had replied that he could not say for a certainty just what they consisted of, Mr. Hadden concluded he was in the company of an insane person, and, at the earliest opportunity, withdrew, feeling that, even if Dr. Hare had clearly remembered the vital circumstance, and had been willing to testify, the plaintiff's counsel would have proved the incompetency of the testimony.

"A few months after this occurrence Gould and Vanderbilt settled the Page patent question by agreeing to a consolidation of the American Union and Western Union telegraph interests, which, in all probability, was hastened, to some extent, by Dr. Hare's inability to obtain from his father's spirit definite information on the subject of the early experiments with a magnet in 1845."

Mr. Crary Drops Into Reminiscence.

Mr. A. Crary, repeater chief of the Western Union Telegraph Company at Cincinnati, talks pleasantly in a reminiscent vein of his experiences when located in Denver, Colo., in 1871, to which point he went at the earnest solicitation of the then manager of the Western Union Telegraph Company at that point, W. H. Harrington. He said:

"Denver then was not the telegraphic centre that is to-day. The office was on Holliday street, between 4th and 5th, a one-room, one-story brick affair. It had two wires to Cheyenne, one to Kansas City, one to Santa Fe (originally the United States and New Mexico Telegraph Company, B. F. Woodward, secretary,), and one wire to Georgetown. This wire ran by Golden City, following the stage route to Central City, thence down the famous Virginia Canyon to Idaho City and so to Georgetown. There was a large amount of business to be attended to, more especially when the Cheyenne-Omaha overland route was down. Then Denver would have to relay all overland business to Kansas City.

"The force at that time consisted of W. H. Harrington, manager; B. F. Bush, T. S. Cunningham and myself. 'Con' Gatch came in from Georgetown soon after, but after a month's stay went back to the States. W. S. Lewis, commonly called 'Billy Lewis,' reached Denver on the 17th of November from the States, bringing with him the greatest snowstorm known to that country. For two weeks we kept the stove warm, but there was no work, the wires all being down. Mr. Harrington resigned and went to Salt Lake on October 20.

"April, 1872, was made memorable to the Denverites by the visit of Grand Duke Alexis, of Russia, accompanied by Gen. Philip Sheridan and staff. Gen. Sheridan came to the office and left word for Gen. Custer, who was expected, where he (Custer) might find him. About nine o'clock that night Gen. Custer came in. His tall figure, dressed in full uniform, with his hair falling on his shoulders, made a picture. I got pretty well acquainted with Gen. W. S. Rosecrans, who was in in Denver on business connected with a proposed railroad from El Paso, south, for many telegrams passed between him and President Juarez, of Mexico."

Mr. Crary opened the first telegraph office at Black Hawk, Colo.

A Junior Old Time Telegraphers' Society.

"The Old-Time Telegraphers of the Pacific Northwest" is the title of an organization, temporarily constituted, of telegraphers formed for social purposes at Spokane, Wash., January 3. Fifteen years is the limit of time necessary to qualify for membership. The following named were elected as officers: T. P. McKinney, chief operator, Western Union Telegraph Company, Spokane, president; D. Fletcher, manager Postal Telegraph-Cable Company, Spokane, vice-president; F. E. Michaels, formerly superintendent of telegraph of the Spokane Falls and Northern Railway System, second vice-president; A. D. Campbell, manager, Western Union Telegraph Company, Spokane, treasurer, and A. W. Neimeyer, secretary. The next meeting will be held in Spokane, probably in March, when it is expected a permanent organization will be effected.

Meeting of the Cincinnati Morse Mutual Benefit Association.

The sixteenth annual meeting of the Morse Mutual Benefit Association of Cincinnati, O., was held in that city on January 13, and was a notable gathering when measured by the numbers in attendance and by the enthusiasm displayed. The organization shows a steady growth and its financial condition is declared to be entirely satisfactory. There has been a comparatively light demand upon its resources, death not invading its ranks during the year.

The election of officers resulted as follows: L. E. Moores, president, re-elected; A. M. Creighton, vice-president; J. F. Colligan, secretary, a position he has held continuously since this association was organized; Frank Minning, treasurer. Executive committee: A. L. Buchanan, J. J. Beyersdorfer, T. T. Connelly, B. C. Cheval, H. P. Donnelly, W. H. Ormston and J. R. Pigman. Auditing committee: J. N. Jacob, A. B. Clark and G. W. Lampton.

After the business meeting the members and their friends repaired to the dining room, where covers were laid for an even hundred. The remainder of the evening was devoted to music, recitations and dancing.

What is strength without a double share of wisdom?—Milton.

The New Engineering Building Available to Telegraphers.

The question has been raised whether the privileges of the Engineering Building, soon to be erected in New York City, the gift of Andrew Carnegie, would be extended free to the use of telegraphers, or any of their societies, who are not affiliated with the American Institute of Electrical Engineers or of other and allied organizations of similar character.

ENGINEERING BUILDING, NEW YORK.
To be erected on Thirty-ninth Street, between Fifth and Sixth Avenues.

A prominent member of the building committee of the Engineering Building, who was a few days since questioned regarding this matter, after due consultation with other members, said:

First of all, I would say that the spirit of Mr. Carnegie in making his gift, and the national Engineering Societies in accepting it, is to render it not merely limited to a few persons, but fruitful of the greatest good to the greatest number. Even from the start, the building will be the home and centre of societies representing some 20,000 engineers, professional men, and organizations connected with technical industries. These societies will each have their separate and individual offices, and to that extent the building will be reserved, as each society will, of course, carry on its business in its own quarters. This, however, when all is said and done, only accounts for a very small part of the fourteen-story structure; all the rest, limited only by the resources of the trustees, is freely devoted to mankind, and particularly to those who are interested in electrical, scientific and industrial advance. The library and the museum will be open to everybody, and the library is to be conducted in harmonious association with, and virtually, it is proposed, as an ally of the great public library immediately adjoining on Bryant Square. In other words, that library proposes, under such a plan, to leave to the United Engineering Library the care of everything relating to the literature of engineering, including files of publications, sets of periodicals, old books, and all the new ones bearing on electrical engineering, mechanical engineering, civil engineering, mining engineering, and a score of allied arts. In like manner, the museum will be open to the public. Beyond this, several floors will be taken up by the large and minor meeting rooms, which will be available for convention purposes, for monthly and quarterly meetings alike for societies within the walls and for the many others in the city who desire only to have a meeting room occasionally. The co-operative plan of conducting the building is not to collect rent from anybody, but simply to arrive at the bare operating and maintenance expenses, and charge the societies pro rata for the floor space used for offices, etc. In addition to this the hospitalities of the building are to be freely extended for convention purposes, which have now become so large a part of our national and professional life. When the Old Time Telegraphers' and Historical Association meet here, or the Association of Railway Telegraph Superintendents, or the Telephone Associations, or the National Electric Light Association, or the electrical insurance people, or the Electrical Contractors, they, like the electrical engineers, will find ready and waiting for them, a magnificent series of large and small audience chambers, fitted with everything required for demonstration and experiment, the like of which does not exist in the world elsewhere. You can readily see what an inestimable boon to scientific engineering and industrial progress generally this building will be from the very day its doors are opened. Not only will these facilities be available to individual telegraphers or their associations, but the trustees will be greatly disappointed if the opportunities are not very freely availed of.

As to the papers and discussions of the institute, and their value to the managers of the telegraph service, I can only point to the record of the institute, and to the stately series of volumes containing its Transactions. It would perhaps not be true that every paper read before the institute is of value to a telegraph manager, but it is safe to assert that there are very few papers in which an intelligent, progressive telegraph engineer and manager will not find something of interest, value and benefit Moreover, as pointed out, the building will be not merely the home of the Institute of Electrical Engineers, but of some fifteen or twenty other bodies, and even more than that number will have their headquarters within it. From these bodies will proceed yearly a mass of literature on which, outside of what is done by the technical press, the whole ad-

vance in the arts and sciences must be based, touching and affecting telegraphy, as well as every other electrical application.

The very fact that such a building exists, that bodies of earnest men seeking scientific truth can get together and discuss facts and papers, will be, it is believed, a notable factor in the creation of many new societies which have been deterred and hindered hitherto, because they have no home, no easy place of meeting, and no building where they could share facilities in common with kindred societies. I am myself conversant with one or two movements in this direction already, and I believe we shall soon see other bodies, in the electrical, the telegraphic and the telephonic fields come into successful being, because this great building will give them a home and a rallying point.

The Nantucket Lightship a Telegraph Station.

Just at this time, when the loss of relief lightship No. 58, with its expensive equipment of wireless telegraph apparatus, is fresh in the minds of the public something of the duties and dangers which the men have to face on Nantucket shoals will be read with more than ordinary interest, says a writer in the New Bedford Standard.

Few realize what is means—this service on a lightship moored forty-two miles from the Island of Nantucket, tugging and pulling at a heavy chain, tossing and pitching in fierce seas, and yet all the while remaining as it were in the same identical place for weeks and weeks. Unlike other fabrics sailing the Atlantic Ocean, she remains in this one place—a beacon for transatlantic liners and other carriers on old ocean.

No one doubts for a moment the necessity for a staunch vessel at this most exposed station, but the wonder is that the government finds men willing to accept positions on such a perilous tour of duty. Monotonous? Why, the meaning of that word is explained only in such an experience. Occasionally speaking other vessels and shore liberty is their only relief.

It may, however, be remarked that the lightship serves as an ocean relay station for wireless communications between the shore and vessels at sea, equipped with wireless apparatus.

Right here it might be mentioned that the Nantucket shoals lightship No. 66 is a composite-built vessel of 500 gross tons, and was constructed at Bath, Me. She is moored at her station in thirty fathoms of water, which is in latitude 40 37 north, longitude 69 37 west and about forty-two miles south southeast of Sankaty Head lighthouse on Nantucket Island. She is one hundred and sixteen feet in length over all, has a breadth of beam of thirty feet and a load draught of thirteen feet seven inches. Fitted with a four-bladed propeller eight feet in diameter, having nine and a half-feet pitch, she can, under favorable conditions, steam from eight to nine miles an hour.

The ship is also furnished with two complete generating sets of the General Electric type, of eight kilowatts each and a voltage of 110. There are eight masthead lamps of 100 candle power each, visible at sea in clear weather for a distance of about twelve miles. She also carries fresh water in iron tanks to the amount of 12,000 gallons for use in the boilers and cooking, and is fitted with a steam Hyde windlass of 200 horse power.

Just before leaving port a few weeks since the Telefunken system of wireless telegraphy was installed, which is believed to be an improvement on the system formerly in use, and under favorable conditions will send messages for a distance of 250 miles.

Thus it will be seen that the United States government is under no small expense in fitting a lightship of the type of No. 66, which, on the present tour of duty, has nine men and four officers.

Three expert telegraphers are detailed from the United States navy for wireless duty on board.

Ocean steamers and steam and sailing craft of all description are reported by the wireless apparatus to the navy reporting station at Newport, R. I., and commercial messages are exchanged with the wireless telegraph station on Nantucket island. From this point they are transmitted from Woods Hole, Mass., via the Martha's Vineyard Telegraph Company's cable, where they are turned over to the Western Union and Postal telegraph companies land lines. Freight and oil tank steamers are given instructions and orders as to what port to proceed for a cargo. These steamers have cabled instructions before leaving European ports to proceed to the light vessel stationed on Nantucket shoals and there receive their orders. Thus it will be noted that ships bound for this country while actually out of sight of land receive wireless telegraph orders respecting the destination of the vessel.

Another feature of the equipment which should not be omitted is the submarine bell. This bell is rung by a steam cylinder from the deck connected with a rod and chain to the submerged bell thirty feet below the surface of the water. It rings the number of the ship—six strokes and a pause, followed by six strokes—sixty-six. The sound from this bell can be heard by passing steamers that are equipped with a telephone receiving apparatus at a distance of from four to eight miles. Men have heard it in the cabin of a fishing schooner two miles from the station. The use of a submarine bell in foggy weather eliminates the defects of the steam whistle, which sometimes in a gale of wind is heard not more than a quarter of a mile to windward, while the bell can be heard in all directions. It being below the surface of the water therefore the action of the wind upon the sound waves has no effect whatever.

A. M. Beatty, the New Postal Manager at Atlanta.

Alfred Miles Beatty, who has been advanced from the managership of the office of the Postal Telegraph-Cable Company at Knoxville, Tenn., to that at Atlanta, Ga., there succeeding J. E. Scofield, resigned to enter other business, an announcement already made in these columns, was born at Eaton, O., July 25, 1865. Beginning life as a compositor in a newspaper office, he acquired the art of telegraphing by working nights for the United Lines Telegraph Company, the predecessor of the Postal Telegraph Company. The beginning of his telegraphic career dates from July, 1885, when he became a night operator for the Cincinnati, Hamilton and Dayton Railroad at Carthage, O. In 1887 he entered the service of the United Lines Telegraph Company

ALFRED M. BEATTY.
Manager at Atlanta, Ga., of the Postal Telegraph-Cable Company.

at Cincinnati. This was really his initial Postal service. While conspicuously a Postal man, yet during the years 1889 and 1891 he was employed as second clerk and as operator for the Western Union Telegraph Company in the Illinois state prison at Joliet, that state, afterwards holding a clerkship during 1892 in the office of Col. Clowry at Chicago, then vice-president of the Western Union company. The subsequent positions held by Mr. Beatty in the Postal service were as follows: manager at Troy, O., 1896-97; cashier at Birmingham, Ala., a portion of 1897; manager at Jackson, Mich., 1898; clerk in the office of Superintendent W. I. Capen at Cincinnati, 1898-99, becoming city solicitor of the main office in Cincinnati in the latter year; manager for a brief term in 1899 at Champaign, Ill.; manager at Bloomington, Ill., in 1900 and 1901, going thence to the head of the Knoxville, Tenn., office during the latter part of 1901, until his recent transfer to the Georgia capital. His incumbency at Knoxville is referred to in terms of praise for its efficiency.

Mr. Beatty is married, a man of domestic habits, well informed in the study of the telegraph and careful in his methods. His practical knowledge and excellent executive ability well qualify him for the increased responsibilities of his new office in which, it may be remarked, he enters in the prime of life.

Capital Punishment for Stealing Wire.

A City of Mexico correspondent states that a bill has been introduced in the Mexican Congress to make the theft of copper wire, used for transmission purposes, punishable by death in case such theft causes fatal accident to any one. It is stated that several thousand dollars worth of copper wire has been stolen from pole lines in the City of Mexico recently.

In the United States wire stealing still continues. Recently one of the telegraph companies succeeded in sending a convicted wire thief in Pennsylvania to the penitentary for three years. Heretofore the terms of punishment meted out to criminals of this kind have been so lenient as to encourage rather than to deter copper wire robbing propensities. The telegraph and telephone companies are now endeavoring to impress upon the judges the importance of adopting drastic measures for the punishment of this sort of crime by imposing longer and more severe forms of sentence.

"Farmer" Lawton Gets Gun of Ye Olden Time.

It requires all kinds of presents to make people happy; even Santa Claus has to do much figuring to please all. He had "Old Farmer" Lawton, night chief operator of the Western Union Telegraph Company at Denver, remarks the Daily News of that city, guessing the night before Christmas. When Mr. Lawton went on duty he found an old flintlock dueling pistol upon his desk, bearing such an ancient date that many believed it had been dropped by DeSoto when that gentleman discovered the Mississippi River.

The "farmer" has not fought a duel in forty years, neither has he handled firearms much since the Revolutionary War, and was quite timid in handling the weapon, but finally mustered up courage enough, by holding it at arm's length, to make his way to the city hall for the purpose of securing a permit to carry it home, but by the time he reached police headquarters his nerves had completely forsaken him, and he went direct to his old friend, Hughy Smith, the night jailer, and requested Mr. Smith to either lock him up, or the old gun, he didn't care a darn which one.

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

RICHMOND, VA., WESTERN UNION.

The force of this office now consists of nearly seventy operators and there is always plenty for them to do. There are not more than a hundred and twenty-five wires passing through this office, but when it is taken into consideration that with about five exceptions they all terminate or are repeatered here, it will be seen that we have quite an establishment. The work of construction continues and our office is already much crowded. There appears to be no immediate prospect for a change in quarters, but we all hope for the best.

Our former chief operator, Mr. L. D. Beall has been succeeded by Mr. J. B. Faulkner, of Memphis, more recently of Charlotte. Mr. Faulkner assumed charge of the office on January 15.

Miss K. L. Francis, of Charlotte, is now with us.

SAN FRANCISCO, POSTAL.

Electrician W. C. Swain has gone to Butte, Montana, on official business.

Miss Winona Brown and George W. Parsons, all night chief, were married on Christmas.

Mr. Harry Reynolds has recovered sufficiently from an attack of pneumonia to be able to return to his desk.

Mr. James O'Neil is with us again after a month's subbing in the offices of the Pacific Mail Steamship Company.

Miss Alice Beede has resumed her station on the Seattle wire. She has been ill at her home during the last six weeks suffering from an attack of malaria.

W. K. Ward, of Honolulu, is spending a few weeks in this city.

Frank Seaman has returned from a short vacation.

Mr. Mike Dooley has been confined to his home for the last three weeks on account of sickness.

BALTIMORE, WESTERN UNION.

A. Bowersock, one of the oldest men here, for thirty-five years in the employ of the company in this city, has lost his wife by death.

The branch office formerly located at 202 Light street has been removed to 102 Light street, the change being made necessary by the city's purchase of property in order to widen the street. The new office is a distinct improvement over the old, larger, lighter and better equipped and is much to the liking of its manager, Samuel T. Schutt.

W. F. Ganger, night chief, is convalescing from his long illness.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY

EXECUTIVE OFFICES.

Among the recent visitors to the executive offices were: I. W. Copeland, manager at Troy, N. Y.; E. Ryder, manager at Hartford, Conn.; W. H. Doherty, manager at Albany, N. Y.; C. F. Ames, superintendent at Boston, Mass., aand S. R. Crowder, electrician of the southern division at Atlanta, Ga.

Mr. John C. Barclay, assistant general manager and electrical engineer, and C. H. Bristol, general superintendent of construction, have returned to their offices after an absence of three weeks on a general inspection trip in the Southern States.

IN THE OPERATING DEPARTMENT.

Dr. Edwin Reynolds, aged sixty years, an old-time operator, who recently died in Brooklyn, N. Y., was at one time a member of this staff.

Mr. J. B. Hurd, Southern traffic chief, was the recipient of many hearty congratulations and a number of gifts on the occasion of his birthday a few days since. Mr. Hurd has just completed his thirty-eighth year of service in this office.

The weather of late has been so changeable that it seems to have played havoc among our traffic chiefs, Messrs. Lewis and Pearce and Mrs. May having been absent owing to sickness, while Chief Athearn of the Wheatstone force is still confined to his house with pneumonia. Mr. M. T. Durkin of the quadruplex department, is also seriously ill.

Messrs. W. Klitz, E. M. Matthews, D. C. Murphy and J. J. Carney have resigned.

Mr. E. T. Burrill, general traffic chief, is enjoying a well-earned rest, having gone to New England.

Mr. N. W. Lovegrove, of the Stock Exchange force, was married lately to Miss Brereton, of Buffalo.

Geraldine Louer, aged twenty years, died at her home in Brooklyn, January 21. Miss Louer was formerly employed at this office and was a daughter of the late Alfred F. Louer, a traffic chief, also of this office.

Alfred J. Bailey, aged fifty-eight years, connected with the bookkeeping department for upwards of twenty years, died on January 11.

The cable message bureau, which is under the management of Vice-President Thomas F. Clark, has undergone a complete renovation. The housewarming of the clerks of this department on Friday, January 19, was a unique and enjoyable affair.

Onnolee Lodge, No. 63, Order of Iroquois, made up mostly of telegraphers of this office,

held a public installation of officers at their rooms in Brooklyn, Friday evening, January 19. A pleasant social hour followed, enlivened by speeches by M. J. O'Leary, Senator W. L. Ives, and by musical selections and recitations.

Senator W. L. Ives is absent, owing to sickness, but it is hoped he will be able to resume his duties in a few days.

OTHER NEW YORK ITEMS.

Assessment No. 444 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of James Smith at Springfield, Mass.; Edward F. Welch at New York; Michael F. Gaffney at Brooklyn, N. Y.; John Kelly at Albany, N. Y., and John A. Sahlin at Hoboken, N. J.

The Commercial Telegraphers' Union of America, as exemplified through its New York local, proposes to hold a smoker and telegraphic tournament at the Manhattan Lyceum, No. 66 East Fourth street, on April 20 next. The proceeds of the affair, of which W. S. Riordan, 150 Nassau street, New York, is the chairman, are to be applied to the sick benefit fund of the union. The tournament, the details of which are being worked out with much care, will be conducted under the direction of George B. Pennock.

The annual report of the American District Telegraph Company of New York, shows a gratifying increase of business for the year 1905. There was a net gain in the revenue of $18,011. The number of instruments in circuit on December 31 last was 32,234, with 1,587 miles of wire in operation and eighty-seven offices. At the annual meeting of the stockholders the retiring board of directors was re-elected.

Mr. John Brant, secretary of the old time Telegraphers' and Historical Association, is confined to his home in Brooklyn by illness. It will be probably a week or ten days before he will be able to resume his duties at his office. Necessary work incident to his position, however, will be attended to by him at his residence.

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Fernand Emile d'Humy has been appointed electrician of the Eastern division, vice John F. Skirrow, in order that the latter may devote his entire time in the future to the duties of his position of associate electrical engineer. Mr. John T. Needham, assistant electrician of the Eastern division, has been appointed district electrician, vice F. E. d'Humy.

Mr. d'Humy was born in London, England, August 9, 1873. Coming to this country at an early age, he entered the service of this company at Boston, July 15, 1891. His aptitude for and grasp of electrical matters becoming manifest, he was recognized by the company when he was placed in charge of the dynamo plant in the Boston office. He gradually worked his way up to the position of electrician of the first district, Eastern division. His transfer to New York occurred in May, 1904, when he was made electrician of the second district, Eastern division, a post he has since filled most acceptably. His present promotion is a further recognition of Mr. d'Humy's abilities as an electrician.

Mr. Needham is a native of London, Ont., where he was born in 1874. His telegraphic career began in the employ of the Great North Western Telegraph Company at London in 1897. Coming to New York he entered the service of this company as an operator, subsequently becoming wire chief in the operating department, and later assistant to Mr. J. F. Skirrow. Mr. Needham has been a careful student, has a well-informed and practical mind in the technicalities of his profession, and his appointment of district electrician, succeeding Mr. d'Humy, is a meritorious one.

At a meeting held at Salt Lake City, January 8, of the Postal Telegraph-Cable Company of Utah A. L. Thomas was elected president; W. S. McCornick, treasurer, and E. P. Gaylord secretary, the three, together with T. G. Webber, constituting the board of directors.

Mr. John F. Skirrow, associate electrical engineer of the company, is still absent on account of illness. He is reported, however, to be convalescing, and it is thought that he will be able to resume his duties at a comparatively early date.

The headquarters of C. B. Arrington, which have been located temporarily at Atlanta, Ga., have been transferred to Jacksonville, Florida.

IN THE OPERATING DEPARTMENT.

Edward Rhates has been transferred to the office at 8 Cortlandt street.

W. Conly has been added to the service department force.

Geo. Wichman, of the Western division, has been assigned to the office at 317 Greenwich street to help out during the heavy file of business there.

T. E. Heffren has been appointed manager of the 51 West Thirty-first street office. Mr. Heffren was chief operator at the Produce Exchange for a number of years. He succeeds H. E. Wilson, who has been transferred as manager to the 184 Franklin street office.

J. J. Finnerty is looking out for the all night traffic.

Willie Calhoun, check boy of the Western division, died January 24 after an operation for appendicitis. He was fifteen years of age and was the most popular boy in his division.

L. A. King is now located at the Evening World newspaper office.

H. C. Mitchell, H. Woolard and J. P. Gallagher have been added to the regular night force.

S. C. Dodd has been appointed general traffic chief.

C. W. Morrell is now day city chief.

J. Dupius has been appointed night city chief.

S. B. Haig, for a number of years general traffic chief, has been appointed assistant manager to S. E. Ostrom at the 20 Broad street office.

Mr. Williams a Solicitor for the Postal.

James P. Williams, night traffic chief of the Postal Telegraph-Cable Company, New York, has been appointed a business solicitor of the company for the Borough of Manhattan.

Mr. Williams was born in Philadelphia, April 9, 1866, beginning life like many another in the telegraph service as a messenger. This was for the Philadelphia Local Telegraph Company, September 24, 1877, when but a boy of eleven years. Ambitious to succeed he learned to telegraph and

JAMES P. WILLIAMS.
The Newly Appointed Business Solicitor at New York of the Postal Telegraph-Cable Company.

when fourteen years of age became an operator for the American District Telegraph Company of that city. In November, 1886, he entered the service of the Postal. With the exception of a few months, spent in the employ of the Pennsylvania Railroad at Philadelphia, Mr. Williams has since remained with the Postal company, (coming to New York in 1888), though serving on detail service on leased Postal wires. In this capacity he worked the leased wire of the Chicago Times-Herald and served for two years as chief operator of the Northern Associated Press and correspondent of the Buffalo Enquirer. In these positions Mr. Williams won distinction as a gilt-edged telegrapher. He was selected to represent the New York office of the Postal as a judge in the tournament held in Philadelphia in 1903.

Mr. Williams has devoted himself closely to his business, in which he has been rewarded by promotion; he is a man well informed as to the requirements of his company, and his selection for the position of solicitor is believed to be an admirable one.

Serial Loan Association Election and Statement.

On January 16 officers of the Serial Building Loan and Savings Institution, of New York, were elected as follows: David B. Mitchell, president; James R. Beard, vice-president; E. S. Butterfield, treasurer; Edwin F. Howell, secretary; John B. Sabine and Augustus A. Rich, counsel and attorneys. Directors: John Brant, J. B. Taltavall, M. J. O'Leary, W. H. Jackson, T. A. Brooks, C. F. Leonard, G. W. Blanchard, G. H. Schnitgen, W. J. Quinn, M. S. Cohen, M. W. Ravens, J. P. Clolery, H. F. Hawkins, John A. Hill, H. C. F. Howell and F. C. Leubuscher.

The 41st semi-annual statement of the Serial Building Loan and Savings Institution for the six months ended December 31, 1905, is as follows:

Assets.

Cash on hand	$ 31,647.14
Loans on mortgage	428,286.40
Loans on shares	10,430.00
Real Estate	27,692.78
Contracts Real Estate	21,364.59
Advances to members	2,418.87
	$521,839.78

Liabilities.

Installments	$300,048.00
Earnings	55,678.46
Matured shares	63,800.00
Full paid shares	23,000.00
Borrowed money	11,037.31
Due on loans	33,200.00
Undivided earnings	12,348.07
Surplus	22,627.94
Real Estate Commission	100.00
	$521,839.78

New York, January 4th, 1906.

The semi-annual statement of the Electric Building Loan and Savings Association (having the same officers as the Serial Association) for the six months ended December 31, 1905:

Assets.

Cash on hand	$ 348.92
Mortgages	43,006.77
Stock loans	2,300.00
Real Estate	10,129.79
Advances to members	14.03
	$55,799.51

Liabilities.

Subscriptions	$53,154.18
Contingent fund	1,000.00
Suspense account	367.73
Undivided earnings	1,277.60
	$55,799.51

This is to certify that we have examined the books of the Electric Building Loan and Savings Association and find them correct.

W. H. DAVIS,
J. P. CULLEN.

Edison's First Work in Indianapolis.

Back in the telegraphic history about forty years ago Thomas A. Edison, then twenty years old, but an expert operator even at that age, wandered into Indianapolis, and it was here, says the Indianapolis Sentinel, that the first experiments of the now great electrician and inventor were made.

John F. Wallick, then as now superintendent of the Western Union Telegraph Company, gave the young operator a position, placing him in the branch railroad office in the Union Station. It was here that young Edison began his first experiments which have made his name one of the first in the age in number and importance of inventions. According to Mr. Wallick, Edison came to him from Michigan and was put to work at once. He remained three months. This was in 1866.

"There was nothing striking in Edison's early work," says Mr. Wallick. "He was a good operator, but nothing wonderful. His earliest attempts in the inventing line were made while employed under me, but at that time I did not take his work seriously. One day, soon after beginning work, Edison came to my office and asked for some old instruments, sounders and keys. He said he wished to experiment with them, and I let him have them.

"One night some time after that I was in his room at the Union Station and saw he had the whole batch rigged up and was working over them every spare minute he had.

"'What are you doing with those things?' I asked him.

"'Just experimenting,' he answered. 'I believe I can make a duplex and quadruplex instrument that will work right.

"He left Indianapolis soon after that, first going to Boston and then to New York City. It was while in the East that his fame began to grow. Every once in a while I would see little notices in the papers about a fellow named Edison who was working wonders in the telegraphic line, and, of course, my interest was aroused. So I looked into the stories and found that he was the same fellow who had been experimenting in Indianapolis. I am convinced that the first experimenting he ever did was in the railroad office in Indianapolis."

To Season and Preserve Telegraph Poles.

Seven electric companies doing business in California have made arrangements with the Government forest service for a thorough cooperative study of seasoning and preserving telephone and telegraph poles. The work centers at Los Angeles, Cal., and an agent of the forest service will immediately take up the preliminaries there.

Oregon cedar is the tree chiefly used in that region for poles. The experiments will be devoted not only to the handling of this wood, but to a search for satisfactory substitutes among other species. Possible substitutes are western yellow pine, incense cedar, redwood and eucalyptus.

The comparative value of these will be studied, and those which promise best will be subjected to such seasoning and preservative treatment as the forest service may recommend. In general, the wood will be handled in much the same manner as that which has proved successful in other work done by the service.

Thomas A. Edison is somewhat of a joker. A correspondent was looking over the inventor's laboratory when his eye was caught by a curious model. It looked like a cradle with some kind of telephonic attachment. "What on earth is that?" inquired the visitor. "I hope to make my fortune from that invention," said Edison gravely. "It is a motor to run by sound. You attach it to a cradle and the louder the baby cries the faster the cradle rocks."

Montreal, Que.

(Communicated.)

The largest city in Canada is Montreal, now claiming a population of about 400,000. It is the head of navigation on the St. Lawrence River for ocean liners, the big transatlantic steamers land directly at the wharves on the city's river front. Nearby is the famous resort of American tourists, the Thousand Islands. From Montreal, it is a night's ride to Toronto or New York; four hours to Ottawa, the Dominion capital, and six hours to Quebec.

The city is an important railroad centre and the most important relay point of the Great North-Western Telegraph Company. From Montreal the company's lines connect with offices throughout the Province of Quebec, and by direct wire service to the Maritime Provinces, Ottawa, Toronto and Winnipeg, as well as Boston, New York, Chicago and three cable stations. Montreal is the western terminal of the Intercolonial Railway, operated by the Dominion Government. In Montreal is also the head office of the new Canadian transcontinental railway, the Grand Trunk Pacific.

Montreal has its own Board of Trade and Stock Exchange, both boards now occupying new and very handsome buildings. The Great North-Western Telegraph Company is represented in both by a special branch office. In addition, the company maintains a ticker service distributing the New York markets as well as the quotations of the Montreal and Toronto exchanges.

Whether resident or visitor in Montreal, messages should be marked via Great North-Western as the company has a large number of exclusive offices, and communicates, through its connecting lines, with upwards of 49,000 places in Canada, the United States and Mexico.

The Vibroplex

In order to afford buyers of the Vibroplex, the most perfect telegraphic transmitter extant, an opportunity to deal conveniently with their nearest home agent, the following authorized representatives are named for their special benefit:

Chicago, Ill.—W. T. Plummer, Postal Tel. Co.
Cincinnati, O.—John Stangle, Western Union Tel. Co.
New York.—G. H. Wiser, Postal Tel. Co.
Philadelphia, Pa.—D. Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

Hudson's Word Register.

Buyers of Hudson's Word Register, the standard and most simple and accurate device for counting the words written upon the typewriter, will consult their convenience by communicating with any of the following named authorized agents, preferably the one nearest to their place of residence:

Kansas City, Mo.—J. N. Harper, West. Union Tel. Co.
Philadelphia, Pa.—Daniel Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

Gold and Stock Life Insurance Association Holds Annual Meeting.

The Gold and Stock Life Insurance Association held its twenty-eighth annual meeting in the Western Union Telegraph Building, New York, on January 15. It was well attended, and the interest shown by those present in the welfare of the association was evidenced in the remarks recounting its history and referring generally to its good work and the success it has achieved.

Under the association's plan of payment, by monthly installments of $50, until the full amount of the certificate is paid, $100,000 has been distributed among the beneficiaries of the one hundred and sixty-nine deceased members, thus giving each the advantage of a monthly income, and at a time when only those who received it could appreciate its full value.

President Atkins commended the fraternal spirit that prevails in the association and urged strenuous efforts to increase the membership and revenues to the end that a satisfactory reserve fund may be accumulated.

The total membership on December 31, 1905, was 1,163, while the gain in assets during that year amounted to $1,219.60.

The auditors' report showed that there was now on deposit $128.73, a reserve fund of $21,086.25, and that the market value of the securities over their cash was $833.75, thus showing the assets to be $22,048.73. The death claims payable, but not yet due, foot up to $2,700.

Officers were 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.

Book Notice.

The twelfth edition, carefully revised and enlarged, of "The Arithmetic of Electrical Measurements," by W. R. P. Hobbs, R. N., has made its appearance, being published simultaneously in London and New York. This excellent work, designed primarily for the use of young students of electricity who desire to obtain a clear and concise application of Ohm's law, the foundation of all electrical measurements, fully maintains its past reputation. In a note the author calls the attention of students in telegraphy especially to Chapters XI. and XII., which treat at length and in detail the questions of resistance of conductors and the electric lighting and transmission of power. The price of this book is fifty cents, which includes postage. Orders should be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

A Valuable Book on Testing.

We are in frequent receipt of letters from correspondents wishing to ascertain the names of a book that will give detailed information on testing by voltmeter, ammeter, etc. We are pleased to announce that a new book just placed on the market, entitled "Electrical Instruments and Testing," by N. H. Schneider, price $1, covers the subject of testing thoroughly. It contains 110 pages and over 100 illustrations and tables. Because the book is low in price does not invalidate its claim to the best of its kind dealing with testing subjects, some of which are as follows:

The simple galvanometer; deflections not proportional to current; ampere turns; selection of size of wire for coil; tangents; the tangent galvanometer; influence of the earth on a galvanometer; the astatic galvanometer; compensating magnet.

Sensibility of galvanometer; figure of merit or constant; the Thompson reflecting galvanometer; forms of the D'Arsonval reflecting galvanometer; ballistic galvanometers.

Rheostats; resistance wires and their composition; laboratory resistance slab; shunts; condensers; keys; the reversing key; the Rymer-Jones key; commutator; the Kempe discharge key; the standard cell; Clark cell; Weston cell.

The voltmeter; the series ammeter; the shunt ammeter; types of instruments; sensibility; duplex instruments; potential indicators; millivolt and milliampere; multipliers; hot wire instruments; shunts; the wattmeter; Thomson inclined coil instrument; Queen instruments; Keystone instruments; G. E. potential indicator; electrostatic voltmeters; electro dynamometer type; electromagnetic type; reading instruments; parallax; care of instruments.

The Wheatstone bridge; post office bridge; how to use the bridge.

Forms of portable sets and how to use them; Queen bridge; Willyoung bridge; Whitney bridge; Sage ohmmeter; Evershed testing set.

Current flow and e. m. f.; galvanometer constant; direct deflection method; with Queen set; with voltmeter; testing resistance of galvanometer; five methods of battery testing.

The potentiometer; checking voltmeter; checking e. m. f.; use of various portable testing sets.

Charge and discharge of condenser; testing capacity and insulation of condenser; loss of charge method.

Cable testing; capacity; insulation and conductivity; locating cable faults; Varley test; Murray test..

Testing with voltmeter; testing wiring; insulation of generator; e. m. f. around commutator; measuring drop; testing high e. m. f. with low reading voltmeter; temperature and resistance; testing temperature by rise of resistance; testing filed coils; testing armature coils; plotting curves of tests.

Address all orders accompanied by the cash, to J. B. Taltavall, 253 Broadway, New York.

Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines

We will have ready for delivery early in January a book entitled "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines." The volume contains over 100 full-page diagrams and fifty pages of reading matter; size 7 x 4½ inches.

Of these fourteen pages are devoted to Rules governing the construction and repair of telegraph lines; and four to the subject of standard tools. Submarine cable splices, underground cable splices, single-wire joints and aerial cable splices are also fully treated. Under the general head of Rules for Wiring Offices and Cable Boxes, the subjects of the terminal office, intermediate offices, submarine and underground cables, aerial cables, call circuits and call boxes, leased wire offices, branch offices, miscellaneous, are fully given. Then come rules for the care of motors and generators, explanation of and rules for the care of the Callaud battery, rules for the care of the Leclanche battery and resistance coils, following which is the table of Size and Insulation of Wire Cable for interior use, and that of Wire Gauges.

The authority to publish this fine work by TELEGRAPH AGE, exclusively, was granted by Mr. William H. Baker, vice-president and general manager of the company, the stipulation being that the price shall be restricted to but fifty cents a copy.

This is done primarily in order that the employees of the Postal company may enjoy the benefit of a low charge, for to them the book may be said to be practically indispensable; the price, however, will be the same to all purchasers alike.

This nominal price for so large, important and complete a work, embellished with so many first class plates, made especially for it, does not, of course, cover the cost of production. We are enabled to make this low price because the Postal company has generously loaned its cuts to us in order that the book may be placed in the hands of its employees at the lowest possible figure, a fact that will no doubt be very generally appreciated.

The diagrams shown are absolutely correct, being made from the official blue prints, and every employee of the Postal company will find them of positive advantage in promoting the study and understanding of the equipment he is called upon to use.

All orders, which must be accompanied by the cash, should be addressed to

J. B. TALTAVALL, Telegraph Age

Remit by Postal or Express money orders. **253 BROADWAY, NEW YORK**

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. Vehe, 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.

The price of the books is $1 per copy, which includes carrying charges.

Address all orders to

J. B. Taltavall,
Telegraph Age,
253 Broadway,
New York.

TELEGRAPH AGE

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TELEGRAPH AGE

No. 4. NEW YORK, February 16, 1906. VOL. XXIV.

CONTENTS.

SOME POINTS ON ELECTRICITY.

The Dynamo—Series, Shunt and Compound Wound.

In Three Parts—Part II.

BY WILLIS H. JONES.

The preceding installment of this article was devoted to a description of the manner in which the respective coils of series, shunt and compound wound dynamos are wound.

In this issue we shall endeavor to show why the three methods of winding are necessary and how alterations in the ohmic resistance of the external circuit cause the respective machines to give electric outputs in as many different forms.

Now, if the total ohmic resistance of a circuit, or that of the joint resistance of a number of circuits, would remain permanently unaltered there would be no positive necessity for the different methods mentioned. Unfortunately, however, while individual circuits may remain practically the same at all times, the number of such circuits in use at different periods may alter greatly.

As one machine, as a rule, feeds a great many such circuits, the "external circuit" of a dynamo really means the equivalent of one circuit possessing a total ohmic resistance of a value equal to that of the joint resistance of all the individual circuits it happens to be feeding current to at the time. If the circuits are telegraph conductors, or electric light circuits, some of which are rapidly being opened and closed, or where lamps are almost constantly being cut in or out, it is obvious that the joint resistance of the entire system is altering in value every moment. As the volume of current demanded by the individual circuits must always remain unaltered, it follows that if it is required to supply more than one branch circuit it must be so constructed as to yield additional quantities without altering, to any appreciable extent, the value of its electromotive force. Hence we have what is called "constant pressure" dynamos. These are the shunt, and the compound machines. On the other hand, when one machine is assigned to furnish current to a number of lamps connected in series, that is to say, feeds but one continuous electric light conductor, it must provide but one volume of current at all times, regardless of whether one or one hundred lamps happen to be cut in at any period. Here we find the demand for a "constant current" producing machine. The series wound dynamo fills this requirement. Let us see how these ends are attained.

Before proceeding further, however, a few remarks concerning the manner in which the electromotive force in a dynamo is developed and regulated may help to a clearer understanding of the description to follow.

The number of volts a dynamo produces depends upon the number of magnetic lines of force in the "field" that the armature cuts across per second of time as it rotates between the large metal polepieces of the magnet. Hence it follows that the voltage may be increased or decreased in several different ways. First, with a constant strength magnetic field between the polepieces, the voltage may be increased by merely increasing the number of revolutions per second. For example, if an armature rotating in a certain magnetic field at a given rate of speed per second, created 100 volts, it would create 200 volts from the same field should the speed be doubled. Or the electromotive force could be doubled in value by doubling the strength of the field without altering the speed. In each case the armature would cut double the number of lines per second.

It could also be increased by increasing both the speed and the field. Decreasing the value of any or all the factors would, of course, decrease the voltage in like manner.

Again, as there is a maximum and a minimum point in the field where the number of lines of force are greatest and least, it follows that if the brushes of the machine are shifted between these points the armature coil will only cut that proportion of the total number which equals the percentage of brush displacement. Hence, the pressure may be varied by merely altering the position of the brushes on the commutator.

Now, the object of the various windings in the different types of machines mentioned in this article is to compel the unavoidable alterations in the volume of current flowing into the external circuits to instantly either create or preserve, as the case demands, the exact value of electromotive force in the machine that is required to compensate for any temporary loss or gain in the ohmic resistance of the circuit the dynamo feeds. Were it not for an automatic regulating device of some kind the sudden cutting in of a considerable number of electric lights, for instance, would immediately reduce the illuminating power of all to a mere glow. Let us now see how the windings preserve normal conditions. We will begin with the operation of a series wound dynamo furnishing current for a series arc light circuit.

An arc lamp demands about 9 amperes of current and it requires about 45 volts of electromotive force to produce that volume in the lamp without allowing for any "drop" of electric pressure due to the resistance of the conducting wire. As the conductor connecting the lamps together, such as in a street circuit for instance, obviously offers some resistance, let us say 50 volts per lamp will be required for each additional lamp connected in series. Hence, the electromotive force of the machine must be increased or diminished 50 volts for each additional lamp lighted or extinguished, respectively. Otherwise the volume of current flowing would not remain at the normal value of 9 amperes. Ten lamps in series would thus require 500 volts when all the lamps were lighted. If, say, 5 lamps in such a series should be extinguished it follows that owing to the resistance of the circuit thereby being reduced one-half of its total ohmic value, the volume of current which would flow, should the electromotive force of the machine remain unaltered, would be doubled. To prevent this increment of current volume the voltage of the dynamo must be reduced in like ratio.

Of course, the resistance value of the external circuit could be maintained constant at all times regardless of the number of lamps lighted at any given period by providing a shunt around each lamp which would substitute as much resistance when a light is extinguished as the lamp contains.

By this method, however, the cost in energy to the power company for maintaining one light in a ten-lamp series circuit would be as great as if the other 9 lamps were cut in and in active operation, for the reason that the same number of watts would be expended in the circuit in either case. The only difference would be that if but one lamp was cut in 9 per cent. of the electric energy expended would be absorbed by the dead resistance shunts and but ten per cent. employed usefully in furnishing light.

As previously stated the alterations in the value of the electromotive force must be accomplished by shifting the position of the brushes on the dynamo. As a matter of fact, however, the necessary degree of displacement is not as great as one would naturally expect on first thought, because of another factor that must be taken into consideration. This factor is what is termed armature reaction. As the current flows through both the armature and the field magnet coils the resulting reaction which takes place while the current is actually increasing or decreasing in volume has the effect of partially neutralizing or altering the normal number of lines of force flowing between the magnet polepieces as well as distorting and displacing their density at certain points.

For this reason the strength of the field is not only prevented from being increased by an increment of current, but is actually weakened, and to help along the good work, the distortion which takes place shifts the denser portion of the field away from the brushes, thus reducing the electromotive force and requiring but a comparatively slight displacement of the brushes to complete the operation.

There are various methods of moving the brushes, but the following will show the general principle: An electro-magnet is connected directly in the lamp circuit and so arranged that any alteration in the volume of current flowing in the external conductor will cause its armature lever to engage with the rocker-arm of the brush holders and shift it backward or forward, according to whether the current is increasing or decreasing, until the normal value of current is restored. The movement then ceases and the magnet no longer acts, but remains on guard ready for instant operation in the event of further alterations in the external circuit.

(To be continued.)

[Important articles by Mr. Jones, appearing in back numbers, dating from January 1, 1904, copies of which may be had at twenty-five cents apiece, are as follows: A Useful and Simple Testing Device, January 1, 1904; The Bad Sender, His Past and Future, January 16; The Transmitting Typewriter Wire Connections, February 16; A New Transformer for the Alternating Current Quadruplex (J. C. Barclay, patent), March 1; Definitions of Electrical Terms—Unabridged, March 16 to April 16, inc., June 1 to July 16, inc.; The Future Quadruplex (S. D. Field's invention), May 1-16; The Ghegan Multiplex, August 1; Proper Adjustment of Telegraph Apparatus, August 16-Sept. 1; Practical Information for Operators, October 1 to Dec. 1, inc.; Switchboard Practice at Intermediate Stations, December 16; Definition of the Terms Cycle, Period, Frequency, etc., Diagrams Interpreted, January 1, 1905; Lessons from the December Storm, January 16; The Bonus Wire, February 1; A Few Useful Methods, February 16; Co-operation, A Hint for Wire and Quad Chiefs, March 1; Measuring Resistance by Voltmeter Alone—Something About Ground Wires, March 16; Elementary Information Concerning Household Electrical Appliances, April 1 to May 1, inc.; The Barclay Printing Telegraph System, May 16; Polarized and Self-Adjusting Relays for Single Line Circuits, June 1; Limitations of Quadruplex Circuits, June 16; Electric Power From the Clouds, July 16; Concerning Condensers and Retardation Resistance Coils, August 1; District Call Box Service, August 16; The Art of Studying, Sept. 1; Other Methods of Splitting a Loop, Sept. 16; The Sextuplex, Oct. 1; A Few Questions Answered, Oct. 16; Positive and Negative Currents, Nov. 1; The Education and Evolution of a Chief Operator, Nov. 16; A Study of an Electric Circuit—Definition of the Principal Terms of Factors Which Regulate its Practical Output, Dec. 1; The Telephone—First Principles, Dec. 16, and Jan. 1, 1906; Questions Answered, Jan. 16.]

The Cable.

Mr. George Gray Ward, vice-president and general manager of the Commercial Cable Company, New York, will on February 17 sail on the steamer Celtic and go by way of Fayal, Azores, where the Commercial Cable Company has a station, and the Mediterranean to China and Japan. He expects to arrive at Shanghai in time to witness the landing of the shore end of the Manila-Shanghai cable. His visit to China and Japan is in the interest of the Commercial Pacific Cable Company. He will also visit Manila, Guam, Midway and Honolulu on his way home across the Pacific. Mrs. Ward and his daughter, Mrs. Hough, accompany him. He expects to return home in July.

Mr. Daniel Coath, superintendent of the Commercial Pacific Cable Company at Guam, has been transferred to Shanghai, China, where he will open the station for the company and act in a similar capacity. Mr. Coath's place at Guam will be filled temporarily by Mr. H. F. Harrington, superintendent at San Francisco, who has gone to Guam on special duties in connection with the laying of the cable between Guam and Japan. Mr. P. McKenna, the assistant superintendent, will act in Mr. Harrington's place at San Francisco during his absence. Mr. E. B. Hibberdine, operator for the same company at San Francisco, has gone to Midway Island station, where he will become a member of the working staff.

The Central and South American cable, extending down the west coast of South America, has broken, apparently in two places, to the north and south of Buenaventura, United States of Colombia.

Fanning and Washington Islands in the South Pacific are being offered for sale under instructions from the Registrar of the British High Commissioners' Court for the Western Pacific. Fanning Island is the mid-ocean repeating station of all the British Pacific cable connecting Canada and Australia.

The stockholders of the Mackay Companies will hold their annual meeting in Boston on February 15. It has just become known that T. Jefferson Coolidge, Jr., and John I. Waterbury, who were voting trustees of the Mackay Companies, are no longer connected with that concern. When the voting trust was abandoned and stockholders got a voice in the management, some months ago, Messrs. Coolidge and Waterbury did not go upon the new board of directors. As both Mr. Coolidge and Mr. Waterbury are directors of American Telephone, their close connection with the Mackay Companies has been the subject of much comment, as indicating the close alliance between the telegraph and telephone companies.

Consul-General Dietrich writes from Guayaquil that the Central and South American Telegraph Company has secured an improved contract with the government of Ecuador covering a submarine cable. The company agrees in return to lay a cable into Esmeraldas Province.

The cables remaining interrupted week ending February 10, 1906, are as follows: Cayenne-Pinheiro, interruption announced August 13, 1902; Port Arthur-Chefoo, interruption announced Mar. 9, 1904; Jamaica-Colon, interruption announced January 9, 1905; Cadiz-Teneriffe, interruption announced July 20, 1905; Martinique-Porto Plata interrupted October 30, 1905; Santa Cruz-Ponce, interrupted December 13, 1905; Curacao-Venezuela, January 12, 1906; Bolama-Bissao, interrupted January 19, 1906; Juneau-Skagway, interrupted January 26, 1906; Panama-Buenaventura and St. Elena-Buenaventura interrupted, cutting off communication with the United States of Colombia, January 31, 1906; Jamaica-Ponce, interrupted February 1, 1906; Nagasaki-Vladivostok, interrupted February 3, 1906.

Personal Mention.

Hon. Senator George A. Cox, of Toronto, president of the Canadian Bank of Commerce and one of the leading business men of Canada, began life as a telegraph operator. Recently while in New York, he called on the now venerable Orrin S. Wood, under whom he was employed in the service when the latter was at the head of the Canadian telegraph system over half a century ago, since which time the two men had not met. Mr. Wood recalled the fact that he had appointed Mr. Cox to the Peterboro, Ont., office more than fifty years ago and needless to say the meeting was a most friendly one. Mr. Wood gave the Senator a cordial invitation to visit him during the coming summer at his farm in Orange county, New York, promising him a drive behind a pair of fast horses, through the lovely country of that locality. Mr. Wood is now in his eighty-ninth year. He received his instructions as a telegraph operator from Professor Morse, whose first pupil he was, and may now be considered as the oldest living operator, and he still takes a lively interest in telegraph affairs both in Canada and the United States, and is a frequent and welcome visitor at the office of TELEGRAPH AGE.

Dr. George R. Fowler, the eminent Brooklyn surgeon who died February 6, aged fifty-seven years, when but a lad of fifteen or sixteen became a telegraph operator in the railroad office at Jamaica, L. I. Although he soon quit the dots and dashes for a professional life, he never lost his interest in telegraphy. It is related that, long before the advent of the telephone system, he, in connection with William H. Baker, now vice-president and general manager of the Postal Telegraph-Cable Company, and W. K. Applebaugh, a former well-known old-time New York telegrapher, organized a plan by which direct telegraphic communications were established connecting about seventy drug stores and doctors' offices in Brooklyn. Later this service was sup-

plemented by a crude but effective telephone system. In many emergencies Dr. Fowler used his skill as a telegrapher in getting ambulances, nurses or physicians.

Col. B. F. Montgomery, for many years in charge of the telegraph department at the White House, Washington, D. C., and who a year ago was transferred to California for duty in the Signal Service, has been placed on the retired list.

Mr. Y. C. Tong, chief superintendent of the Imperial telegraphs of China, who is one of the party of high Chinese officials now in this country on a tour of investigation, while in New York City recently took occasion to call upon the officials of the telegraph.

Mr. Geo. H. Albee, a well-known, old-time telegrapher, of Windsor, Conn., who for some time past has been using a crutch on account of knee trouble has, we are glad to say, been able to discard this appendage, and is in a fair way to entire recovery. Mr. Albee was a recent New York visitor.

Mr. James P. Bradt, a former well-known New York telegrapher, for many years identified with The Associated Press and The United Press, but since 1897 in the service of the Columbia Phonograph Company, at Philadelphia and Baltimore, and for the past three years at Berlin, Germany, has been appointed manager of the company's sales depot in London, England.

The appointment of Mr. Hugh P. Trainor as chief district engineer of the Transvaal Government telegraph service, at Pretoria, has been confirmed.

The Railroad.

The Delaware, Lackawanna and Western Railroad Company during the past three years have handled the greater part of their message communications (telegrams) over their telephone lines, and they now have complete telephone service throughout all yards and terminals, including blind sidings or passing tracks, which enables second-class trains to obtain moving orders by telephone. At each end of these sidings a box containing the telephone is placed, which is opened by a regular switchman's key. Formerly it was necessary to have a telegraph operator accompany each wreck train, but now wrecking cars are equipped with telephone service, and immediately upon arrival at a wreck, the wrecking foreman or train master can by means of a sectional pole with wire connections at once place himself in communication with the division train dispatcher. It is the intention of the Lackawanna management to extend its telephone service to cover all branch lines, as it has been clearly demonstrated that business communications can be handled more expeditiously by telephone than by telegraph. The Lackawanna now have six hundred of its nine hundred and fifty miles of road equipped with metallic telephone circuits, using over one thousand telephones with ten private branch exchanges, located at convenient points. The remaining three hundred and fifty miles will be equipped with telephone service by May 1. Each station along the line in addition to the railroad company's own serivce, is equipped with the service of the Bell Telephone Company, which can be used in case of interruption to the lines of the railroad company. These improvements have been carried out under the direction of L. B. Foley, superintendent of telegraph of the Lackawanna road.

A bill has been presented to the Virginia Legislature which prohibits the employment as telegraph operators of any persons under eighteen years of age and to require an examination as to his qualifications.

Mr. T. W. Crowley, superintendent of telegraph of the Delaware and Hudson Company, Albany, N. Y., has resigned his position and will return to the Erie road, from which he came with A. J. Stone when he became general superintendent of the road.

Some time ago we referred to the fact that a paragraph was going the rounds of the newspaper press to the effect that the Pennsylvania Railroad was placing its telegraph wires between New York and Washington underground. We took occasion to state that the newspaper paragraphers had no doubt confounded the Pennsylvania Railroad Company with the American Telephone and Telegraph Company, which has been actually engaged placing its wires underground between the points mentioned. Now it appears that the original paragraph referred to is being given further circulation in railroad trade papers, which, of all journals, should be careful in such utterances. In referring this matter recently to D. C. Stewart, superintendent of telegraph of the Pennsylvania Railroad Company, that gentleman had this to say on the subject: "We have at various times in the past looked into the question of the feasibility of putting the wires on some of our heavy pole lines underground and have made figures showing approximately the cost of doing so on certain portions of our line, notably our New York division between Philadelphia and Jersey City and portions of our main line from Philadelphia westward, but with the exception of the lines in the immediate vicinity of the larger cities, the estimated cost of any such extensive underground installation has always appeared to our people to be prohibitive and at the present time no such proposition is contemplated. Between Philadelphia and Washington we have just erected a brand new pole line, which will unquestionably answer our needs on this portion of the railroad for several years to come. The item referred to seems to have obtained very wide currency."

Mr. J. C. Browne, general foreman of telegraph for the Iron Mountain, has received notice and

has made his arrangements to handle the telegraph service on the White River division from Diaz, Arkansas, to Carthage, Missouri, a distance of 208 miles.

Mr. W. W. Ryder, joint superintendent of telegraph of the Chicago, Burlington and Quincy Railway Company, Chicago, accompanied by his wife, was a recent New York visitor.

The Southern Pacific Company is about to begin the construction of a passenger station at Los Angeles Cal., to cost $500,000. The plans provide ample space for telegraph and telephone facilities.

Mr. G. A. Cellars, of Pittsburg, superintendent of telegraph of the Pennsylvania Lines West of Pittsburg, was a recent New York visitor.

Announcement is made that Charles E. McKim, formerly superintendent of telegraph of the Pennsylvania lines and later superintendent of transportation of the Rock Island Railroad, has been appointed general inspector of transportation of the Louisville and Nashville Railroad, with headquarters at Louisville.

Mr. S. L. Van Aken, wire chief at Ravena, N. Y., has been promoted to be assistant superintendent of telegraph of the West Shore and the New York Central railroad companies, with headquarters at Syracuse, N. Y. Mr. A. B. Taylor, the superintendent of telegraph of both systems, whose headquarters are at Weehawken, N. J., is devoting a considerable portion of his time to the electrification of the New York Central roads in the vicinity of New York, hence the establishment of the office of assistant, rendered necessary by Mr. Taylor's increasing duties.

Death of William B. Clum.

William Buell Clum, for many years a member of the operating staff in the main office of the Postal Telegraph-Cable Company, New York, and one of the oldest telegraph operators in active service in this country, died on January 29 at his home in Jersey City, N. J.

Mr. Clum was born in Troy, N. Y., in 1827, and was therefore in his seventy-ninth year. Graduating from the Lansingburg, N. Y., academy in 1846, his first business employment was that of a postoffice clerk at Troy. While holding this position he learned telegraphy, and in 1848 became an operator in the telegraph office in that city. His associates at the key were A. B. Cornell, who afterwards became Governor of the State; William Clum Buell, a relative and namesake; W. H. Collins, M. V. B. Finch and B. F. Fuller. In 1849, Mr. Clum removed to New York, shortly thereafter going to Portland, Me., there finding employment with the Maine Telegraph Company, whose merger with the Western Union Telegraph Company was lately referred to in these columns. In 1851 Mr. Clum, with others, went to Mexico, with the avowed purpose of establishing a telegraph company in that country, but a charter being refused he returned the following year to Portland, where in 1853 he was married. From 1854 to 1857, he resided in Boston, afterwards coming to New York, where he remained until 1862, when he was sent by the Western Union Telegraph Company to take charge of its office at Halifax, N. S. At this point he acted as agent for The Associated Press. In 1868 he returned to New York, going the following year to Washington, D. C., in the employ of the Franklin Telegraph Company. Two years later he once again went back to the metropolis to take a position in the main office of his company, at 11 Broad street, a position he retained until the merger of the company with the Western Union Telegraph Company, the latter continuing him in its service until 1883. At this time Mr. Clum connected himself with the Postal company, an association he had since continuously maintained.

OBITUARY.

George Stoker, an old-time cable "packer," and who was prominent in telegraph circles in New York City fifty years ago, being identified at that time with the American Telegraph Company, died in Brooklyn on February 7, aged eighty-two years.

Howard D. Huntsman, aged forty-four years, formerly an operator at Philadelphia, Pa., died at Richboro, Pa., January 27.

Hiram C. Shorey, aged sixty-seven years, an operator and merchant, died at Newankum, Washington, on January 23.

Walter C. Neele, aged thirty-two years, of the Postal Telegraph-Cable Company, San Francisco, Cal., left there January 20 on the ill-fated steamer Valencia, to accept a position with that company in Seattle. On the night of the 22d, the steamer was wrecked on the west coast of Vancouver Island, and Neele, with more than a hundred others, lost his life. Mr. Neele, who was a native of Michigan, served for several months in the Signal Corps in the Philippines, and was a well-known and expert operator.

George Heath, an old-time telegraph operator, employed at the state capitol, Albany, N. Y., during the Civil War, died at Lee, Mass., on January 31.

H. B. Benson, a telegraph operator, aged thirty-three years, employed by the brokerage firm of Armstrong and Ganong, Memphis, Tenn., committed suicide January 27, the act being attributed to poor health.

Daniel A. Williams, aged sixty-seven years, an old-time operator, well known in the West, died recently at Kansas City, Mo. He was a native of Ithaca, N. Y. He served as a military operator under Gen. Grant in Northern Missouri, at the outbreak of the Civil War.

Charles A. Wardwell, fifty-two years of age, a Boston operator, died at his home in Cambridge, Mass., February 2.

Resignations and Appointments.

The following changes have occurred in the Western Union Telegraph Company's service:

Mrs. F. W. Adams has been appointed manager at Gallitzin, Pa., vice A. J. Zenz, resigned.

Miss Grace Morris has been appointed manager at Meyersdale, Pa., vice W. W. Stiver, resigned.

Mr. R. L. Adams, manager of the Gadsden, Ala., office, has resigned to devote his entire time to his numerous outside enterprises.

Mr. J. H. Lang, manager at Lynn, Mass., has been appointed manager at Fitchburg, Mass., vice W. E. Baker, resigned to go with a local broker.

Mr. A. A. Gargan, assistant superintendent at Denver, Col., is acting manager of the office in that city until an appointment can be made to succeed Mr. F. M. Duncan, who has resigned to accept the general agency of the Union Pacific Coal Company, with headquarters in that city.

The following changes have occurred in the Postal Telegraph-Cable Company's service:

Mr. T. C. Hughes, manager of the Bay City, Mich., office, has been advanced to the management of the Detroit, Mich., office, vice J. C. Smith, resigned to enter other business.

Mr. D. McNichol, of the Superintendent of Telegraph's office, Northern Pacific Railroad, St. Paul, Minn., has been appointed to a position in the Butte, Mont., office.

Recent Telegraph Patents.

A patent, No. 811,435, for a telegraph or telephone pole, has been taken out by James M. Perdue, Matthews, Ga. Mechanical features of a three-legged steel telephone or telegraph pole are set forth.

A patent, No. 811,247, for an electrically operated typewriter, has been issued to Willis J. Roussel, New Orleans, La. Combined with a motor is a shaft operated by the motor. A type-wheel is loosely mounted upon the shaft with means for locking the wheel to the shaft. Teeth upon the wheel, a pawl normally engaging one of the teeth, a magnet and an armature for the magnet, the armature being connected to and adapted to operate the pawl and locking means complete the apparatus.

A patent, No. 811,127, for telegraphy and telegraph apparatus, has been secured by John Burry, of New York, assignor of one-half to James E. Munson, New York. The combination consists of a series of members from which one is to be selected, a series of selectors determining the member to be selected, a magnet controlling the selectors according to the impulses received and means for sending impulses to the magnet varying in combination with periods of rest according to the member to be selected.

A patent, No. 810,878, for a selective call for telephones and telegraphs, has been granted to William Palmer, Jr., of Rincom, N. M. A selective telephone and telegraph call comprises a subscriber's instrument having a local battery and two local circuits, a step-by-step escapement and a bell switch. Two electro-magnets are arranged one in each local circuit, one for working the step-by-step escapement and the other for adjusting the bell switch to ringing position. A vibrating shunting relay sends the local-battery current through either electromagnet by a reversal of the main-line current and a switch under the control of the subscriber enables him to exclusively introduce his telephone into circuit for private communication.

International Conference on Electrical Units.

Although no details have yet been published concerning the conference at Berlin last Octotber between the representatives of different governments on the subject of electrical units, yet we understand that an informal conference was held and that conclusions were reached. This conference, it will be remembered, says the Electrical World, editorially, was called in view of the resolution of the Chamber of Delegates, at the St. Louis International Electrical Congress, to the effect that the difference between the legalized electrical units in different countries were such as to warrant the appointment of an international commission on the subject. We believe that the conference decided in favor of selecting the international ohm in mercury, and the international ampere, determined by the silver coulombmeter as the fundamental primary concrete standard electric units. Also that the Weston cadmium cell containing solid hydrate of cadmium sulphate should be the standard cell, whose e.m.f. should consequently be determined by reference to the primary standard ohm and ampere. Also that an official conference should be called within a year to bring the legalized electric units in accord among the various governments represented.

It was hoped in this country that the two primary fundamental concrete standard units would be the volt and the ohm, because the electrolytically determined ampere involves a process and does not admit of continuous existence or substantial embodiment. However, that is really a matter for physicists to decide upon. The secondary standards of our national laboratories will no doubt consist of alloy-wire ohms, cadmium cells, and electro-dynanometer ammeter balances. Our tertiary standards in engineering laboratories will be cadmium or Clark cells and alloy-wire resistance coils. If our standard cells are marked with the same voltage, at standard temperature, to one part in two thousand, and our coils with the same resistance to one part in five thousand, no matter to what national laboratory they are sent for calibration, we believe that the most exacting requirements of the electrical engineer will be fully met for the present.

The London-Glasgow Underground Telegraph System.

The approaching completion of the London-Glasgow underground telegraph system may be said to mark an epoch in the history of long-distance underground telegraphs. The pipe line is now complete and all the cable is safely delivered and most of it is in position, but the final jointing up and testing is still to be done.

The London-Birmingham section of the cable is a thirty-eight-pair paper-insulated lead-covered cable, the conductors weigh 150 pounds per mile, their capacity is 0.065 mf. per mile, and the diameter over the lead is approximately 2.6 inches. In the extensions from Birmingham to Warrington and from Warrington to Glasgow, different types of cable are used, and they contain a greater number of wires. The external diameter of both cables is not much greater, however, and a three-inch cast-iron pipe with socket joints is used exactly similar to that employed on the first section. The makers of the cables were the British Insulated and Helsby Cables (Limited), W. T. Henley's Telegraph Works Company, Messrs. Siemens Brothers and Company, and the Western Electric Company.

On the Birmingham-Warrington section, the cable contains thirty-seven pairs of 100-pound conductors, laid up in the usual way with one pair in the center and successive layers of six, twelve and eighteen pairs. Over this, however, comes a layer of twenty-nine single copper seventy-pound conductors, each protected individually by a screen of copper foil over the paper insulation. This screening tape is of soft 100 per cent. conductivity copper, three mils thick and 0.3 inch wide, it is laid on as a tape, with a thirty per cent. overlap in the usual manner, and the diameter over the copper tape is 225 mils. The paper used for the insulation is of the strong variety customarily employed for this purpose, and it was specified that a strip one inch in width should be able to support a weight of four pounds for each mil thickness of the paper, the minimum thickness of the actual paper employed to be six mils. The same paper is used for insulating the pairs and the single conductors, but in the former case different colors are employed to ensure correct joining and easy identification of the wires. Between each layer of pairs there is a spiral wrapping of paper three mils thick, but there is purposely none over the screened single conductors, so that the copper around the latter should come in direct contact with the lead. The lead sheathing is 150 mils thick, and the diameter of the whole cable is 2.7 inches. The following maximum capacities and minimum insulation resistances at 50° F. are specified:

Single Conductors.—0.12 m.f. per mile; 500 megohms per mile after one minute's electrification.

Paired Conductors.—0.06 m.f. per mile (wire to wire, others insulated); 5,000 megohms per mile (between one wire and all others earthed) after one minute's electrification.

In the cable from Warrington to Glasgow, the conductor-pairs are laid up on the Dieselhorst-Martin principle. The 100-pound conductors, after being insulated with paper, are laid up in pairs, then the pairs are "twinned" together into a two-pair cable, and finally a pair of these two-pair cables are laid up together. There are seven of these sets of four pairs in each cable, and they are surrounded by twenty-nine screened seventy-pound conductors as in the Birmingham-Warrington cable, but first six ordinary pairs of 150-pound conductors are laid in to fill up the interstices. This cable gives sixty-five circuits. The insulation and lead sheathing are similar to those in the Birmingham-Warrington section. A maximum wire-to-wire capacity of 0.06 and 0.065 m.f. per mile was specified for the 100-pound and 150-pound pairs respectively, 0.12 m.f. per mile between each screened single conductor and all the others earthed. The object of laying up the pairs in the manner described is in order that they may be employed in parallel if the equivalent of a heavier conductor be required. For instance, if two of the pairs are used in parallel, the equivalent of a 200-pound copper conductor is obtained, but the capacity is less than if two pairs of an ordinary twenty-eight-pair cable were used in parallel.

The outer screened single wires of the cables are employed for ordinary telegraph traffic, in many cases for comparatively short distances only, while the paired wires serve for high-speed transmission on the longer distances. Although there is little doubt that the cable might be employed for telephone traffic with the addition of "loading" coils for the longer distances, it is primarily intended for telegraphic purposes.

The total distance from London to Glasgow is 409 miles, London-Birmingham 117 miles, Birmingham-Warrington 80 miles, Warrington-Carlisle 117 miles, Carlisle-Glasgow 95 miles. As already mentioned, the cable is laid in a three-inch cast pipe, lead-jointed in the usual manner. Each conductor is jointed by a soldered copper sleeve, and the joint is insulated with a paper sleeve. The insulation is dried by placing a brazier at each side of the joint until no more moisture is driven off, and the test for this is to hold a mirror above the joint and to notice whether it is dulled with water vapor. A lead sleeve previously passed over one end of the cable is then pulled over the joint, and a plumber's "wiped" joint is made on each side. The cable is laid for the greater part in 150-yard lengths south of Carlisle, and 220-yard lengths north of that point. At about every half mile an air nozzle is soldered into the lead sleeve of the joint, so that compressed air can be passed through the cable to dry out faults and to test it. After each joint is completed, the lead "wipe" is covered with soap suds, and the joint is tested with compressed air at twenty-five pounds per square inch

pressure. The usual manner of protecting the joint and air nozzle is with a split cast iron sleeve, but under roadways or pavements the excavation of which would be expensive and troublesome, a regular street box with a cover is employed. At intervals of five miles there are test pillars containing cable-connection boxes.

For drying out the cable and for testing purposes, a dessicating pump, driven by a portable petrol engine, is used, and this is mounted on a lorry. The engine is not used to drive the lorry, and is permanently connected to a "Boreas" air compressor. This supplies compressed air to a receiver, and the air is delivered to the cable through four cast iron cylinders containing calcium chloride. The engine is supported on springs from the lorry axles, but four bolts are provided to take the weight of the engine off the springs when running. The normal speed of the engine is 700 revolutions per minute, and the compressor runs at 300 revolutions, and can supply ten cubic feet of air at thirty pounds per square inch pressure when running at this speed. —The London Electrician.

Pension Bills for the Military Telegraphers.

As our readers are aware, the friends of the Society of the United States Military Telegraph Corps are making an earnest effort to obtain from Congress a recognition of the rights of the old veterans, to the end that individual members may be placed on the pension roll of the country, in honorable juxtaposition with the old soldiers among whom and for whom they served during the Civil War.

The bill before the Senate, numbered 2165, which reads as follows:

Extending the provisions of the pension laws of the United States to persons engaged in the operation and construction of military telegraph lines during the war of the rebellion.

was passed unanimously on February 8.

A bill identical with it is No. 3178 before the committee on Invalid Pensions in the House of Representatives. An early hearing is promised.

It behooves all parties and their friends interested in the measure to communicate with their respective Congressmen and urge its passage.

Col. William B. Wilson, of Philadelphia, president of the Society of the United States Military Telegraph Corps, who has been indefatigable in his efforts to bring about this recognition of the right of the military telegrapher, writes to TELEGRAPH AGE in this enthusiastic vein: "Now for the House of Representatives. Light is beginning to dawn after a long dark night. Yet through the darkness I have never lost hope because of my firm belief that right must prevail in the end."

Wireless Telegraphy.

Mr. Jim Brown, for many years identified with the telegraph service in South Africa, at Johannesburg and other points, and who has now been in this country for about two years past in the service of the Marconi Wireless Telegraph Company at Siasconset, Nantucket, and on the steamer Finland of the Red Star Line, plying between New York and Antwerp, has been appointed manager of the Marconi wireless telegraph station now in course of erection at Sea Gate, Coney Island, near the entrance to New York Harbor. Mr. Brown ranks high as an expert wireless telegrapher and his appointment to this station indicates that the Marconi Company intends to make this the most important station in the vicinity of New York.

One of the most puzzling facts connected with wireless telegraphy is that messages can be sent much farther at night than during the day. This fact was first noticed by Marconi in 1902, in crossing the Atlantic on the steamship Philadelphia. Since then the same phenomenon has been frequently observed by others, but the cause has not yet been determined. Various theories are advanced to explain it, some claiming that the action of the light causes the air to absorb the electric waves; others that the action of the sunlight produces a leakage of electrical energy from the wires used in transmitting the messages, and still others that there is some difference between the electric condition of the earth itself in the day and night. Strange as it may seem, this position is tenable, as the electric waves used in wireless telegraphy are known to slide over the surface of the earth. However, a number of considerations seem to make it probable that the phenomenon is due to the fact that daylight acts upon the air in such a manner as to make it absorb the electric waves. Of course this absorption weakens the energy of the waves and diminishes the distance at which they may be detected.

A good deal of interest has been shown recently in the statement that grounding a wireless telegraph station impairs considerably the efficiency of the station. The London Electrician, in its issue of December 29, gives an abstract of a recent German paper by Herr J. S. Sachs, detailing the author's experiments to arrive at some definite conclusions in this matter. His conclusions are stated thus: the earth's surface is, for waves of thirty-one metres, a strong absorbing and a weak reflecting medium. The connection to earth of sender or receiver is greatly prejudicial to transmission. Insulating it is decidedly favorable. It is desirable to install the apparatus as high above the earth as possible. The integral effect at the receiver varies inversely as the square of the distance of transmission.

Chapter IV.

On WATTS and SIGNALS

When you buy electric batteries to operate signals you are really buying a certain number of watt hours energy to do a corresponding number of foot pounds of work. You are practically confined to one type of cell by other considerations, such as non-liability of freezing and constancy of voltage, but it also happens that this cell is the most condensed form of electro-chemical energy available. In his "Primary Batteries" Carhart says: "The copper oxide battery has a capacity for work per unit weight greater than any other, either primary or secondary. One kilogramme (2.2 lbs.) is able to furnish 255 x 1010 ergs, or 188,060 foot pounds." Further, referring to usual form of this cell in which the oxide is in loose state, Prof. Carhart says: "A disadvantage is that only a part of the surface constituting the negative plate is provided with the cupric oxide sufficiently near to be of any

TRADE MARK
Thomas A Edison

service in the removal of the hydrogen which accumulates on all parts of the inner metallic surface."

This hydrogen is harmful to the efficiency of the cell, as it decreases the available volts and increases the internal resistance, and, therefore, the amount of energy available outside. However, in one make of cell all objections have been met; we quote from the same authority as above:

"Recognizing the good qualities of copper oxide as a depolarizer, EDISON has devised a form designed to meet the objections noted above. The copper oxide is employed in the form of a compressed slab, which, with its connecting copper support, serves also as the negative plate. In recent cells the device has been resorted to of reducing a superficial film of copper on the oxide before it is sent from the factory."

Having satisfied yourself of the superiority of the EDISON primary cell, the whole question of buying batteries becomes one of economics. Let us submit figures and ask for our BOOK "T. A."

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Orange, N. J.

31 Union Square, New York
304 Wabash Avenue, Chicago
25 Clerkenwell Road, London

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NEW YORK, FEBRUARY 16, 1906.

The Book Department of TELEGRAPH AGE, always a prominent and carefully conducted feature of this journal, has, in obedience to continually growing demands made upon it, materially increased its facilities of late. The desire 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. These will be of especial aid to buyers inasmuch as they contain brief descriptive references of each volume listed, frequently with full chapter titles.

The Need of Greater Efficiency in the Telegraph Service.

Executive officers of the telegraph complain of the difficulty they experience in securing the right kind of men to fill many of the higher grade positions above that held at the key. A man may become an operator, and so remain doing good work within that compass, performing labor largely of a perfunctory nature, yet knowing little or nothing about the instruments he works, the mechanism of the telegraph with which he should be familiar, and of the laws of applied electricity. Going upward in the scale the higher qualifications requisite for the proper equipment of managers, wire chiefs and others, appear in large measure to be lacking. More than in any other one feature the service is suffering because of this fact; and this, too, notwithstanding the presence of many who are contributing intelligent, loyal and painstaking efforts to the great organizations of which they are an active working part. This is, indeed, a deplorable state of affairs. It is unpleasant to contemplate, for it constitutes a direct reflection on the ambition of the great rank and file of telegraph workers as it exists to-day. In a service covering so wide an area and giving employment to so large a number, it would seem as if there should be no excuse for this condition of things. Criticise telegraphic management as we may, the fault is mainly lodged in the men themselves.

These are plain spoken works, yet they are not uttered in the spirit of unfriendliness. Rather are they intended as an admonition because a condition has to be faced and because the welfare of telegraphers is held close at our heart. This great body of men are our friends and we would see them better their status. We are constrained to say, however, that many, especially young men, so far as properly acquiring a thorough and practical knowledge of their business is concerned, are neglecting opportunities not likely to occur again within the lifetime of the average operator. For habits are being formed, unconsciously, perhaps, hard in later years to throw off and overcome, and which bind the operator down to the lower levels and estimates of life, originally carelessly acquired.

Yet men would fain succeed; there is intense pathos in the picture presented of the unsuccessful man, particularly when he has attained to advanced years. Still, how few there are who are willing to deny themselves in young manhood so that afterwards they may reach prosperity and possess greater abundance! How few there are who will patiently and with infinite industry, through study and application, seek to gain a solution of the problem of the business in which they are engaged, and become expert and a master of the subject! Yet no lasting success can be reached without the giving of earnest, conscientious and hard work. The law of equivalents is inexorable. Unfortunately, the difficulties of the task discourage many, and they give up almost as soon as they begin, and then their lives, in consequence, too frequently are permitted to drift.

Now, the telegraph, in which so many are engaged, whether from choice or accident or because of temporary purpose simply, it does not matter which, offers a field of endeavor of exceptional value, at least, as a training school. There is a fascination about the business that exerts a spell, holding many an one to its duties throughout life. This being the case is there any good reason, other things being equal, why a person so situated should be held down to its fundamental purposes and drudge from young manhood to old age at the key? Honest consideration of one's proper sense of manhood should answer in the negative. If intelligence were permitted to hold sway, the careful student with force of

character, able to apply practical knowledge, could no more be kept back and down than the waves of the sea, for the world has a place for every competent man. Such men are being eagerly sought for. They are needed, and urgently so, in the telegraph service. If telegraph executives fail to discover them, of which the chance is remote, for the hunt for this class is unceasing, they will find their opportunities, if not in the telegraph, then in other avocations.

No man's environment is narrow unless he himself makes it so, notwithstanding the pessimistic and essentially false reasoning sometimes heard to the contrary. An alert, broad-minded, self-respecting and intelligent man of capacity, in whatever field he may be placed, will break all confining bonds, enjoy the confidence and trust of his official superiors, and on him the mantle of promotion will be laid. Such men are needed in the telegraph service to fill present and prospective places within its gift, for the future of the telegraph, from the chief executive officer down, must of necessity be confided to the keeping of those now filling the humbler positions.

There are plenty of naturally bright minds in the telegraph employ who can and should, health permitting, make their avocation a personal success if they will but elect to do so. There should be men aplenty in successful training for the best the telegraph has to offer. It is due to individual effort, and that alone, that success can be achieved. The natural gifts that God endows a man with are placed in his keeping only as a means to an end. He has no moral right to let them lie dormant or to abuse their possession. Young men, the telegraph demands and has need of the best there is in you!

Misuse of Fac-Simile Telegraph Blanks for Advertising Purposes.

The too frequent practice of business concerns and others producing in fac-simile telegraph blanks for advertising purposes, has reached that point when the custom has become one of great annoyance alike to the telegraph companies and to the general public. Complaints are becoming numerous that, imitating the methods pursued by the telegraph companies in delivering their messages, certain private firms send out advertising matter on what purports to be telegraph blanks, the same being enclosed in an envelope, for which the receiver is made to sign in the usual way. Possibly no wrong is intended, yet the practice is wholly reprehensible, and is in direct violation of good taste and of commercial decency. Whether the offending parties know it or not, they are acting within prescribed limits, for the law of copyright protects the telegraph companies. The word "fac-simile," or in fact any other word employed to relieve the transgressor from liability in the premises, does not absolve him in that respect. A well-known lawyer, amply versed in telegraph law, recently expressed the following opinion: "I don't think that the recipient of a telegram has a right to have it lithographed and used for advertising purposes. I don't think it makes any difference whether or not he marks it 'fac-simile.' A trademark and copyright cannot be avoided in any such manner."

A particularly offensive instance charged to this method of advertising, is related in the case of a pawnbroker whose invitation to people who might be hard pressed for money to call at his office and obtain the same by pledging their watches, jewelry, etc., reached, to the infinite disgust, a large and respectable class, who received what purported to be a telegram, delivered by a uniformed boy garbed in the regulation dress of a messenger. Again, in a certain large Western city thousands of residents were pestered by this form of advertising, and numerous recipients of so-called messages, believing them, because of their adroit wording, to be genuine, took the trouble to call with them at the office of the company whose imprint they bore, prompted to do so in the belief that some mistake had been made.

The telegraph companies in cases like these frequently find it necessary to resort to legal measures in order to stop the circulation of such bogus messages. The only redress usually obtained is the tender of an apology on the part of the offending party and a parade of the baby act, pleading no knowledge that the law was being violated.

In order to overcome this growing evil stern measures of repression should be adopted and punishment secured.

The English underground telegraph system, connecting London with several of the principal cities in the central and northern parts of England, as well as with the more distant point of Glasgow, Scotland, referred to at length elsewhere in this issue, is an experiment in telegraph underground construction probably the most extensive ever attempted. Telegraph engineers the world over are regarding the venture with profound interest, and anxiously await the results of the tests covering the long circuits involved, especially those between London and Glasgow, a distance of over 400 miles. Should the expectation of the English telegraph department be realized and it is shown that the underground system can be worked expeditiously as well as profitably, the advisability of laying wires underground in other countries will doubtless receive careful consideration, particularly between large cities in populous sections.

The Overland Telegraph to St. Petersburg.

Mr. George C. Maynard, assistant curator of the department of technology, Smithsonian Institution, Washington, D. C., in a lengthy article entitled "Washington to St. Petersburg—Overland," contributed to the Electrical Review, New York, of January 13, an interesting story of the causes which led to the projected construction and the exploration of the route proposed for the overland telegraph by way of Behring Sea to Asia and so on to St. Petersburg. Among other interesting statements not previously fully covered by our own articles on the general subject, Mr. Maynard says:

"Among the brave, far-sighted men of that time, William H. Seward, then Secretary of State, was one of the foremost. The insatiable mania for icebergs of that distinguished American had better foundation in solid sense than anyone understood. He had faith in both submarine cables and overland telegraph lines. For years he had been studying the problems involved in 'putting a girdle 'round the world in forty minutes,' and, with prophetic comprehension, clearly saw the desirability and the practicability of establishing a line crossing Behring Sea and uniting America with Asia and Europe. Under his instructions American diplomatic officials in Russia had made thorough investigations of the physical, social and political questions bearing on the undertaking, and a plan for its accomplishment was developed. This plan did not simply contemplate telegraphic connection between Washington and St. Petersburg, but was intended as an important step toward the establishment of one comprehensive system which should provide means for quick transmission of intelligence to all important points throughout the world. Seward fully realized the advantages of such a system and declared that it is impossible to assign limits to the increase of national influence which must necessarily result from the new facilities we should acquire in that manner for extending throughout the world American ideas and principles of public and private economy, politics, morals, philosophy and religion. The monarch of the Russian empire also had ambitious designs of providing means for reaching distant lands. Official records show that long before Seward's scheme was announced he had made plans and preparations for extending the telegraph system of his government from the mouth of the Amoor river, across the straits of Tartary, over the island of Sakhalin, across the straits of LaPerouse, through Hakodadi, and across the straits of Sangar to Yeddo, the capital of Japan. The difficulties in the way of extending Russian lines into the heart of Japan have somewhat increased since '65.

"The leading spirit in the Russian-American overland telegraph was Perry Macdonaugh Collins, a citizen of California, who had spent six years in the United States service as commercial agent for the Amoor country and as acting consul at St. Petersburg. During this period he made careful study of the subject and, upon the close of his official duties, set to work to put his plans in operation. He secured liberal concessions and rights of way from Russia and Great Britain, returned to the United States and, most fortunately, enlisted the interest and co-operation of the Western Union Telegraph Company. That company had just completed a telegraph line across the vast western plains and over mountain ranges eight thousand feet high to the Pacific Coast and, by its great experience, administrative ability and financial resources, was fully prepared to carry the line onward to St. Petersburg. Funds to the amount of ten million dollars were provided and operations were promptly commenced and vigorously prosecuted."

* * * * * * *

"Out of the Civil War period came men endowed by native qualities and stern training, with high courage and that resilient toughness of fibre, physical, intellectual and moral, which fitted them to successfully meet any emergency and overcome all obstacles. Colonel Charles S. Bulkley, an army officer and an experienced telegrapher, was placed in command of the field work. He selected one hundred active young men as leading explorers and superintendents, many of whom were telegraph operators and engineers. Four hundred additional men were employed to do the actual work of constructing the lines and placed under the direction of Edward Conway. Among the leaders were Franklin L. Pope, his brother, Ralph; George Kennan, Frederick Whymper, brother of the famous Alpine climber; Professor Dall, of the Smithsonian Institution; George Willoughby Maynard, the artist, and other well-known men. Major Serge Abasa, a prominent and influential Russian military officer, had command of the Siberian section of the line. The names of the explorers are too many to be noted, the title of hero fits them all. The parties were organized on a semi-military basis, principally for the reason that this would give them a better standard in Russian territory. The officers were commissioned by the governors of several states. Bulkley was a colonel, and Frank Pope a major on the staff of Governor Andrew, of Massachusetts. Quite a number of the men held commissions from the governor of California. A spirit of high enterprise and heroic adventure filled and animated the heart of every man in the expedition. That there was a dash of danger in the work before them only made them the more anxious to begin it."

* * * * * * *

"From San Francisco four main parties were sent out in different vessels. One of these, under Franklin L. Pope, went to the mouth of the Frazer river, in British Columbia, to explore the country along that stream and across to the Yukon; the second, under Robert Kennicutt, to St. Michaels, on Norton sound, to go up the

Yukon Valley and meet the British Columbia party, and also to locate a route northwest to Behring Sea; the third party, in charge of Collins L. MacRae, was landed in Anadyr Bay to explore the country westward to Behring Sea and eastward up the Anadyr River to meet the men of the fourth division to which, starting in at Petropavlovski, was assigned the task of surveying the country between the Amoor and Anadyr rivers. Major Abasa was in command of the entire work in the Siberian territory, with George Kennan and Richard J. Bush as his principal assistants."

* * * * * * *

"At the close of the year's work Franklin L. Pope, who was the most experienced and competent telegraph engineer in the whole expedition, expressed the opinion that the entire line, from the Frazer to the Amoor, could be completed by the fall of 1867, and reports from other departments confirmed that opinion. To reach that end the energy of every man was put forth. To them, in their isolation, tidings from the world seldom came and they were in ignorance of the progress of events. The Atlantic cable had been in operation many months before the news reached them and orders to abandon the overland enterprise were received. They were sadly disappointed, and reluctantly obeyed instructions to return to their homes."

* * * * * * *

"Thirty-five years later, when the people of the United States desired to run a line of telegraph to the northwestern tip of the continent, they said 'by your leave,' to nobody. The entire route lay within their own domain. In less than three years the officers and men of the army signal service, under the direction of General A. W. Greely, laid more than two thousand miles of submarine cable, connecting Seattle with Valdez; built more than fifteen hundred miles of land line between Valdez and St. Michaels, and spanned Norton Sound by means of wireless telegraphy."

* * * * * * *

"Away out near the furthest point on the American side of Behring Sea a line of telegraph poles, erected in 1866, is still standing, sound and strong. Their permanency is due, as explained by a recent scientific visitor to that locality, to the fact that they are not subject to the ravages of tropical insects. Overlooking that spot stands a high, conspicuous, wireless-telegraph tower erected by General Greely in 1904. For thirty-eight years the old line has remained dumb. From the new tower electric signals flash and pulsate a thousand miles out to sea, calling to ships whose masts are tipped with the new St. Elmo's fire, and far across Siberian wastes, studded with mountain peaks, bearing a message from the new liberty-loving world to the liberty-longing millions of ancient empires. The world awaits the answer."

General Mention.

Mr. William H. Young, night manager of the Western Union Telegraph Company, Washington, D. C., and president of the Old Time Telegraphers' and Historical Association, in renewing his subscription, writes: "It is my desire and pleasure to keep up my subscription."

The Edison Medal Committee of the American Institute of Electrical Engineers, Mr. John W. Howell, chairman, has just issued a circular to the educational institutions of the United States, calling their attention to the fact that funds are available for the award of the medal this year and pointing out the conditions under which students can enter in competition for it. This will be the first award of the medal, and it is hoped that there will be many contestants for the honor.

Mr. D. P. Boyd, manager of the Postal Telegraph-Cable office at Strong City, Kan., in a recent letter renewing his subscription, remarked: "In forty-three years' experience I find there is always something to learn."

Such is the extent to which the stealing of copper telegraph and telephone wire has developed in this country that stern measures are being adopted for its suppression. As a result it is stated that there are now about forty wire thieves of this class serving terms in the penitentiary. One company alone has succeeding in having about thirty men convicted.

Judge Hazel, of Buffalo, N. Y., has lately handed down a decision in a suit that was started in 1876 against Jay Gould, who was accused of appropriating discoveries patented by Thomas A. Edison for the more rapid transmission of telegraphic communication. The decision was adverse to the Gould interests. The amount involved is problematical.

It is stated that there is such a large movement of telegrams between Buenos Ayres and Mendoza, Argentina, that the construction of new lines is now absolutely essential. At the present time there are only two lines, the same as those existing twenty years ago. The Cuyo Provinces have developed and gained in population so much of late years that the present lines are inadequate to carry the traffic.

Dossert and Company, New York, are placing on the market a modification of their solderless wire and cable connector, especially adapted to the use of motor leads. The new device is designed to do away with the inconvenience of the present method of connecting motor leads to the wires.

A Jersey City, N. J., lineman a few days ago found a peculiar trouble on a line he was sent out to clear. A trolley car under full headway had struck a heavy wagon and had hurled it on top of a thirty-foot telegraph pole.

A Letter Telegraph System for Alaska.

Col. John P. Clum, formerly postoffice inspector for the district of Alaska, recently appointed postmaster at Fairbanks, Alaska, has advanced a plan for cheaper telegraph tolls in Alaska. In an interview several days ago on this subject, published in the Washington Star, Col. Clum said:

"One matter which has already been presented to the department and which I hope will receive consideration this winter is a plan for cheaper telegraphic communication with Alaska, or what might be termed a mail-telegraph service. The government owns the cables, overland lines and wireless systems operated to all points between Seattle, Wash., and Nome, Alaska. It would seem entirely practicable for Congress to authorize the use of this telegraph system in direct connection with the mail service.

"To illustrate the plan, let me say that to send a letter from Washington, D. C., to Nome, Alaska, and receive a reply over the winter trail requires from four and a half to five months. Now, if Congress would authorize the use of the government's wires—and wireless—for the transmission of short letters, such communications could be sent from Washington to Nome and a reply received within ten days at any time during the year.

"It is proposed that the government shall issue what may be termed 'telegraph stamps.' I am not prepared to suggest what the rates should be, but suppose the stamps were of two denominations—one for twenty-five cents and one for fifty cents. The smaller stamp would cover the telegraphic charges on a letter not exceeding twenty-five words, and the larger stamp would perform a like service for letters of more than twenty-five and less than fifty words.

"The letter would be written in the same form as an ordinary telegram and then inclosed in an envelope addressed to the manager of the government telegraph station at Seattle, Wash. Besides the regular two-cent postage stamp there would be affixed to the envelope a twenty-five-cent or a fifty-cent telegraph stamp, according to the number of words contained in the letter. From Seattle the letter would be forwarded by wire to the office in Alaska nearest the residence of the addressee. There it would be inclosed in a penalty envelope for delivery to addressee by mail provided the addressee did not reside within the delivery of the local telegraph office. These telegraphic letters would be sent from points in Alaska in the same manner and at the same rates and would be forwarded to addressees from Seattle in penalty envelopes. When such letters were filed directly in a government telegraph office the telegraph stamp could be affixed to the letter itself.

It is possible that the present cable service would not be adequate for the satisfactory operation of the plan here suggested, but there would seem to be no reason why a mail telegraph service could not be undertaken at once from Valdez to all interior Alaskan points—and the mails can be conveyed from Seattle to Valdez in about four days at all seasons of the year. The additional cost to the government would not mean more than the pay of a dozen or fifteen additional operators, and this cost would be much more than offset by the additional revenues, while the facilities thus afforded for prompt communication with Alaska at reasonable rates would be of the greatest importance to the residents of that territory, as well as to the thousands who have friends or investments there."

Major Glassford, in charge of the government cable in Seattle, is reported by a local paper to have said, regarding the plan advanced by Col. Clum, that he considered the scheme entirely impracticable.

"The Alaska cable and telegraph are being operated on the lowest possible basis," said Major Glassford, "and there is a special rate now in force for what we term social messages that is lower than such message could be sent from Seattle.

"A great many reductions have been made in rates and it should be remembered that the service has its limitations. Under the special rate on social messages it is possible to send a message from Washington, D. C., to Nome and receive a reply in twenty-six days, instead of five months, as Mr. Clum says in his interview. It takes five days for a letter to come from Washington to Seattle, and another six days to forward the letter by boat from Seattle to Valdez, and then a day to forward by telegraph from Valdez to Nome, making a total of thirteen days. This gives twenty-six days for a message and reply, and it has been made in twenty.

"As far as the letter system is concerned, any message addressed to a party at Fairbanks is delivered through the mail if it is found that the party is not in Fairbanks, but out at some of the camps on the creeks. The social message rate has been in effect for some time, and during the month of December something over 200 of these messages were handled through the cable office."

The present political awakening in China appears to be due in very large measure to the extension and the enlightening influences of the telegraph. Sheng Taotai, when director-general of railways and telegraphs of the Chinese Empire five years ago, uttered these prophetic words now coming true: "The beginning of this is due, I believe, to the establishment of railroads and telegraphs, particularly the telegraphs, in the empire. The telegraph, more than anything else, is breaking down the barriers of distance. Newspapers in consequence have sprung up all along the lines of the telegraphs and are teaching Chinamen everywhere that they have an empire."

The Rudd Revolving Addressed Envelope Holder.

It is generally conceded by telegraph managers that by far the largest majority of claims and complaints from patrons of the telegraph are due to errors and delays in the delivery department. Upon close investigation it has been found that there is fully as much, if not more, delay between the wire and the messenger boy than there is between the much abused messenger boy and the customer. This may be due in a small measure to slow checking in the operating room and sometimes to indifferent work on the part of the tube boy in numbering and copying; but far greater delay is due to the superscriber, and that, too, through no fault of his.

It is usually between ten o'clock A. M. and three o'clock P. M. that the greatest file of messages reach the superscription department. These

THE RUDD REVOLVING ADDRESSED ENVELOPE HOLDER.

are thrown before the superscriber in bunches of five to twenty. The envelope must be addressed and numbered, the message folded, enclosed and sealed, and no matter whether in the pile of messages before the superscriber there may be four or five for one firm, each must be enclosed in a separate envelope and individually addressed. This, of course, necessarily takes time, and it is the loss of this time that is sure to bring complaint. In some of the larger offices it has been possible to expedite the business somewhat by the use of addressed envelopes. This plan, however, has not proved to be a time-saver of much practical value, because of the difficulty in taking care of the envelopes so that they do not become mixed one address with another, and also because the trouble of keeping them within convenient reach of the superscriber. Especially is this true in large offices where the addressed envelopes to be of value one must have from seventy-five to one hundred on hand. The ordinary rack to hold such a number is large, unsightly, and cannot be used by more than two superscribers at the same time.

In the Western Union office at Boston the inconvenience of this arrangement has been overcome by the use of what the employees facetiously term "Rudd's Revolver," but which is more properly known as the "Revolving Addressed Envelope Holder." The device consists simply of a sheet iron frame, hexagon in form, with seven shelves on a face, each half arranged to hold two packages of addressed (stamped) envelopes. The entire frame is so constructed as to revolve upon a brass rod, thus being easily turned and affording the superscriber ready access to any part. Mr. W. A. Rudd, who is the manager of the Boston office, is the designer of this ingenious contrivance, and he will be glad to furnish a sketch or blue print of the same to any one to whom it would be of value, simply at the cost of the print.

The Murray Printing Telegraph.

Donald Murray, of London, England, the inventor of the Murray telegraph system, has this to say in a letter in the Electrical World of January 27, concerning his invention:

"The Murray system has reached a speed of one hundred and fifty words a minute, and without particular difficulty a speed of 120 words (720 letters) per minute in each direction (duplex) can be attained; while a speed of 100 words (600 letters) per minute in each direction is obtainable with ease over long distances."

* * * * * *

"Some of your telegraphic readers may be interested to learn that the Murray automatic system is in regular daily work handling commercial messages between London and Edinburg, and that the British Post Office is having a complete duplex installation of the system constructed for London-Dublin. The practical working trials of the apparatus in Germany are not yet concluded. Russia has ordered an equipment for two circuits, and the apparatus is shortly to be installed in Russia, probably between St. Petersburg, Moscow and Odessa. The Austrian telegraph administration has ordered a trial set to work between Vienna and Prague, and the Indian Government is having a complete duplex installation of the system constructed for Calcutta-Bombay, a distance of 1,230 miles."

Mr. Hesketh Reports on the Telegraph.

The Postmaster General of Australia, who is the head of the telegraph system in that country, selected John Hesketh, electrical engineer to the Queensland postal service, to tour America and Europe in order to investigate and report on electrical matters. His mission was to inquire specially into telephony and telegraphy, and the present methods adopted in those countries. Mr. Hesketh's report has recently been made public. What he has to say regarding the telegraph in the United States will be of interest to our readers. Under various subheads he says:

"Construction Methods.—The methods of construction adopted in the United States of America are not widely different from those in use in Australia. The following are the chief points of difference:

"Poles are erected closer together, but are no heavier nor longer. They are usually fitted with crossarms, each of which carries six wires. The crossarms are double bolted to the pole, and braced thereto with one or two braces.

"Insulators are, almost without exception, of glass.

"Wires are of iron or copper, according to the circuit for which they are to be used. Heavy gauges are exceptional, 300-pound copper being considered sufficient for most wires. The controlling factors recognized in Australia are admitted in America.

"Ties.—The method of binding the wire to the insulator is different from that adopted by us, but its advantages are not proven.

"Joints.—Sleeve joints are used for copper wires and twist joints for iron. Sleeve joints have been tried for iron wires, also, with good results so far. Soldered joints are very infrequent.

"Pins.—Insulator pins are various, but generally of wood, or, if of iron, then fitted with wooden threads for the insulators.

"Clearing.—Lines erected through the bush in America are not so thoroughly cleared as in Australia. The interruptions through contact with trees, fallen limbs, etc., are consequently higher.

"Apparatus.—Current supply. In every large office batteries are practically unknown. Motor-dynamos, at varying voltages, furnish the current for all purposes direct. Accumulators are found to be practically unnecessary.

"Working currents are much heavier than with us.

"Morse Lines.—The usual equipment for Morse lines is a key known by us as the American key, a non-polarized relay, and light sounder fitted in a resonator on an adjustable pedestal.

"Duplexes are not usually employed, except as parts of a divided quad. I was much disappointed in that in America I saw nothing in quad working which was any improvement upon what we do in Australia. The acknowledged attitude toward quads, by almost everybody with whom I conversed, was that, as duplexes, they could be relied upon; when working three ways they might be good; but no effort was made to work four ways, unless such was absolutely unavoidable. In only one instance was I able to see good quad working, and that was on a line only 250 miles long. I paid special attention to quads in every important office, from San Francisco to New York, yet only saw this one instance of good working. In all the other cases the No. 2 side was either quite unworkable, or so shaky that it was risky operating trying to read the signals.

"The quad methods were interesting, however. The current supply being from the dynamos, a special non-continuity-preserving pole-changer must be used. The increment transmitter is the field arrangement.

"The currents are (maximum or full), 50, 60, and even 80 milliamperes.

"Balances are obtained without galvanometers, and by very rough 'hit-or-miss' methods. Curative devices are practically not used at all. Summing up, there is nothing in American quad methods to lead us to adopt them, except the one excellent feature of dynamo supply.

"High-Speed Systems.—Here, again, there was not much to copy. Several systems have been tried, or were under trial, but none had survived except the Wheatstone, and this worked at no exceptional speeds. One hundred and eighty words was high. In my opinion, where the Wheatstone survived, it was not by reason of its fitness, for from my observation it was not imparting any economy as there worked.

"Bonus System.—It is usual in American offices for operators to receive a bonus of 1 cent for every message operated over, say, 300 in one day. It is worthy of consideration whether some such system is not feasible in the large offices of the Commonwealth.

"As indicating the daily work of operators in America, the following typical examples were shown to me in a Chicago office:

Line to		Time From	To	Messages Sent	Rcd.
St. Louis	Quad. No. 1	8 a.m.	3.15 p.m.	440	506
Detroit	Quad. No. 1	8 a.m.	3.15 p.m.	407	404
St. Paul	Quad. No. 1	8 a.m.	3.10 p.m.	539	485
New York	Duplex	8 a.m.	3.18 p.m.	—	400

"The operators on these lines would, therefore, be receiving from one to two dollars a day bonus on the work from 8 a.m. to 3.15 p.m., in addition to their daily pay.

"Operators are paid rates varying from fifty to ninety dollars a month. Preference is given to those who typewrite, such receiving an advantage of as much as ten dollars a month, in addition to the more secure tenure of employment.

"Speaking generally, I should say that the speed of operating in America is not higher than in Australia, except on bonus lines, where the obvious incentive of higher rates of pay accounts for the increased efficiency."

(To be Continued.)

LETTERS FROM OUR CORRESPONDENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating nine words to the line, announcements to be enclosed with a border and printed under the name of the place of the advertiser. The special local value attached to advertising of this character will be apparent. Our agents are authorized to solicit advertisements for these columns, and further information on this subject may be obtained on application.

The current information of any office will, if carefully chronicled, furnish a welcome digest of news that will be read with pleasure and satisfaction by thousands, and this limit should constitute the legitimate contents of all letters. And we wish that our correspondents would avoid the too frequent habit, at all times a bad one, of abbreviating words in writing. This is a peculiarity among telegraphers, we know, but what may be plain to the writer, and for local interpretation, is usually a mystery to the editor, and is apt to lead to error in the printed statement.]

SAN FRANCISCO, POSTAL.

Mr. Al. Buhot is absent on a vacation of a month.

Mr. W. C. Swain, electrician for this company, has returned from a tour of inspection of the company's lines throughout Montana and down this Coast. He was accompanied by Traffic Manager Minor M. Davis, of New York, whom he met at Butte, Mon. Mr. Davis will remain here for several days.

Mr. M. L. Hadley, an old time telegrapher of Philadelphia, New York, and other Eastern cities, and Canada, is doing well here in the advertising business.

Mr. Fred H. Cleveland has resigned his position here, and it is not likely that he will return to the key, although his ability as an operator is not greatly impaired. He has been in the telegraph business for the last thirty-five years, having worked a number of years in the cable station at North Sidney, C. B., where, in the old "Pen" days he was considered one of the finest.

BOSTON, WESTERN UNION.

Owing to the increased traffic at the Fishmarket office, the old quarters were found to be inadequate to the proper transaction of the business, and have accordingly been moved recently from 197 Atlantic avenue to a new and more spacious office at No. 188, near-by. The force has been increased and a number of through wires added to the facilities of the office. It now has direct wires to Chicago, New York, Baltimore, Washington, Philadelphia, and all the markets. Manager W. A. Rudd and Inspector Roorbach are and have good reason to feel proud of the new office, which is one of the most important branches in the city.

At the leather district office, Robert Tobin, an old timer, still remains as manager, and the work performed by him appears to be as effective as ever.

Col. R. C. Clowry, president of the company, accompanied by General Superintendent Belvidere Brooks, of New York, were recent visitors at the main office. Chief Operator T. F. Clark gave a demonstration of his fire drill for the benefit of the guests, an exhibit which Col. Clowry declared to be a fine showing. Manager M. W. Hamblin, of New York, who later visited the office, was also shown an exhibition of the fire drill.

BALTIMORE, WESTERN UNION.

Work on the new office of this company, which is located in the Equitable Building, rebuilt since the great fire, is progressing rapidly, and when completed will constitute one of the best appointed offices in the great chain of the company's possession. The effort is being made to have it ready for occupancy by March 1, and to this end all energies are directed, work being pushed day and night. The present undertaking makes the third entire new equipment installed in the Equitable Building, old and new. We first occupied the basement, with the clerical force on the upper floor, then under Manager Creamer, who is a hustler, we secured a new operating room on the second floor. Burned out by the great fire, we now for the third time, in the rearrangement of space, will occupy the ninth floor for the operating department, with the clerical department in the basement. The Gold and Stock telegraph department will also have quarters on the ninth floor, which, by the way, is a large, light and airy room.

Benjamin Birch has been sent to Annapolis to help out during the Legislative session there.

PHILADELPHIA, WESTERN UNION.

J. H. Abdill has resigned to accept a position with the Bell Telephone Company, as wire chief.

D. A. Toland, aged forty-seven years, a well-known operator, died February 1, of typhoid fever after a short illness.

Messrs. McBride and Riley were sent to Mt. Holly, N. J., to handle press matter during a recent murder trial there.

Walter Bair, who was stricken several months ago with paralysis, has so far recovered as to again resume duty.

Ralph Rowles, who resigned some months ago to accept a position as an operator with the Carnegie Steel Company, this city, has been promoted to a responsible clerkship.

Manager Richards, of Carlisle, Pa., has again returned to duty after a severe attack of quinsy. During his absence his duties were performed by his sister, Miss Anna Richards.

Mr. W. S. Fowler, of Vineland, N. J., has been appointed manager at New Brunswick, N. J., vice H. J. Witt, resigned to go with the Postal.

Mr. H. Lentz, of Bedford, Pa., has been appointed manager at Camden, N. J., vice Miss Lacey, transferred to the West Chester, Pa., office, vice Mr. Hall, who becomes manager at Seaford, Del.

Mr. C. A. Prigg, of Osceola Mills, Pa., has been appointed manager at Chester, Pa., vice J. T. Mortland, resigned to go with the Bell Telephone Company, Philadelphia.

Mr. A. M. Long, of the Hagerstown, Md. office, has been promoted to the managership, vice

J. K. Snyder, resigned, to go with the Cumberland Valley Railroad Company.

OTTAWA, ONT., GREAT NORTH WESTERN

The personnel of this office is made up as follows: James G. Davies, manager; Charles E. Davies, chief operator; E. M. Marshall, night chief operator; A. H. Smith, cashier; Miss N. Trimble, bookkeeper, while W. M. Manchester, W. Leslie, W. Forsyth, H. Hamer, Frank Turcotte, Miss R. Perrault, Miss M. Haryett, M. Kiely, W. E. Burris and W. Brown constitute the force of operators. G. Dalton, J. Keenehan, W. G. Irwin, Miss I. Armstrong and E. B. Marshall are the clerks, T. W. Quayle, reporter, and A. Laroeque and J. Caron, linemen. The messenger force consists of eighteen wide-awake young fellows who, it is said, would put a New York messenger boy to shame.

The company own the four-story building at the corner of Metcalf and Sparks streets, the ground floor and basement of which are given up to their own use for the main office and operating departments.

There are branches at the Russell House, the Grand Union Hotel, the Windsor House and at Hull, Que., just across the Ottawa River, the latter office being also under the jurisdiction of the Ottawa manager.

The entire building has been renovated, and extensive repairs made during the past year, including an entire new operating room, a new forty-wire switchboard and new hardwood operating tables being chief among the new acquisitions.

CHICAGO, WESTERN UNION.

Miss Lena Ditman, of the St. Louis division, has resigned to accept a position with the American Can Company.

Miss Lizzie Heppe is again with us.

Miss Cathrine Gallagher of this office and Mr. Chatterson of Columbus, Ohio, were married a few days ago.

Charles White, of the St. Paul division, is at Hot Springs, Ark., whither he is staying for the benefit of his health.

The Signal Corps boys announce that their seventh annual ball will take place Friday evening, February 9, at the armory.

The seventeenth annual meeting of the Chicago Telegraphers' Aid Society was held February 4, 1906, and the following were elected officers for the ensuing year: Charles H. Finley, president; Henry E. Whitcomb, vice-president; C. R. Copeland, secretary; John S. McCurdy, treasurer.

Executive committee—F. M. Crittenton, J. E. Applegate, W. W. Hawthorne, Carl Otto, John J. O'Brien, Henry Jahn, F. L. Donaldson.

Auditors—W. De Haven, Evan T. Jones, Jr., C. H. Cartmell.

The membership on December 31, 1905, was 1,026. Secretary's report for year 1905 is as follows:

RECEIPTS.

Cash on hand, January 1, 1905	$630.96
Cash in bank, January 1, 1905	2,060.45
Applications	346.00
Dues	5,213.50
Interest	62.26
Total	$8,313.17

DISBURSEMENTS.

Death Benefits	$700.00
Sick Benefits	4,251.94
Secretary	180.00
Treasurer	25.00
Commissions	111.93
Miscellaneous	100.00
Cash on hand January 1, 1906	544.00
Cash in bank January 1, 1906	2,400.00
Total	$8,313.17

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mrs. John F. Skirrow, wife of the associate electrical engineer of the company, who himself is absent on account of sickness, died of cancer of the stomach on February 3. The funeral, which occurred on February 6, was largely attended by officials. Much sympathy is expressed for Mr. Skirrow in his bereavement, especially because of the peculiarly sad attendant circumstances.

Mr. Minor M. Davis, traffic manager and electrical engineer of the company, is making a tour of inspection in the Pacific coast offices.

Mr. Joseph W. Larish, formerly electrician of the Western Union Telegraph Company at Boston, Mass., but for the past three years in outside business, has accepted a position in the district electrician's office in this city.

It may not be generally understood, but it is nevertheless a fact, that the late John W. Mackay endowed in perpetuity two beds in St. Vincent's Hospital on West Eleventh street for the benefit of employees of the Postal Telegraph-Cable Company.

IN THE OPERATING DEPARTMENT

M. J. O'Donnell has returned from Kingston, N. Y., where he was temporarily with the Publishers Press.

E. D. Rowland has been assigned to the Evening World force.

A phantoplex circuit between this and the Newark, N. J., office, has been installed.

J. B. Havice has been assigned to the Evening Post force.

F. C. Yule has returned from a two months' leave spent at his home in Chicago.

E. G. Walther and R. G. Salisbury have been transferred to the Cotton Exchange office.

W. J. Bradley of the first Chicago bonus wire has resigned to accept a position with a broker.

Owing to ill health, V. C. Frost has secured an indefinite leave of absence.

A. J. Ward has returned after an absence of three weeks, due to illness.

Departures—J. Coyle.

J. P. Kearns has resumed duty after an absence of five months.

Western Night Chief S. A. Coleman has been confined to his home for the past two weeks owing to illness.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY

EXECUTIVE OFFICES.

Extensive alterations are being made in this building, which are in the nature of necessary improvements. That portion of the structure known previously as the annex and which is located at No. 8 Dey street, is being utilized for office purposes. The hallways on each of the upper floors of 195 Broadway have been extended through the Dey street section of the building, which has made available much room for the conduct of the telegraph business, which was heretofore inconveniently located.

Mr. H. V. Shelley, formerly manager at Bridgeport, Conn., and latterly a wire chief in the operating department here, has been appointed manager of the Produce Exchange office, vice Thomas C. Eipper, resigned to enter other business. Mr. Eipper has been manager of this important branch office for twenty-three years.

Mr. E. B. Saylor, superintendent at Pittsburg, was among those recently visiting the executive offices.

IN THE OPERATING DEPARTMENT

The Woodmen of the World, a fraternal insurance institution with which a number of telegraphers of this office are affiliated, recently held their public installation of officers. The affair was unique, owing to the fact that the numerous camps in the vicinity installed their officers jointly. Ex-State Senator W. C. Burton, formerly of this office, who is a woodman, was presented with a solid gold charm by a Bridgeport delegation for having rendered them material assistance on several occasions.

Recent appointments to service in the quadruplex department include M. T. Durkin, of Carmel, N. Y., and J. F. Stickel, of Chicago, Ill.

Miss B. C. Tracy, of the Central Cable office, a popular and very efficient operator, has resigned, and on February 14 was married to Mr. T. Carley.

Miss Agnes Sullivan has been transferred to the cable office, 16 Broad street.

Mr. Durkin, quad chief, has returned to duty after an absence of three weeks, due to illness.

Friends of "Senator" W. L. Ives, who has been ill, will be pleased to hear that while he will not be able to resume duty for some time yet, he is rapidly improving in health, and has gone to Syracuse, N. Y., to recuperate.

Another employee on the sick list is Traffic Chief R. Ferguson.

Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, who has been confined to his home on account of illness, is again able to leave his house, but not yet to return to his office.

Mr. A. V. Offutt is still another who is absent because of sickness.

OTHER NEW YORK ITEMS.

Mr. George Morgan, an expert telegrapher, up to two years ago identified with the telegraphs, Brisbane, Australia, and for the past two years a visitor in England and Canada, is now in New York City, where he expects to locate permanently.

The general offices of the Serial Building Loan and Savings Institution and the Electric Building Loan and Savings Association have been moved from 195 Broadway to 253 Broadway, Postal Telegraph Building. A branch office will be maintained at 195 Broadway for the accommodation of the Western Union members. The removal was made necessary because the Western Union Telegraph Company needed, for its own use, the office space occupied by the loan associations.

The proceedings of the thirty-ninth annual meeting of the Telegraphers' Mutual Benefit Association, held in New York, November 15, 1905, has made its appearance. It embodies a pamphlet of thirty pages, and as it contains full reports of the several officers it is especially valuable inasmuch as it presents a correct transcript of the actual condition of the association, which we are glad to say, is most prosperous. A small pamphlet has also been issued giving the constitution and by-laws originally adopted in 1879, together with the various amendments thereto, which have since been made, including those adopted on the occasion of the last meeting.

The Postal Branch Managers of Cincinnati Dine Together.

The local branch managers, together with the clerical force, of the Postal Telegraph-Cable Company, at Cincinnati, assembled for their annual dinner, tendered by Manager C. E. Sawtelle, on Tuesday evening, January 23. The affair was held at the Business Men's Club, and covers were laid for seventy. Nearly one-half of those attending were ladies. Mr. Sawtelle presided, and the guests of honor, seated at his right and left respectively, were Superintendent E. W. Collins, from Cleveland; Manager A. W. Rinehart from Pittsburg, and Prosecuting Attorney of Cincinnati, Hiram M. Rulison, a former telegrapher.

Mr. Rinehart, in responding to the toast "The Ladies," said that a few years ago there was not one woman telegrapher in Pittsburg. Now twenty per cent. of the operators are women. Woman's efficiency in the telegraphic field, as in many others, has been proven beyond a doubt, a number of them even having become chief operators.

Miss Margaret Brady, who answered to the toast "The Gentlemen," gave the sterner sex some pretty hard raps, her utterances being in the

form of an original poem written for the occasion.

Mr. Elmer Sawtelle replied to the toast "The Branch Manager." His remarks were in a humorous vein, vividly depicting the trials and tribulations of the branch manager viewed through the eyes of the main office operator. He dwelt upon the fact that the successful branch manager seems to feel that the prosperity of the entire company revolves around his particular branch office, and that it was this sort of enthusiasm which raised the receipts of the company.

Hon. Hiram R. Rulison responded to the toast "The Lawyer," and gave a number of humorous incidents in the life of an attorney, as well as some valuable advice to the young people present, at the same time making no demand for his fees in advance.

Superintendent Collins responded very feelingly to the compliment paid him by Miss Ethel Kyle in the toast "Our Superintendent." He also gave some words of counsel and spoke for a few moments on the general subject of Enthusiasm.

Mr. Thomas Bruton's response to the toast "The Banquet," brought forth prolonged applause, his remarks not only being complimentary to this particular occasion, but to the Cincinnati operators in general, and he certainly excelled from an oratorical point of view.

General Superintendent E. J. Nally, of Chicago, expected to have been present, but instead sent a letter, in the course of which he held up as an example worthy of emulation the manhood and career of the late Marshall Field of Chicago.

The next meeting will probably be devoted to a discussion of suggestions for the betterment of the service, etc. The social features will be left entirely to the ladies.

Book Notice.

"Wireless Telegraphy and Telephony," by Prof. Domenico Mazzotto, has been translated from the original Italian by S. R. Bottone, the well-known English author of electrical literature, and is published in this country by the Macmillan Company, New York. The volume takes up the subject of wireless telegraphy from its inception and traces chronologically the progress which has been made in radio-telegraphic signaling from the first experiments of Marconi at Bologna down to the last results of transatlantic radiophony. It discusses the general subject intelligently, including wireless telephony, reviews the different systems in vogue and the apparatus employed; enlarges upon the topic of electric waves, refers to the experiments that have been tried, as well as the principles on which the new signaling is founded, and passes an opinion as to the present state of radio-activity. The volume contains 416 pages, twelve chapters, and over 250 illustrations. The price is $2, and orders will be filled by addressing J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Business Notice.

That portion of the business of the Willyoung and Gibson Company, of 36 West Thirteenth street, New York, which consisted of the manufacture of condensors, and which have achieved such an enviable reputation, will hereafter be manufactured by J. H. Bunnell and Company, New York, who have purchased this right.

The Electric Storage Battery Company, of Philadelphia, has filed papers in a suit against the Universal Storage Battery Company, manufacturer of the Morrison battery, claiming fifty thousand dollars damages for infringing in the construction of the Universal plate, the Knowles patent, owned by the Electric Storage Battery Company. Suit has been brought in Wilmington, Delaware, the Universal Storage Battery Company being a Delaware corporation.

Ottawa, Ont.

(Communicated.)

Although not the largest city in Canada, Ottawa is a strikingly handsome and particularly interesting town. It is the capital of the Dominion and is, therefore, the home, for the greater portion of each year, of the Governor-General of Canada, the Premier and the cabinet ministers.

The Dominion Parliament Buildings are situated upon a high bluff overlooking the Ottawa river, and it is universally conceded that there is no site on the continent more picturesque than that selected for those buildings.

Ottawa is also one of the most important Canadian cities commercially. Situated at the junction of the Ottawa and Gatineau rivers, upon the Ontario side, the Chaudiere Falls furnish 60,000 horse power for commercial uses. The electric railway system and electric light plant has always been famous and looked upon by experts as a model, the magnificent water power of Chaudiere Falls having afforded special facilities for electrical development.

Ottawa, from its location, is destined to become a great railway center, there being now the Canadian Pacific, Grand Trunk, New York Central and the Canada Atlantic, with the Canadian Northern and Grand Trunk Pacific headed in this direction.

The population, including suburbs, is estimated to be fully 100,000.

The city was originally known as By-Town, named after Col. By, who constructed the Rideau Canal in 1827, a canal 126 miles in length, connecting the Ottawa river and Lake Ontario.

On the corner of Metcalf and Sparks streets, the most central location in the city, is situated the Great North-Western Telegraph Building, the ground floor of which is given up to one of the most complete and up-to-date telegraph offices in Canada or even in the United States. The Ottawa office has direct wire communication with all of the principal Great North-Western offices in Canada.

The Vibroplex

In order to afford buyers of the Vibroplex, the most perfect telegraphic transmitter extant, an opportunity to deal conveniently with their nearest home agent, the following authorized representatives are named for their special benefit:

Chicago, Ill.—W. T. Plummer, Postal Tel. Co.
Cincinnati, O.—John Stangle, Western Union Tel. Co.
New York.—G. H. Wiser, Postal Tel. Co.
Philadelphia, Pa.—D. Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

Hudson's Word Register.

Buyers of Hudson's Word Register, the standard and most simple and accurate device for counting the words written upon the typewriter, will consult their convenience by communicating with any of the following named authorized agents, preferably the one nearest to their place of residence:

Kansas City, Mo.—J. N. Harper, West. Union Tel. Co.
Philadelphia, Pa.—Daniel Good, West. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, West. Union Tel. Co.

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

Rubber Telegraph Key Knobs.

Price fifteen cents, reduced from twenty-five cents. No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Remit in one or two-cent stamps and address.

J. B. Taltavali, TELEGRAPH AGE, 253 Broadway, New York.

Signal Corps Field Train.

A model field train for the signal corps of the army will be organized and fitted up, and will be maintained at Fort Omaha, Neb. Organization of this train will start at once. A number of the vehicles for the train are already at the post.

The model train is to consist of three construction wagons, one automobile telegraph wagon one automobile repair wagon, four lance trucks, four wagons of the pintle type—the last two types using entirely the wheels adopted by the quartermaster's department for the escort wagons—four instrument wagons, built up on running gear of the standard army ambulance, and six reel carts.

Premium on Temperance.

A Swiss life insurance company has agreed to insure railroad and telegraph men who are members of temperance societies for four per cent. less than the premiums charged to non-members; and a Swiss accident insurance company which for some time has made a rebate of ten per cent. to total abstainers is so well satisfied with the result that it made the rebate fifteen per cent., beginning with the first of this year.—Railroad Gazette.

The Postal Telegraph-Cable Company of Texas

S. M. ENGLISH, General Manager
W. H. ORDWAY, Auditor

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