TELEGRAPH AGE

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

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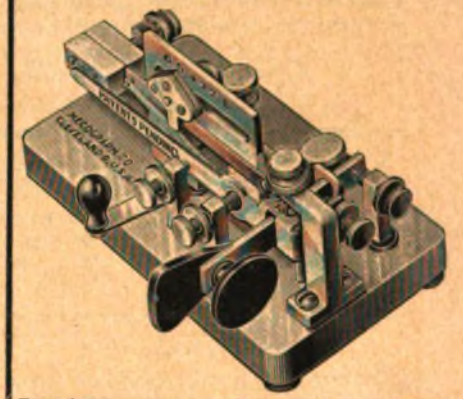


TELEGRAPH AGE

No. 1. NEW YORK, JANUARY 1, 1906. VOL. XXIV.

CONTENTS.

SOME POINTS ON ELECTRICITY.

The Telephone—First Principles.

BY WILLIS H. JONES.

(Concluded)

In the preceding installment of this article, published December 16, we described the mechanical and electrical operation of the simplest known method of telephony—the magneto system—wherein the battery power is created in the telephone coils and main line by the co-operation of the voice, metal diaphragm and steel magnet of the of the so-called "receiver."

In this system the telephone acts in a double capacity. When spoken into it becomes a transmitter and transforms the mechanical force imparted to the diaphragm by the voice into electric impulses in the line and coils of both the home and distant telephone.

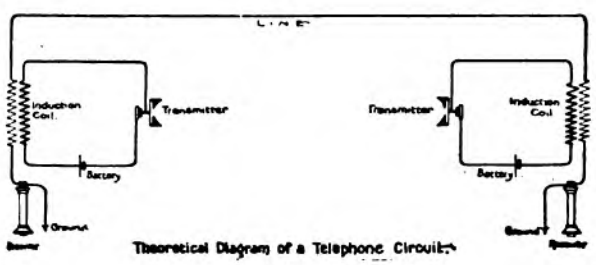
At the listener's end of the circuit the electric impulses flowing through the telephone are retransformed into mechanical force by means of the metal diaphragm there, which they set in motion and thus create the air waves which reproduce the voice.

So far as the system of telephony is concerned the foregoing description covers the entire principle of operation. The various types of apparatus employed, and line arrangements, are but different methods of avoiding or overcoming harmful conditions.

LONG DISTANCE TELEPHONY.

The term "long distance" applies properly to all circuits that are too long in mileage or ohmic resistance to be successfully operated by the comparatively feeble current a telephone receiver, used as a transmitter, is capable of generating. Hence, for circuits of this class a special transmitting device is required. The principle upon which the device is constructed is based on the following facts:

A telephone in operation is a true little dynamo, the coils representing the armature, and the steel magnet creating the "field." This being the case, the method followed to increase the cur-



Theoretical Diagram of a Telephone Circuit.

rent-producing power of the telephone is practically the same as that employed in regulating the electromotive force of an ordinary dynamo. That is to say, the end is attained by increasing the number of magnetic lines of force which are altered per second of time; in other words, by creating a stronger magnetic "field" and thus permitting of a wider range in the degrees of alterations.

As the number of magnetic lines of force capable of being altered in an ordinary telephone receiver is a fixed value limited to the comparatively feeble magnetism contained in the steel bar, its transmitting power is, therefore, impotent except for short circuits. In order to increase the transmitting power for the operation of longer circuits it is necessary to provide a much greater number of lines to alter.

Now, magnetic lines of force may be obtained in any degree of density by regulating the volume of current producing them. Hence, if we construct a local circuit containing a coil of wire surrounding an iron core, almost any strength desired is possible. If, now, we connect in this local circuit a telephone mouthpiece containing

a metal diaphragm, as shown in the accompanying diagram, so arranged that the vibrations of the latter cause alterations in the value of the resistance of the local circuit to occur, the strength of the current therein and, consequently, the number of lines of force will also be varied in like degree.

In the long distance transmitter the strength of the "field," or the line conductor's battery power-creating agent, is increased to the desired value by means of the current flowing through the coils of a magnet connected in a local circuit. The greater the volume of current given this local circuit the greater will be the available number of magnetic lines altered by the vibrations of the diaphragm in the mouthpiece.

As the coils of the home telephone, in this case, are not expected to act as a transmitter, an additional coil of insulated wire is connected in series with the main line conductor and substituted for the former. This latter coil is placed in the transmitter, being wound over the coil in the local circuit. One iron core serves for both windings. The combination thus becomes what is known as an induction coil. The under coil usually consists of but a few turns of coarse wire and is called the "primary." The local battery current flows through this coil.

The line coil is called the "secondary," and is wound with a much finer wire in order to obtain a greater number of convolutions and thereby increase the electromotive force developed in that coil.

It will thus be seen that the "secondary," or line coil, instead of the telephone, now becomes the armature of the "dynamo," as is the case in the original method, while the primary coil and local battery current, instead of the steel magnet, creates the "field." The operation of the long distance transmitter is as follows:

When the speaker's voice causes the thin metal diaphragm in the mouthpiece of the transmitter to vibrate, the alterations in the position of the metal creates an imperfect contact in the local circuit connections, thereby rapidly altering the value of the resistance and consequently the volume of current flowing.

As the imperfections of contact vary in degree in accordance with the timbre of the speaker's voice impressed on the diaphragm, the strength of the current in the local circuit varies in like manner. Hence, the resulting alterations going on in the primary or "field" coil of the transmitter develop identical "induced" currents in the "secondary" or line coil, and thus convey the speaker's voice, electrically, to the coils of the distant telephone receiver, where it is reproduced in the usual manner.

[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.]

The Railroad.

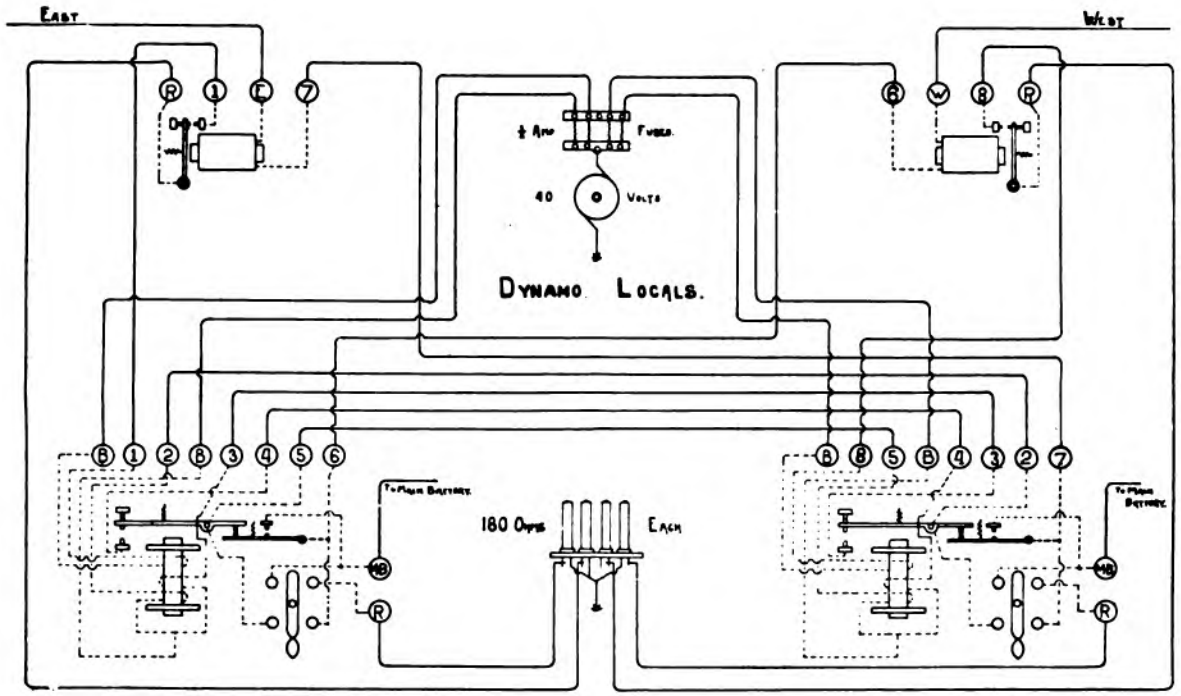
The Telegraph Signal Company, of Rochester, N. Y., was incorporated at Albany, December 5, 1905, with a capital of $1,000,000, the purpose being to manufacture an electrical device by which semaphores at various points along a railroad may be operated from the despatcher's office in case of accident or omission of any operator along the line to attend to his duty. The directors are J. G. Halleran and J. McGarvey, of Rochester, and M. J. Stover, of Morton, N. Y. The device is the invention of S. A. Wright, of Morton.

An instance of rapid and continuous advancement for merit through the several grades in the railroad service is afforded in the career of Wallace G. Collins, of Chicago. In 1873 he was appointed from the position of a telegraph operator to be assistant train despatcher on the Chicago, Milwaukee & St. Paul Railway. In close sequential order he subsequently filled the following positions: Train despatcher, assistant superintendent, division superintendent, assistant general superintendent, general superintendent, general manager, resigning from the railway service in 1900 to accept the vice-presidency of the Illinois Tunnel Company and the presidency of the Chicago Warehouse & Terminal Company.

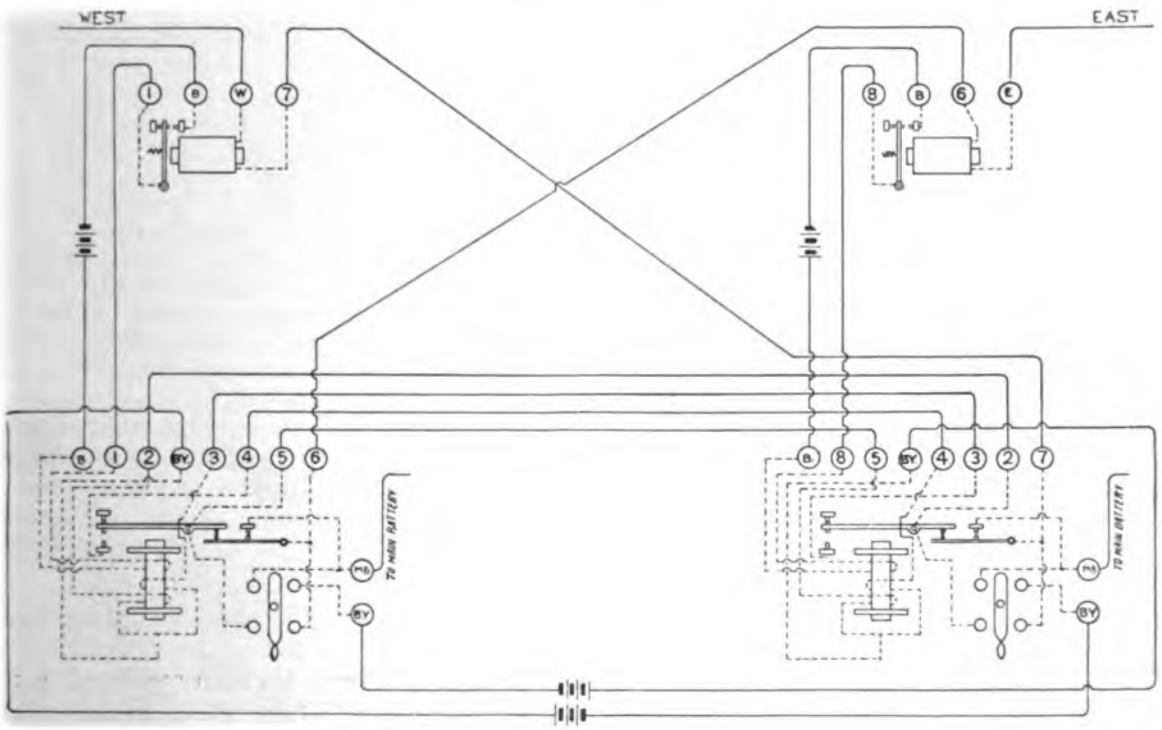
Mr. C. H. Gaunt, of Topeka, Kan., superintendent of telegraph of the Atchison, Topeka & Santa Fe Railway, has, in addition to that office, been appointed assistant general manager of the company, effective December 20, 1905, his headquarters continuing to be at Topeka. Mr. Gaunt, who is not yet thirty-nine years of age, reflects the best element in the telegraph service. Only a few years ago he was an operator in New York for both the Western Union and Postal telegraph companies. Going West, his subsequent career has been on a rapidly advancing scale. Possessed of an excellent fund of information, practical, of indomitable energy, an engaging personality, and a studious mind, he seems destined to reach the top. His early education was gained in Brooklyn.

The Jones Repeater.

Mr. Francis W. Jones, electrical engineer of the Postal Telegraph-Cable Company, New York, was granted recently letters patent, No. 806,412, for an automatic telegraph repeater for single Morse wires, the object of which is to increase the certainty of operation of such repeaters and reduce the expense of the instruments. This is accomplished by arranging two single or repeater transmitters, so that they will embrace all the functions necessary for the purpose. The only change made in the present style of transmitters



F. W. JONES REPEATER, SHOWING DYNAMO LOCALS.



F. W. JONES REPEATER, SHOWING BATTERY LOCALS.

is to provide their electromagnets with three convolutions instead of one. These transmitters are used with any ordinary Morse relays.

The advantages claimed by Mr. Jones are that any adjustment made upon the main line relay will in no manner affect the holding power applied to the opposite transmitter, also that supplementary holding magnets are dispensed with, and in case of damage to the relay by lightning, etc., a workable relay can be more readily substituted than one having any special magnets or attachments. The diagrams will more fully show the extreme simplicity of the system.

Recent Telegraph Patents.

A patent, No. 806,769 for an adjustable support for telegraph line wires, has been awarded to Jasper N. Bell, of Stratford, Iowa. An insulator for telegraph line wires is composed of two parts of rigid insulating material semicircular in cross-section, fitted together to produce a short tube having a longitudinal bore in its center extending from end to end to admit a wire conductor.

A patent, No. 806,812, for a double jack for telegraph circuits, has been obtained by Ola Johnson, of Conway Springs, Kan. The associated parts are a relay, a main circuit connected therewith for energizing it, a local circuit connected with the relay, a double jack connected with both the main circuit and the local circuit, a key and a sounder connected with the jack and main and local wiring connected with the jack, the local wiring containing an extra sounder to be energized in lieu of the first-mentioned sounder.

A patent, No. 806,884 for a telegraphic repeater, has been taken out by Stephen D. Field, of Stockbridge, Mass, assignor to John J. Ghegan, Newark, N. J. A duplicate and a main line contain a relay, a circuit-controlling device being actuated by the relay, which controls line and local contacts of the opposite set. The relay is also adapted to operate the line contacts before the local contacts. Means for accelerating the movement of the relay-armature when the opposite controlling device closes the line of contacts are provided.

A patent, No. 806,891, for a telegraphic apparatus, has been secured by Melville A. Hawley and William L. Rhoads, of St. Louis, Mo. Combined with a relay having the main-line magnets and armature for shunting the circuit of a local battery are an auxiliary magnet and a secondary springy armature fixed to and insulated from the main armature. The free end of the secondary armature is extended beyond the corresponding end of the main armature and adapted to make and break contact with an adjustable contact point in the main-line circuit for directly repeating and transmitting signals into the opposite line.

A patent, No. 806,801, for a telegraph repeater, has been issued to Oscar C. Greene, of St. Paul, Minn., and Charles H. Gaunt, of Topeka, Kan. Associated with two main telegraph lines and their relays are a pair of repeating sounders, the magnet of each sounder having two different windings. One winding forms a permanently closed and energized local circuit and the opposite winding forms a local circuit through one of the contact points of the adjacent relay and one of the contact points to the other repeating sounder. By this arrangement the armature of the sounder upon the outgoing side will open or close the local circuit of the opposite sounder, which passes through the contact point of its relay.

Personal Mention.

Miss Lelia Morse, a granddaughter of the famous inventor of the telegraph, will spend the winter in Washington with Mr. and Mrs. Edward Lind Morse. Miss Morse has spent the past two seasons in New York, where she has met with success as a singer.

Mr. I. McMichael, vice-president and general manager of the Great North Western Telegraph Company, Toronto, Ont., was in New York a few days since, while en route to Florida, where he has a modest orange grove and where his family are spending the winter, as is their custom. He will pass a week or two with them.

The Cable.

The Federal Senate of Australia, has ratified the agreement concluded by the Commonwealth Government on June 8, 1903, with the Eastern Extension Co., conferring on the latter the right for a term of years to have special wires and to open offices apart from the Government telegraph station, and bestowing certain other advantages.

The dispute between Venezuela and the French Cable Company is now likely to cease to be a diplomatic question between France and Venezuela, in view of President Castro's withdrawal of the counter protest which he made to France in answer to the French complaint of his treatment of M. Taigny, the French Charge d'Affaires at Caracas.

Resignations and Appointments.

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

Miss Grace P. Newton has severed her connection with the Grand Rapids, Mich., office.

Mr. W. W. Stiver has been appointed manager at Meyersdale, Pa., vice Miss Agnes Sellmer, resigned.

Mrs. E. G. Young has been appointed manager at South Fork, Pa., vice Mr. R. F. Deckross, resigned.

Mrs. F. M. Merryfield, one of the most expert lady telegraphers in the United States, and who for many years had charge of the repeaters at

Cheyenne, Wyo., has been appointed manager of the office at Durango, Colo., vice W. T. Davis, resigned to go into other business.

Mr. J. C. Scheffer, of Albert Lea, Minn., has been appointed manager at Billings, Mont., vice Robert Foster, who has resigned to go to St. Louis.

Mr. E. H. Krunzuch, of Jamestown, Dakota, has been appointed manager at Anaconda, Mont., vice Mr. C. J. Munger, resigned to go with the Standard Publishing Company, of that place.

Mr. J. R. Kearns, manager at Gloucester, Mass., has been promoted to the management of the Portland, Me., office, vice K. P. Ruggles, resigned on account of ill health. The vacancy at Gloucester has been filled by the promotion of J. F. Haas, who goes to that point from North Adams, Mass., at which place the managership has been filled by H. B. Simons, of Chelsea, Mass., where he is succeeded by W. Foden.

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

Mr. Joseph Coffer has resigned the managership of the office at Hot Springs, Ark., to engage in the brokerage business.

Mr. J. W. Mayers has been appointed manager of the Postal Telegraph-Cable Company at Santa Fe, N. Mex., vice H. T. Gibson, resigned.

Mr. A. M. Beatty, manager at Knoxville, Tenn., has been advanced to the Atlanta, Ga., management, vice J. E. Scofield, resigned to enter other business.

General Mention.

The Southern Bell Telephone Company has increased its capital from $1,000,000 to $30,000,000.

Beginning January 1, night messages for transmission will be accepted by both telegraph companies as late as two o'clock A. M., instead of twelve o'clock, midnight, as formerly.

Mr. E. B. Barbee, of Fort Egbert, Alaska, in remitting to cover a renewal of his subscription, says: "I find I cannot do without TELEGRAPH AGE as its receipt is a great comfort to me in the frozen North."

Each clerk and check-boy of the operating department of the Western Union Telegraph Company, St. Louis, received as a Christmas present from the operating staff, the sum of $2 and a box of candy.

Among recent visitors at the office of the Postal Telegraph-Cable Company, San Francisco, Cal., were Mr. Neil Primrose, son of Lord Rosebery, London, who is making a tour of the United States and Canada, and Mr. Elwood Hosmer, son of C. R. Hosmer, of the Canadian Pacific Railroad, Montreal, Que.

The largest of the newspapers printed on the ocean and given free to the passengers is the Atlantic Daily News, printed on board of the new Hamburg-American liner the Amerika. Its daily editions are printed in both the English and German languages, the news being received constantly by wireless telegraph.

Mr. Clement Lee, New York superintendent of the Direct United States Cable Company, is distributing its day pad calandar for 1906. The pads are fixed upon a cardboard on which appears in addition to the name of the company, the addresses of its offices both in America and Great Britain. The calendar is arranged for the wall or the desk.

Mr. B. A. Cratsley, who was recently appointed manager at Springfield, Mass., of the Western Union Telegraph Company, was the recipient on Christmas day of a handsome leather covered chair given by the office force as a mark of the esteem held for that gentleman. Before going to Springfield Mr. Cratsley was connected with Superintendent Clary's office at Hartford, Conn.

The General Committee at New York, having in charge the collection of funds from various parts of this country for the amelioration of the existing condition of the Jews in Russia, state that their work has been greatly facilitated by the courtesy of the Western Union and the Postal telegraph companies in extending to them the privilege of free transmission of messages, in connection with their efforts in the direction indicated.

The electrical show, which opens at the Coliseum, Chicago, on Monday evening, January 15, and which is to be continued for two weeks, promises to offer an exposition of electrical apparatus such as to afford visitors a pretty comprehensive idea of the development of electrical science, and of the multiplicity of ways in which electricity serves mankind. It is expected that a wireless telegram to be received from President Roosevelt, will be the signal for the opening of the exhibition, marked by the sudden bursting into glow of thousands of electric lights. It is said that greetings will come in an aerogram from Thomas A. Edison.

The Standard Underground Cable Company has leased the exclusive use of an all-copper line to connect its general office and factories at Pittsburg, branch offices at New York and Philadelphia and its eastern factories at Perth Amboy. This private line will be available for either telegraph or telephone service. There could be no better evidence of the large aggregate volume of business and the growing condition of this important manufacturing company; for so far as known this will be the longest exclusive wire owned or operated by any company confining itself to the manufacture of copper wire and cables. The service will be in effect January 1, 1906, and while without doubt of great convenience and

value to the company in facilitating communication between its offices and factories and the important market centres of New York, Philadelphia and Pittsburg, it is installed primarily to enable it to place itself in closer touch with its customers and to give these customers the same quick service that would be possible if its general offices were located in each of these cities instead of in one.

There is now opportunity to judge of the value of the telegraph through a negative demonstration. The Russian empire has been practically isolated from the outside world for nearly a month through a strike of telegraphers having inception in the revolutionary movement against the government. If ever the struggling rulers of that country needed the telegraph it is now. Heretofore the government has been in control of the wires and the censor could smile at the futile efforts of revolutionaries who were working in haphazard fashion because they had no means of quick communication. Now the government seems to be struggling in the dark because the wires are practically down.

Mr. W. L. MacLellan, at one time a prominent operator in New York and Portland Ore., but now associated with the banking house of Marshall, Spader & Co., New York, is representing that firm at Jacksonville, St. Augustine and Palm Beach, Fla., with headquarters at the latter place. In a letter received lately, requesting a change of address, Mr. MacLellan writes: "It seems so long since I really got down and 'pounded brass' that I much regret having lost some interest in the profession, but whenever I do get hold of a news item of some old friend, I take as keen a relish in it as ever and it is just for that wish for old memories that I now take TELEGRAPH AGE and, let me say, always will as long as it is under your care."

We have received from the author, Louis de Goll, and bearing the imprint of the Rowland Telegraphic Company, of Baltimore, an intelligently prepared and interesting brochure of thirty pages bearing the title of "The Italian Telegraph System." The telegraph and the conditions thereof, mainly as they exist in Europe, largely in England, and more briefly in Italy, are pointedly outlined, the deduction being drawn therefrom that machine telegraphy is now the one thing required to further promote and perfect European telegraphic conditions, a conclusion in which the reader is led to infer that the initiative in such a move is being contemplated by Italy in the introduction of the Rowland system in that country. The subject is cleverly presented and by an altogether ingenious writer.

Wireless Telegraphy.

A patent, No. 806,966, for a wireless telegraph system, has been obtained by Lee De Forest, of New York.

An object lesson in the practical use of wireless telegraphy was afforded recently. The Nantucket lightship, at sea, was in distress and by wireless telegraphy was able to call for help. Only the single signal was given, however, and then it stopped. The wireless telegraph station at Newport caught the call and a relief boat was started to aid the distressed ship. Further than that, communication was established with ships at sea, telling them of the distress of the lightship. This put other ships on their guard against depending on the light that ought to have been on the lightship. The crew were rescued by a relief ship but the lightship itself was lost.

The value of wireless telegraphy to ships threatened with danger at sea was demonstrated lately when the French liner La Lorraine arrived at New York after having successfully steered around a gigantic iceberg she had been informed lay directly across her path. The iceberg was described as being fully a quarter-mile in length and extending about 150 feet above water. When last seen the floating ice island was riding the waves directly in the line of the great Atlantic liners. La Lorraine had been signaled at sea by the American liner Philadelphia and she, in turn, passed the word to all the other outgoing and incoming liners within reach of her wireless telegraph apparatus.

Bids were recently opened in the Navy Department at Washington for furnishing ten sets of wireless telegraph apparatus for the navy, intended for stations mainly on the Pacific Coast, the following propositions being received: Clark Electrical Engineering Company, $9,468; Massie Wireless Telegraph Company, $15,000; De Forest Wireless Telegraph Company, $25,100; International Telegraph Construction Company, $48,300; Ostheimer Brothers, $67,950; Marconi Wireless Telegraph Company, $175,600; National Electric Signaling Company, $393,500. The contract was awarded to the Massie Wireless Telegraph Company. The Stone Telephone and Telegraph Company made a proposition for a test of its method, which trial took place recently under the direction of the Bureau of Equipment. It is understood that one of the ten sets will be installed at the Washington navy yard, and the others will be set upon the Pacific Coast. The Navy Department will purchase the material and make the installation. The Bureau of Equipment regards the price of the successful bidder as entirely reasonable, considering the guarantee of efficiency exacted of bidders.

The History, Manufacture and Properties of Drawn Copper Wire.

BY THOMAS B. DOOLITTLE,
IN THE HARVARD ENGINEERING JOURNAL.

That the adaptation of a well known principle to meet conditions sometimes leads to important results is well illustrated in the story of the raising of the obelisk in the Piazza di San Pietro, Rome. The populace were commanded under penalty of death to keep silent. At a critical moment, when the obelisk had nearly reached a perpendicular position, the ropes proved too long. A sailor cried out: "Aqua alle funi" (wet the ropes). This was done, and the shrinking of the ropes set the obelisk squarely on its base. It will be remembered that the sailor (Bresca) received a reward instead of the penalty.

Hard drawn copper wire was the result of an adaptation rather than a discovery, although many of its valuable properties were not appreciated until after it had been in service several years.

It is the common knowledge of all who are familiar with the manipulation of copper that the process of drawing it into wire serves to harden the surface. Thus it will be seen that the experiments which resulted in the so-called hard drawn copper wire were based upon a well known principle, although the application of this principle had never been made use of for the final product. The writer was familiar with this phenomenon at the time he entered the field of electricity; therefore, when it was disclosed to him that copper was not only one of the best conductors of electricity, but was the cheapest in conductivity, or per mile ohm, it was only left for him to determine whether or not this hardening process could be made available, in order that copper wire should be comparable to iron in its ability to stand the strain of its own weight when strung on poles, and, in addition thereto, the weight of sleet or snow and wind pressure. There was no mathematical road to determine this factor; therefore, it was simply a case of "cut and try."

First, the size of the finished product was fixed upon (No. 12 B. & S. gauge); then it became a matter of experiment to determine the size of the annealed copper rod which, when drawn to this predetermined size, should possess the proper tensile strength and the required torsional property. It was also necessary to determine the number of "holes" or reductions that should intervene in the process of drawing in order that the structure or fibre of the metal should not be injured during the process. Too much force would result in granulating the metal and thereby impairing its tensile strength. The experiments proved all that could be anticipated, and a sufficient amount of hard drawn copper wire was manufactured to equip the lines necessary to connect all of the mills, offices, and residences of officers of The Ansonia Brass and Copper Company, in whose wire mill these experiments were made. A telephone switchboard was set up in the brass mill of that company, and an operator answered calls and made connections. This work was begun in November, 1877.

Although the product is known in the trade as hard drawn copper wire, and properly so known—as the name indicates its property of hardness and the method of manufacture—the name has no antonym or contra-term because soft drawn copper is a misnomer; the very process of drawing eliminates the quality of softness and makes it hard.

Prior to its introduction for aerial electricial conductors, there was very little, if any, call for the hard product. Copper wire was usually annealed after drawing, and sold in that form. Copper alloyed with other metals was, and is now, used in the manufacture of hard or "spring wire."

Skepticism on the part of electricians and generally in scientific circles, as to the practical value of this adaptation, prevented its being adopted to any extent, except the few circuits that the writer introduced into the Bridgeport, Conn., telephone exchange, until seven years afterward.

In 1884 the writer was commissioned to construct an experimental metallic circuit of copper between New York and Boston. The wire for this circuit was drawn under his personal supervision in the wire mill of the Bridgeport Brass Company. The total cost of this experiment was, in round numbers, $70,000. After the experiment was concluded, the wires were turned over to the intervening telephone companies for local use, and immediate steps were taken to build the New York and Philadelphia long distance telephone line. The miles of hard drawn copper wire now in use for all electrical purposes are counted by millions.

The first recorded employment of copper as a line conductor was its use by Prof. Morse in his experimental telegraph line between Washington and Baltimore. The ordinary market wire was used but, for the reason that it would not sustain its own weight, it was abandoned and iron wire was substituted. The next of record was strung by the Western Union Telegraph Company, in New Jersey. In this case, also, the ordinary copper wire was used, but an attempt was made to increase its tensile strength by twisting a pair of wires into the form of a rope. This did not prove a success, and was abandoned for the same reason as the other. In the early seventies many experiments were tried in attempts to make available for aerial line conductors the superior conductivity of copper. In each case a steel wire was employed for tensile strength. In one case a copper ribbon was wound spirally around the steel wire. On exposure to the elements a chemical action was set up that quickly destroyed the steel core. This ribbon was afterward tinned, but with unsatisfactory result. In another experiment the copper ribbon was folded longitudinally. The last and most successful in this line of experiment was the process of electroplating the steel wire with copper. This was put in service by the American Rapid Telegraph Company, but in a few years it also proved unsatisfactory and was abandoned. Therefore it will be seen that the first successful employment of copper wire for electric line conduc-

tors was on the telephone lines of The Ansonia Brass and Copper Company in 1877, and the Bridgeport, Conn., telephone exchange in 1878. The next was on the line between New York and Boston in 1884. The latter experiment was an immediate success, and hard drawn copper wire was, within a few months, adopted throughout all civilized countries.

(To be continued.)

A Novel System of Wireless Telegraphy.

BY DR. ALFRED GRADENWITZ.

Our readers will doubtless remember the beautiful experiments in wireless telephony which were made by Herr F. Ruhmer on the Wannsee Lake, near Berlin, last year and continued with increasing success in the course of last summer. Now the inventor has applied his process to optical telegraphy.

In optical telegraphy the rays issuing from a projector are, as a rule, intercepted at given intervals, so as to form luminous flashes, succeeding one another more or less rapidly. In the Ruhmer telegraph system, on the contrary, the so-called speaking arcs are utilized by superposing on the direct current circuit of the lamp placed at the sending station in the focus of a projector, a continuous current frequently broken by means of a mechanical interrupter, the opening and closing being insured by a Morse key, in accordance with ordinary Morse signals. At each closing of the telegraph key, the superposed and frequently interrupted current will modify the luminous intensity emanating from the electric arc, giving rise to luminous oscillations which are projected toward the receiving station. If all the conditions be so arranged that the luminous intensity of the lamp is maintained constant, this process will insure not only a more rapid handling of telegrams, but will permit at the same time of keeping the latter strictly secret, as the human eye, incapable of discerning any more than ten luminous alternations per second, will get the impression of a continuous beam on account of the rapidity with which the luminous oscillations of the transmitting station will succeed each other.

The receiving station is arranged in a way analogous to those of optical telephony, comprising two telephones and one parabolic reflector in the focus of which the selenium cell is placed. The luminous oscillations of the transmitting station act on the selenium cell at the receiving station to alter the resistance of the electric circuit through the telephones, thereby producing intermittent humming sounds which vary with intervals corresponding to those of Morse signals. The pitch of this sound will depend on the frequency of the interrupter. Whereas in transmitting language, uncertainties are possible on account of the different acoustical intensities of the different vowels, the same sounds have to be heard here for more or less prolonged intervals. It has therefore been possible to insure perfectly clear transmissions of signals in atmospheric conditions which would have rendered difficult the transmission of language. The beginning of a communication is indicated by a bell, operated by the selenium cell without the agency of any wire connecting it with the transmitting station.

The satisfactory results of the experiments so far made, go to show that this system of optical telegraphy, like the analogous system of optical telephony, will be used to special advantage in the case of transmissions over short distances.—Scientific American.

The North Magnetic Pole.

Major Glassford, in charge of the government cable office at Seattle, received a message a few days ago from Ronald Amundsen at Fort Egbert, Eagle City, Alaska, addressed to the Norwegian explorer, Nansen. The message is incomplete as to detail, but shows that Amundsen traveled from Greenland to Herschel Island, which indicates that he at last has located the Northwest Passage from the Atlantic to the Pacific for which Arctic explorers have been searching for centuries.

Amundsen left Norway in June, 1903. He made magnetic observations in various localities, and from the message it is taken that he set up his self-registering instruments last summer and located the true north magnetic pole on King Williams Island. He is said to have made a complete and systematic magnetic survey of the region about the magnetic pole, from which an accurate location of the pole is believed to have resulted. The determination of the north magnetic pole by Capt. James Clark Ross in June, 1831, rested on a single determination. Local disturbances may be expected in that region, and it was not believed that his determination was reliable. His position was on Boothia Felix, in north latitude 70 degrees, five minutes and 17 seconds, and west longitude 96 degrees, 45 minutes and 48 seconds. It has been generally believed that the magnetic pole is subject to a fluctuation in its position, and it is hoped that Amundsen's work will throw some light upon the rate and direction of motion.

If Amundsen has located the north magnetic pole, it will be of great value to science, especially if he succeeded, as he purposed, in determining whether the magnetic pole was a fixed point or a circumscribed area. If he found it was an area he proposed to make stations clear around it, so as to completely circle the magnetic pole.

Captain Amundsen left Herschel Island on October 24, and arrived overland at Fort Egbert, near Eagle City, Alaska, on December 5. His return trip will be made by the way of Behring Strait, and he proposes to stop at Sitka, and make his final observations there at the United States Coast and Geodetic Survey magnetic observatory for the determination of instrumental constants.

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NEW YORK, JANUARY 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.

Telegraph Age extends a Happy Near Year to its readers everywhere, and wishes them all a full measure of happiness and prosperity.

The index for 1905 will be found bound in this issue; it can easily be removed, however, and bound in with the 1905 volume by those who are in the habit of binding their copies.

The report of the Fourth Assistant Postmaster-General, P. V. DeGraw, former telegrapher and newspaper man, shows in its compact, intelligible distinctness, and its strictly logical form, the training of its author. His subject was a big one, dealing with the post offices, the delivery service and the rural and suburban ramifications thereof, yet the story was told within the limits of a 16-page pamphlet, and in a manner that "he who runs may read," all of which goes to emphasize the desirability of newspaper discipline. Mr. DeGraw should receive the printed, as he doubtless has the mental, thanks of newspapers from the Atlantic to the Pacific, for he has materially lessened their work.

Government Ownership of the Telegraph.

Mr. William R. Hearst, Congressman from New York City and whilom nominee for Mayor of the metropolis, is "at it" again, for he fathers a congressional bill "to enable the United States of America to acquire, maintain and operate electric telegraphs, and to pay therefor by sale of bonds redeemable out of the net earnings." It is provided that a commission consisting of five disinterested persons, two to be selected by the postmaster-general, two by the company interested, and one by the other four, shall appraise the value of any line or lines owned by a telegraph company, and, if the price be satisfactory, the President is authorized to purchase the line or lines. If a price satisfactory cannot be agreed on, it is provided that the properties shall be acquired by condemnation proceedings begun in United States circuit courts. The lines when acquired are to be operated under the direction of the Postoffice Department. The Secretary of the Treasury is authorized to borrow one hundred million dollars to purchase the telegraph lines. It is provided that a commission consisting of five members, not more than three of whom shall be of the same political party, shall be appointed by the President to aid in the acquisition of the lines.

Mr. Hearst made a phenomenal run for Mayor on the slogan of municipal ownership of public utilities, many persuading themselves to believe that in some occult manner his election meant the dawning of a millennium, in which the wage earner would receive immediately not only an increase of pay, but that the same would result from shorter hours of labor. Probably a convenient pigeon hole will receive and hold the bill, for it is not likely that the saving common sense of Congress will permit itself to be stampeded in favor of a move of this fantastic character, which must be regarded as an expression of but a fad pure and simple.

It is remarkable, however, to what an extent the vicious idea, embodied in such a proposition, in effect favoring a paternal form of government, is gaining in this country, clearly showing the trend of socialistic thought. Many newspapers, even, glibly declare for government ownership of the telegraph, when, if they would but take the trouble, as we have frequently pointed out, to look into and carefully study the problem involved therein, what it really means, they would doubtless see and recognize the hopeless fallacy of such a measure. Yet, parrot like, many continue the iteration with no adequate knowledge of the subject they are talking about.

It would, indeed, be a sad day for the business

interests of this country, which are not content to follow the slow-going methods prevailing abroad, and which, so far as the telegraph is concerned, are frequently quoted as fit examples for our adoption, should the telegraph pass over to government control. The old notion that the least governed people is the best governed people, as has hitherto prevailed, reflects a high state of national intelligence, and is a principle both in spirit and in operation that should not be departed from.

If the people of this country, however, imagine that corporations, telegraphic or otherwise, are not governed honestly, especially in view of recent unsavory disclosures made in insurance and other circles, the remedy therefor does not lie in their being taken over and run by the Government. Rather, the government should be appealed to only, to establish a system by which corporate affairs may be regulated and kept within proper bounds of conduct. Nothing more. The law may be made as stern and mandatory as necessary, but should not encroach on private management.

In our judgment the business of the postoffice could be far better conducted if it were run by private parties. Methods would be changed. It is altogether probable that greater efficiency would be established and that the yearly balance sheet would show a profit instead of a deficit as now. It's the "get there" principle that would be introduced that would bring about the result, necessarily maintained by the individual who achieves success.

Under government control of the telegraph, Mr. Hearst may put it down in very large letters that there would be no net revenue accruing from such management with which to pay off the one hundred million dollar loan as proposed. His views on the subject are chimerical, and we are inclined to believe that privately he thinks so, too.

Legal Intelligence.

The final step was taken December 6 in the suit brought by the State of Minnesota against the Western Union Telegraph Company to enforce the collection of taxes based on the valuation of the company's franchise, when a judgment was entered in favor of the State for $19,464.80. The company refused to pay the taxes on a valuation of $1,000,000, as fixed by the State Board of Equalization for the taxes of 1899, this being an increase of $400,000, and the State brought a suit to enforce the collection on the increase, the company paying the taxes on the admitted valuation of $600,000.

The main point at issue was whether the company could be assessed for its franchise or only for its tangible property, and the Supreme Court held that the franchise is subject to taxation.

The entry of the judgment in this case is for the amount of the taxes for 1899, costs and interest, but the importance of the decision lies in the precedent established, as under the decision of the Supreme Court the franchise of all other public service corporations are also subject to taxation.

Prof. Morse the Inventor of Sound Reading.

Editor TELEGRAPH AGE:

In 1881 James D. Reid, of sacred telegraph memory, wishing to acknowledge a slight favor which he claimed to have received at my hands, presented me with a two-page document in the handwriting of Prof. Morse, dated at Poughkeepsie, N. Y., June 27, 1864. Thinking the younger generation of telegraphers may be interested in it, and as a matter of collateral history in the event of its not having been published heretofore, I send you herewith a copy.

D. H. BATES.

New York, December 20, 1905.

Following is the letter:

The reason for preserving this manuscript is to show evidence not merely that I had contemplated the practice now (1864) so common of reading my telegraphic characters by sound (which some assert is something new, and was not originally contemplated by me), but that this mode was distinctly stated in my earliest patents by Mr. F. O. J. Smith, in his own chirography. This manuscript was the revised copy of my American patent, and prepared by Mr. Smith for M. Perpigna, the French patent agent who prepared and procured my French patent. Many parts of this manuscript are in Mr. Smith's handwriting. The sheet marked "claim" in a French handwriting, is otherwise wholly in the handwriting of Mr. Smith, and it will be perceived that in the sixth and eighth claims the claim is distinctly to sounds as well as signs. It is, therefore, a little extraordinary that since Mr. Smith has sold out his patent interest in the telegraph, and come under obligations to the company to whom he sold not to be connected with a rival line, yet he has attempted to sustain a rival line (under the management of his own son, at least in part), on the plea that the use of sound in communicating my alphabetical characters, was new and did not infringe my patent.

This manuscript, therefore, prepared for my French patent in Paris in 1838, by Mr. Smith, shows that he could not possibly be ignorant himself that the telegraphing by sounds was a method then contemplated, and intended to be secured by patent.

(Signed) Samuel F. B. Morse.

Poughkeepsie, N. Y., June 27, 1864.

When it is understood that the day of the swift ocean liner and the telegraph, before The Associated Press and reporter were ever heard of, and when it is remembered that the battle of New Orleans less than a hundred years ago resulted in deplorable loss of life because the peace consummated two months previously was not known for the lack of news facilities which are now the world's commonplaces, the wonderful opportunities we now have of seeing, at it were, another great revolution, may be appreciated. The daily papers give us more accurate and reliable information than it was possible for those on the ground in Paris to know of the French Revolution near the end of the eighteenth century. Nor can the Russians know as much about what is occurring

in their own country as do the intelligent citizens of the United States. So long has a rigid censorship shackled the press in Russia that it has neither the means nor the demand for news.

The Ancestry of Edison.

The following item referring to the ancestors of Edison appeared not very long ago in the St. John (New Brunswick) "Globe:"

"The pedigree of Thomas A. Edison, the electrician, is largely Canadian. Among the New York loyalists who settled in and near Digby, Nova Scotia, at the close of the Revolutionary War were several of Dutch and some of German extraction. Among these was John Edison. His name appears first on the Digby records a few years later than those of Samuel and Moses Edison. It is believed, though there is no positive evidence, that Samuel and Moses were the sons of John. Samuel was the grandfather of the inventor. He, like many other Nova Scotians, was attracted by the fertile land of Upper Canada, and moved there about 1811. His son, Samuel, Jr., went to Ohio, and there the inventor was born."

In G. Washington Moon's "Men and Women of the Time" it is recorded, that Thomas Alva Edison was born at Milan, Erie County, Ohio, February 11, 1847, being of Dutch descent on his father's side and Scotch on his mother's side.

On referring to Judge A. W. Savary's "History of the County of Annapolis, Nova Scotia," which at that time embraced Digby, it is recorded that Elisha Jones with three brothers from Weston, Massachusetts, settled near Digby, at the same time with the Edison family. Cereno C. Jones, the son of Elisha Jones, was elected to represent Annapolis County in the Legislature in 1816, and in 1822 was appointed a justice of the peace, and in 1824 associate judge of the Court of Common Pleas. Judge Jones was the grandfather of F. W. Jones, of New York, and uncle of Lieutenant-Governor A. G. Jones, of Halifax, Nova Scotia.

Fighting for Patent.

"I happened to be chatting with Thomas A. Edison in his laboratory at Orange, N. J., one night while he was working on his most recent creation—the intensified dynamo," says a writer in Success Magazine, "and heard him discuss thoroughly the injustice that is done inventors in the United States. 'This very day,' he said, 'several of my well-known patents expire, and become the property of posterity, which means Tom, Dick and Harry. The government professes to protect the inventor for seventeen years, and after that time his creation is no longer his own. But, as a matter of fact, the government does no such thing. It lets any poacher run in and bring suit or apply for an injunction, disputing the inventor's patent already granted by the patent office, and in all the courts, pending the long-drawn-out litigation which follows, the other fellow is permitted to go on manufacturing and selling the thing he claims to have invented before the real inventor made it.

"'Do you see that little lamp there?' asked Mr. Edison, as he arose, full-length, in his ragged old linen duster of the workshop, and he pointed with his pencil to an ordinary incandescent electric light beaming brightly over a draftsman's table. 'It was my invention, known as a primary invention, because I took two things, a piece of metal and electricity, and made a third thing of them—light. Now I fought fourteen years in the courts for that little lamp, because a Frenchman bobbed up and claimed it after I had secured the patent. During all this litigation I had no protection whatever, and when I won my rights after fourteen years, there were but three years of the allotted seventeen left for my patent to live. It has now become the property of anybody and everybody. There is no protection given an inventor by the courts or the patent department.'"

What Did Luck Do for Them?

When we consider the few who owe fortune or position to accident or "luck," in comparison with the masses who have to fight every inch of the way to their own loaves, what are they, in reality, but the exceptions to the rule that character, merit—not fate, or "luck," or any other bogy of the imagination—control the destinies of men? The only luck that plays any great part in a man's life is that which inheres in a stout heart, a willing hand and an alert brain.

What has chance ever done in the world? Has it invented a telegraph or telephone? Has it laid an ocean cable? Has it built steamships or established universities, asylums or hospitals? Has it tunneled mountains, built bridges or brought miracles out of the soil? What did "luck" have to do with making the career of Washington, of Lincoln, of Daniel Webster, of Henry Clay, of Grant or of Garfield? Did it help Edison or Marconi with their inventions? Did it have anything to do with the making of the fortunes of our great merchant princes?

I have never known a man to amount to much until he cut out of his vocabulary such words as "good luck" and "bad luck" and from his life maxims all the "I can't" words and the "I can't" philosophy. There is no word in the English language more misused and abused than "luck." More people have excused themselves for poor work and mean, stingy, poverty-stricken careers by saying "luck was against them" than by any other excuse.

The door ahead of you, young man, is probably closed because you have closed it—closed it by lack of training, by lack of ambition, energy and push. While perhaps you have been waiting for "luck" to open it a pluckier, grittier fellow has stepped in ahead of you and opened it himself.—Orison Swett Marden in Success Magazine.

Changes in the Telegraph Service.

In presenting another chapter to the story which has run through several issues, the purpose of which has been to chronicle some of the changes affecting only those individuals whose portraits appeared in "Telegraphers of To-Day," published by Mr. Taltavall, of TELEGRAPH AGE, in 1894, it is observed in the Postal Telegraph-Cable Company's service that Charles E. Bagley, who at the date named was assistant manager of the office at Boston, of which city he is a native, is now manager at Philadelphia, where he is establishing a fine record. John Annand, a Canadian by birth, who a decade ago was night chief operator at Portland, Ore., has since been advanced to the managership of the office, a position he now holds; Thomas F. Rochford, who in 1894 was manager of the entire Brooklyn (N. Y.) district, retired from the service in June, 1905, in order to devote his entire time to his real estate interests, which are large and which have yielded him a competency.

In that portion of the book devoted to the old timers of the telegraph and to the railroad telegraph superintendents, a number of changes are to be recorded. Charles F. Annett, who belongs to the great contingent of Canadian telegraphers in this country, who are numbered among the best, and who, when Telegraphers of To-Day was issued, was assistant superintendent of telegraph of the Illinois Central Railroad, is now manager of the Western Union Telegraph Company, at New Haven, Conn. Ralph D. Blumenfeld, a former telegrapher, at one time a valued contributor to TELEGRAPH AGE and in 1894 superintendent in New York of the Herald property, is now the brilliant editor of the daily "Express," London, England. A bright light in the telegraph firmament is S. M. English, who during the last ten years has risen from the position of chief operator of the Postal Telegraph-Cable Company at New Orleans, to be the general manager of the Postal Telegraph-Cable Company of Texas, with headquarters at Dallas. Then there is James Kent, now the general manager of the telegraph system of the Canadian Pacific Railway. From the position of a district superintendent, which he had gained in 1890, he was further promoted about five years ago to succeed Charles R. Hosmer, who then retired from the general managership. W. J. Camp, now a man of fifty, looked upon as one of the most capable electricians of the Dominion, who ten years ago held the post of electrician of the Canadian Pacific telegraphs at Montreal, has since been elevated to be the electrical engineer of the entire system. A. B. Smith, another of the galaxy of Canada's able telegraphers, who was superintendent of construction of the Great North Western Telegraph Company, at Toronto, has recently been made manager of telegraphs of the Grand Trunk Pacific Railway telegraph system, an appointment which removes his headquarters to Montreal. Harvey P. Dwight, long a prominent figure in Canadian telegraphy, still holds his aforetime position of president of the Great North Western Telegraph Company, at Toronto, although he has surrendered the general management to younger hands, in the person of Isaac McMichael. Mr. Dwight is in his seventy-eighth year.

As with the land lines, so, too, have numerous changes occurred in the personnel associated with the submarine cable service, one of the most prominent is that affecting George Clapperton of the Commercial Cable Company, a man now in his fifty-second year and one of the best informed of the staff. His advance has been from the superintendency of the company to that of traffic manager. Another promotion in this company in that of Samuel S. Dickenson, who from the office of superintendent of the Canso, Nova Scotia, cable station, has become general superintendent with headquarters in New York. Frederick Ward, a younger brother of George Gray Ward, vice-president and general manager of the Commercial Cable Company, who ten years ago was superintendent of the company's cable station at Weston-Super-Mare, England, has since been promoted to the managership of the company's European interests, with headquarters at London. Other changes in the Commercial Cable Company affect Frank Wilson, who was superintendent at Boston, now retired on account of ill health, and the elevation of Charles E. Merritt of the New York office, from the position of cashier to that of assistant treasurer. Oscar Moll, who was traffic manager of the Direct United States Cable Company at London, England, ten years ago, is now general manager of the German-American cable interests, with headquarters at Cologne, Germany. Another promotion in the cable service at New York is that of Stephen F. Austin of the French Cable Company, who from the position of superintendent and representative has been made assistant superintendent of the Commercial Company.

Among the deaths which have occurred in the cable service are those of Gen. E. B. Fowler, auditor of the Commercial Cable Company, New York, who as Colonel of the 14th New York regiment, known for its fighting proclivities as the "Red Legged Devils," had an excellent Civil War record, and who died January 16, 1896; Thomas J. Wilmot, superintendent of the Commercial Cable Company's station at Waterville, Ireland, died April 12, 1904; Sir John Pender, G. C. M. G., M. P., of London, besides being a prominent political figure in England, was also at the head of vast cable interests, died July 7, 1896; James Brown, superintendent of the Direct United States Cable Company, at New York, died on December 17, 1897; his successor Arthur C. Frost, who previous to Mr. Brown's death, was manager of the New York office, is also numbered among the dead, his demise occurring April 23, 1905. Captain Samuel Trott who ten years ago was commander of the cable steamer "Minia" belonging to the Anglo-American Company and stationed at Boston,

Mass., died March 11, 1899. Captain Trott had the reputation of knowing the bottom of the Atlantic Ocean as well as a person would know the streets of the city in which he lived. James G. Smith, a well-known old timer at the time of his death, March 13, 1900, was identified with the cable department of the Western Union Telegraph Company.

Among other deaths in the telegraph service are the following: R. J. Hutchinson, superintendent of telegraph of the New York Stock Exchange, died November 24, 1899; Charles C. Hine, a forty-niner of the telegraph, who for many years previous to his death was editor of the "Insurance Monitor," New York, died April 17, 1897; Charles Peterson, a native of Denmark, superintendent of telegraph of the Delaware & Hudson Canal Company, has also gone over to the great majority; James D. Reid, who was affectionately known as the "Father of the Telegraph," and who was the first superintendent of telegraph in the world, having been appointed to fill that position in 1845, died in New York, April 28, 1901; W. W. Smith, an old time telegrapher, for many years previous to his death, general manager of the telephone company at Kansas City, Mo., died December 27, 1894; Day K. Smith, in 1894 president of the Duluth Transfer Railway Company at Duluth, Minn., formerly a Western Union Telegraph Company superintendent, and at one time president of the Old Time Telegraphers' and Historical Association, died September 14, 1894; F. W. Sabold, an old time telegrapher, ten years ago general manager of the telephone company at Yonkers, N. Y., died April 16, 1904; John I. Sabin, an old time telegrapher, who a decade ago was recorded in the pages of Telegraphers of To-Day as the head of the Bell Telephone interests on the Pacific Coast, died October 10, 1905; J. C. Van Duzer, a forty-niner of the telegraph, one of the most prominent military telegraphers during the Civil War, died at Escanaba, Mich., March 3, 1898; H. A. Bogardue, an old time telegrapher and a member of the United States Military Telegraph Corps, familiarly known all over the country as "Bogy," died March 26, 1904; John N. Gamewell, another forty-niner of the telegraph, inventor of the Gamewell Fire Alarm system, and who ten years ago was president of the Gamewell Fire Alarm Telegraph Company, New York, died July 19, 1896; G. L. Beetle, a forty-niner of the telegraph, ten years ago identified with the Western Electric Company at Chicago, Ill., is also numbered among the dead; A. H. Bauer, an old time telegrapher, one of those at Philadelphia who in 1864 was arrested and confined in the Old Capitol prison at Washington for supposed complicity with the famous bogus proclamation of President Lincoln, and who in 1894 was the electrician for the Pullman Palace Car Company, died January 14, 1895; Wayne H. Parsons, manager of the Postal Telegraph-Cable Company at Watertown, N. Y., a member of the United States Military Telegraph Corps and at one time private operator to General Grant, died September 3, 1898; Edward Leloup, manager of the New Orleans, La., office of the Postal Telegraph-Cable Company, who served the Confederacy as a military telegrapher during the Civil War, died February 2, 1900. He was succeeded by W. A. Porteous, now superintendent. E. R. Adams, in 1894 superintendent of telegraph of the Philadelphia and Reading Railroad and of the Philadelphia, Reading and Pottsville Telegraph Company, is also dead; Jesse H. Bunnell, of New York, senior member of the firm of J. H. Bunnell and Company, the well-known manufacturers of telegraph instruments, and who served as a military telegrapher throughout the Civil War, died February 8, 1899; Edwin C. Bush, a forty-niner of the telegraph, who when Telegraphers of To-Day was printed, was an official in the Cincinnati, Ohio, postoffice, died November 4, 1896; Robert Cunningham, proprietor of the Financial News Bureau, New York, another old time and military telegrapher, died April 8, 1897; A. B. Cornell, at one time governor of the State of New York, a forty-niner of the telegraph, one of the founders of the Western Union Telegraph Company in which he was a large shareholder and director, died October 15, 1904; James R. Dennis, an old time telegrapher and at one time superintendent of the metropolitan district of the Bankers' and Merchants' Telegraph Company, died June 2, 1898; Samuel J. Gifford, another forty-niner of the telegraph, in 1904 a successful business man of Dunkirk, N. Y., died August 18, 1901; Ezra T. Gilliland, a well-known telegrapher, a manufacturer, inventor and a capitalist, died May 15, 1903; James H. Guild, a native of old Williamsburg, Brooklyn, whose telegraphic career began in "Snow's" telegraph office, Detroit, Mich., in 1850, died June 20, 1898; R. B. Gemmell, superintendent of telegraph of the Atchison, Topeka and Sante Fe Railroad Company, who had direct charge, by wire, of the special train which conveyed Mr. Lincoln, President-elect, from Harrisburg to Philadelphia on the night of February 22, 1861, when on his way to Washington, died September 15, 1896.

(To be continued.)

The annual report of the United States Department of Commerce and Labor recommends that the Bureau of the Census be given authority to take up, among other subjects, that of: A five-year report on the electrical services, street railways, public power stations, telephones and telegraphs, etc., in lieu of the ten-year reports now authorized.

John S. Calvert at Atlanta.

The career of John Strother Calvert, until recently assistant superintendent of the Western Union Telegraph Company at Richmond, Va., affords another instance of the rapid advancement of a bright member of the younger element in the

JOHN S. CALVERT.
Recently appointed Assistant Superintendent, Western Union Telegraph Company, Atlanta, Ga.

telegraph service. Mr. Calvert has been a student; he is well grounded in the science and in the business of the company which he serves. His first position of responsibility in the telegraph was accepted in the summer of 1891, when he became the manager at Newmarket, Va., of the Rosenberger and Shirley telegraph line, a one-hundred and fifty mile affair, with fifteen offices, located in the Valley of Virginia. In the year following he took charge of the Western Union offices, first at Newmarket and afterwards at Natural Bridge Hotel, in November being appointed clerk in the office of Superintendent J. B. Tree, at Richmond. His next appointment was in 1895, when he was made auditor and error clerk under Mr. Tree. In 1897 another promotion awaited him, this time lifting him to the position of traveling auditor of the first district of the Southern division. In 1902 he was promoted to be inspector of offices and accounts of the territory comprised within both the first and second districts of the Southern division. It was on January 1, 1903, that he received his appointment of assistant superintendent at Richmond, from which, on December 1 last, as has already been published, his transfer to Atlanta, Ga., the main Southern headquarters, as assistant superintendent, was effected.

The New Western Union Manager at Worcester.

Peter Cunningham, the newly appointed manager of the Western Union Telegraph Company at Worcester, Mass., mention of which appeared in our December 16 issue, was born in that city April 7, 1857. He first entered the office in which he has since remained all his life, as messenger at the age of twelve years. Since that time he has steadily worked his way upward, holding in turn the several positions of delivery clerk, operator and chief operator, filling the latter position for the last twenty-five years. He is thoroughly familiar with the workings of the Worcester office and of the needs of the community in which he dwells. During the thirty-six consecutive years in which he has been an employee of the company, he has seen the Worcester office grow from one having a five-wire connection to that of over a hundred. The promotion of Mr. Cunningham was well deserved, as he has always been a faithful and loyal employee of the com-

PETER CUNNINGHAM.
The new Western Union Manager at Worcester, Mass.

pany, a thoroughly practical man of keen observation, his appointment was received with general satisfaction by the business men of Worcester. He is a prominent member of the Worcester Lodge of Elks, and charter member of Court Quinsigamond, F. of A. and I. O. Heptasophs.

John Gavey on the Telegraph, Telephone, Etc.

(Continued from issue of December 16, 1905.)

[John Gavey, of London, England, the eminent engineer-in-chief of the British telegraphs, was born on the Island of Jersey, August 11, 1842. He entered the telegraph service as an operator in 1860. His promotion in the service was steady, and he reached his present

JOHN GAVEY, OF LONDON.
Engineer-in-Chief of the British Telegraphs.

office in 1902. Mr. Gavey has been closely associated with most of the important developments of the telegraph and telephone service of the British post office. He is a man of extensive acquirements in the field of electrical engineering, and is regarded as an authority in matters telegraphic, foreign as well as in his own country.—Ed.]

Mr. John Gavey, engineer-in-chief of the British telegraph system, and who was recently elected president of the Institute of Electrical Engineers of England, delivered an inaugural address which has been published extensively by the technical press all over the world, it being regarded as a document of unusual importance, treating as it does in such a thorough manner all phases of the electrical industry and its developments. What he had to say in regard to the telegraph, the publication of which was commenced in our December 16 issue, is followed by his reference to overhead wires, underground and submarine cables. The chapter on wireless telegraphy will follow in a subsequent issue.

No marked changes have taken place in the methods of overhead construction, beyond the general tendency towards the wholesale substitution of hard-drawn copper for iron wire for overhead conductors. The magnetic inertia due to the metal itself which affects high speed results so largely when iron wires are used is, of course, absent in the case of copper. Although the first cost is higher, the scrap value of the copper when renewed is considerable, and there is the further point that when the time arrives for converting overhead telegraph circuits to telephone uses, the appropriated conductors will at once be available. In other respects there have been, of course, various improvements in details which, however, do not need special mention.

In underground telegraphs, something approaching a revolution is in progress. It is a curious and instructive fact that the majority of the early inventors who designed or imagined methods of telegraphy contemplated the use of underground wires insulated by various ingenious methods which, however, would scarcely have proved efficacious in practice. Further, in this country, two of the great telegraph companies started with the idea of laying telegraphs underground, and very long lengths of gutta percha wire were laid in wooden casing, some of which is recovered from time to time and is even now found to be in excellent condition. Various reasons lead to the abandonment of underground work in favor of overhead lines, and little was done in later years in the direction of providing a comprehensive underground system until the great work in Germany was initiated in the seventies. Owing, however, to the high cost of gutta percha, and to its great specific inductive capacity, the extended use of this material did not commend itself to the English government, except, of course, in large towns where underground work was imperative, for, owing to the slow speed attainable on ordinary gutta percha underground wires, and the vast mass of press matter that had to be transmitted by the post office, there was little temptation to indulge in a heavy expenditure with the object of replacing overhead wires by underground work, even though the overhead wires were ocasionally subject to serious interruptions which no human skill or engineering foresight could guard against. The introduction of the modern multiple cable insulated by dry paper and enclosed in lead sheath has gone a long way in the direction of overcoming both these difficulties—namely, the financial difficulty of cost and the electrical difficulty of high static capacity.

Incidentally, it may be of interest to refer to the genesis of the modern air-space dry-core cable, for details of which I am indebted to Mr. Kingsbury. It is, of course, well known that many attempts were made years ago to obtain a cheap substitute for gutta-percha insulated wires, and these attempts generally took the direction of wires covered with cotton or other fibrous material enclosed in a pipe or tube, which was filled with a permanent insulator, either solid or liquid, such as paraffin wax or oil. At a later period paper was substituted for cotton, and it was proved that wires so insulated had a lower static capacity than those covered with cotton. It was at first assumed that this was due to the character of the paper used, but it was soon realized that the actual reason was that with the paper the insulating compound could not be forced into the tube so as to absolutely fill all the interstices, and that numerous air spaces existed throughout its

length. From this to the use of the present form of cable was but a step. In cables of this type relatively large conductors weighing from 100 pounds to 200 pounds per mile can be provided with a static capacity of 0.1 microfarad per mile, and where a large number of wires have to be provided, at a total expenditure not very unduly in excess of that necessary for overhead wires.

As soon as this type of cable became available for use, the post office took the initial step in the construction of a line containing seventy-six wires enclosed in a three-inch iron pipe from London to Birmingham, a distance of 117 miles. This line was commenced in 1897, was completed in 1899, and brought into use after preliminary experiments had been carried out with a view of determining its adaptability for the purposes of the post office. It was, of course, foreseen that the wires in close proximity would be subject to a certain amount of mutual disturbance, and it was doubtful to what extent this disturbance would interfere with the various methods of telegraphy in use. To provide for the worst possible case, therefore, the wires were twisted up in pairs like those required for telephone circuits, and the length of the lay of the neighboring pairs was varied, so as to provide as far as possible for working metallic loops where necessary, either for telegraph or telephone purposes, with the minimum amount of mutual interference. The experiments proved that it was possible to work duplex on neighboring single wires of a pair, when earthed at each end, without interference when the speed was limited to that possible with manual transmission. Quadruplex working was subject to some slight interference, but under these conditions Wheatstone working was not possible at a higher speed than fifty to sixty words per minute. The general result, however, was admirable from every point of view, and the steadiness of working and the freedom from interference by atmospheric or other causes was so great that the postmaster-general subsequently decided to extend the London-Birmingham line to Glasgow. The question of the type of cable to be carried forward then came up for consideration. From London to Birmingham there were thirty-eight pairs of wires. In the interval many types of paper insulated cables had been devised with a view to obtain a form suitable for use with earthed circuits, and therefore to a great extent free from mutual induction, either static or electro-magnetic, the ultimate outcome of which was the design of a conductor insulated with paper, each insulated conductor lapped with copper foil and the whole of the wires cabled and sheathed with lead.

It was finally determined to continue the London-Birmingham section northward by the laying of a cable containing thirty-seven pairs of the ordinary paper insulated wires as a core surrounded by twenty-nine copper screened single-wire conductors; this decision being arrived at after it had been proved conclusively that where quadruplex or high speed circuits were required, it was possible to obtain satisfactory working with the quadruplex or Wheatstone on a metallic loop, and to superimpose thereon a key duplex. Where a quadruplex is therefore in use on a long circuit, six channels are obtained on two wires, or a Wheatstone duplex and a key duplex can be worked on each loop. Again, it has been proved that between London and Glasgow, by the use of a repeater at Preston or Warrington, a speed of two hundred words per minute can be obtained on these wires with Wheatstone apparatus, so that it will be observed that a great step has been made by the substitution of a moderately economical system of underground work susceptible of working at high rates of speed, for the old costly and slow methods which the use of gutta-percha involved where land telegraphy was concerned. The main underground line from London to Glasgow will be completed by March or April, 1906, and other important sections of main line, notably a section from London to Chatham, are in hand.

(To be Continued.)

Amazon Telegraphs.

"The Valley of the Amazon and its Telegraphic Communication" is the title of a brochure written by Mr. Francisco Bhering, of the Brazilian telegraph administration, and also the delegate of Brazil at the London Telegraph Conference, says the "Electrical Review," of London. It is stated therein that, with the view of assuring regular communication, the following lines were provided: (1) A landline along the railway from Mederia to Momare. (2) A cable across the river from Belem to Manaos. (3) Landlines along the banks of the river, and serving as auxiliary lines to the British river route. (4) Landline from Caqueta to the mouth of the river Aquiry. (5) Wireless telegraph installation at various points along the Amazon and some of its chief affluents

The first and fourth lines have completely failed. The river line of the Amazon Company has not, the brochure states, given the good results hoped for. The irregularity in working of the cable, which is frequently interrupted between Para and Manaos, considerably interferes with commerce. * * * Experience has also shown that it is not possible to keep the aerial line in good working order, by reason of floods and difficulties of maintenance.

The auxiliary routes constructed by the Amazon Company also did not prove successful. It has been decided to try the American system of wireless telegraphy, and the author thinks this cannot be taken, excepting as auxiliary to the existing systems. At the same time, Mr. Bhering states that he does not think it possible that communication can be maintained by cables, owing to the incessant changes in the depths of the river.

Sons of United States Military Telegrahers.

In our issue of December 1 we printed an article over the signature of David Homer Bates, in which he advocated the organization of a society to be known as the "Sons of United States Military Telegraphers," the object being to perpetuate the memories and traditions of the United States Military Telegraph Corps. Since the publication of Mr. Bates's letter we have received a number of communications giving valuable information bearing on this subject. The letter from Col. Wm. B. Wilson, of Philadelphia, president of the Society of the United States Military Telegraph Corps, is interesting and important, and is as follows:

In regard to "Sons of United States Military Telegraphers." I am in entire sympathy with Mr. Bates's suggestion that such an organization be effected to perpetuate the memories and traditions of "The Society of the United States Military Telegraph Corps" and all that it means in the history of the Civil War. But this plan of promotion seems to me to be too roundabout to carry the suggestion to a reality at an early day. The executive committee of the society, of which the president is ex officio chairman, is scattered and could not be brought together to consider the question. The organizing should be left to the "Sons" who must take the initiative. There are "Sons" sufficient in New York City to perfect an organization if they so desire. They should get together at once, formulate their plan and communicate with the "Sons" throughout the country. John Brant, secretary of the Old Time Telegraphers' and Historical Association, has the addresses of all the known military telegraphers and would gladly furnish them. If there is any difficulty about getting the "Sons" in New York together I would willingly appoint a committee from among them to take the preliminary steps, as it is entirely within my province to do so. It is a great thing to organize the "Sons," and being so the sooner organization is effected the better.

The names which have thus far been presented as being eligible for membership in such an organization, are as follows: Charles P. Bruch and E. B. Bruch, of New York, sons of Samuel Bruch; David H. Bates, Jr., son of David Homer Bates, New York; Albert E. and Willis Chandler, sons of Col. A. B. Chandler, New York; Thomas T., Jr., and James C. Eckert, sons of Gen. T. T. Eckert, New York; Thomas Brenneman, of West Virginia, son of A. T. Brenneman; Mr. D. L. Ludwig, son of D. J. Ludwig, Brooklyn, N. Y.; Mr. Nichols, son of J. H. Nichols, Denver Col.; Mr. O'Brien, son of Richard O'Brien, and Mr. O'Brien, son of Dr. J. E. O'Brien, all of Scranton, Pa.; Mr. Rosewater and Edward Rosewater, Jr., sons of Edward Rosewater, of Omaha, Neb.; A. L. Tinker, of Berlin, Germany, son of Chas. A. Tinker, New York; Thomas Wallace Wilson, of Philadelphia, Donald Wilson, of Brooklyn, N. Y., and Francis S. Wilson, of Eldorado Springs, Mo., sons of Col. Wm. B. Wilson, Philadelphia; Mr. Somers, son of L. A. Somers, Cleveland; Frank J. Dealy and Harry J. Dealy, sons of W. J. Dealy, New York; Mr. Nohe, son of A. H. Nohe, Chicago; H. E. Pettit, son of J. E. Pettit, Chicago; Mr. Plum, son of W. R. Plum, Lombard, Ill.; Mr. Ludwig, son of J. F. Ludwig Cedar Glade, Ariz.; S. B. McMichael, son of I. McMichael, Toronto, Ont.; Mr. Knittle, son of Joseph Knittle, New York; Mr. Logue, son of W. S. Logue, New York.

New Western Union Chief Operator at Memphis.

James B. Dillon who has been appointed chief operator of the Western Union Telegraph Company, at Memphis, Tenn., as announced in our issue of December 1, was born at Louisville, Ky., February 1, 1871. He was fourteen years old when he entered the telegraph service as a Western Union messenger. Naturally of a thoughtful and studious nature, young Dillon began the study of telegraphy almost at once. In this he was aided by means of an experimental line he and a young fellow erected between their homes, half a mile apart, which worked well and over which they transmitted messages. The name of his friend was Oscar W. Krider, now a telegrapher and who has succeeded Mr. Dillon as traffic chief in the Louisville office. Young Dillon's first

JAMES B. DILLON.
Who has been appointed Chief Operator, Western Union Telegraph Company, at Memphis.

appointment as an operator was on the Kentucky and Indiana Bridge Company, a short line of railroad. Subsequently he became an operator for the Western Union at Paducah, Ky., afterwards going to Memphis, Tenn. At the latter point he remained until 1888, acquiring during that time a fine reputation as an operator. His next move was to Atlanta, where he received press reports for the "Constitution" of that city. In the spring of 1889 he returned to Louisville, where after several years he was appointed traffic chief, the position from which he has just retired to accept the appointment at Memphis.

Mr. Dillon is a close student, is of an inventive turn of mind and diagrams of a number of his devices as well as articles treating on various subjects have appeared in TELEGRAPH AGE from time to time. The chain and charm which appears in the picture of Mr. Dillon are those which were presented to him by his associates in the Louisville office at the time of his departure.

The Train Despatcher.

Mr. H. A. Dalby, a well-known Western train despatcher, has this to say in an article appearing in the "Iron Trail," respecting his craft:

"Who is he? What is he? Where is he? What does he do? Comparatively few people can answer these questions. Only a small number of those who can answer them have an accurate knowledge of his work. Even in railroad service there are many who know but little of the real questions that confront him, the difficulties with which he comes in contact, or the mental training necessary to the making of a good despatcher.

"The requirements of successful train despatching may be separated into two grand divisions; the man and his surroundings. Given a first class man with proper equipment, and good despatching is practically assured.

"Let us consider first the man. He should be old enough to be mature in his views and impressed with the importance of the position he holds. In the opinion of the writer his usefulness is not exhausted at the age of thirty-five nor at forty-five, unless he has been worn out by excessively nerve-trying conditions; and these, when imposed, are detrimental not only to the man, but, in far greater degree, to the service. Amid encouraging, and not discouraging, conditions we see no reason why a despatcher should not be a better and more useful man at fifty-five than at thirty-five. At thirty-five he has no more than acquired a fair experience in all the situations which may be expected to come, and which do come in endless variety in the line of daily duty. If he lived to be one hundred and five he would not be beyond learning something new. Such is the value of experience.

"The personal equipment of a successful despatcher comprises a varied knowledge and peculiar mental ability. He should know the road thoroughly and should have opportunity to keep in touch with it without loss of sleep, or pay, and without the necessity of extra work to make up for loss of time from the office occasioned thereby. To ride over the road should be considered a part of his duty. His judgment should be the best, that he may make such moves as will result in the greatest good to the greatest number of trains. His foresight should be as far-reaching as human nature will permit, so that he may anticipate future situations and make provision for them. His power of concentration should be cultivated so that he can keep his mind strictly on the business in hand and allow no outside influence to draw his attention to other things. He should have sufficient confidence in himself and his own ability, so that he will not be disturbed by criticism, and that he will not depreciate his own value when others find fault with his work. Criticism is to be expected, and should be accepted as a matter of course. Neither should he be so egotistical that he cannot entertain a suggestion from others. The train despatcher's office is no place for one who is too sensitive or too self-opinionated. It is seldom that either trait leads to the higher success. Much depends on the man; but quite as much on his surroundings."

Mr. DeForest on the Wireless System.

Lee W. DeForest, inventor of the DeForest wireless telegraph system, says the "wireless transmission of power" is not a wild dream, but a scientific possibility. "The history of wireless electricity is but a repetition of the wire system," says DeForest. "First crude signals, then intelligence conveyed over the wires, next speech and lastly power. Years ago when the first crude telegraph signals were sent over the wires it was thought that a separate wire would be needed for every character of the alphabet. I am now experimenting in my laboratory at Jersey City with wireless telephony. My work is already attaining some form. As soon as the wireless telegraphy is a little more improved I expect to bring out a system of telephoning without wires which will come into general use. After that the transmission of power through the air without wires will come. It will follow just as surely as it did in wire electricity. I am working in that general direction now. I can in a sort of way see the end of the development."

His Code Was Faulty.

The telegraph operators were wisely spending their day off in a brisk walk through the faded autumnal country.

"You know our habit of abbreviating, our habit of substituting short words for long ones?" said the Washington operator. "Well, this habit once did me harm.

"Senator Grande had made a speech about education, and in wiring the speech out I substituted the short word 'kids,' which is not exactly according to the recognized code, for the long word 'children,' thinking that of course the operator at the other end would have sense enough, in taking down the message, to re-substitute the long word for the short one.

"But he didn't, and Senator Grande's really eloquent and stately speech appeared in the next day's newspapers in this fashion:

"'My friends, you will remember Wordsworth's profound saying: "The kid is father to the man." I need not dwell on the vital importance to the community of imparting a sound moral and secular education to kids in their impressionable years. The kids of this generation will be the fathers and mothers of the next. One said "Suffer little kids to come unto me," and we should never forget that saying in behalf of all kids the world over.'"

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.

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.]

PHILADELPHIA, WESTERN UNION.

Miss Risley, who came to us recently from Virginia, was quietly married several weeks ago to Mr. Claude Figgs, of this office. Notwithstanding the quietness, it soon leaked out, and congratulations and good wishes followed. Mr. and Mrs. Figgs will continue to be co-laborers with us.

Another surprise wedding which took place about a month ago was that of Miss Anna Gibbs to Mr. Harry Haynes, both well known here, but now located at Trenton, N. J.

Richard Murphy, who rose from the ranks of check boy to be a good operator, has resigned to accept a broker position.

Messrs. Hughes, Cartin, Stanley and Lewis were sent out to different branches to assist during the Christmas rush.

Messrs. Simons and Abdill, who were both on the sick list, have returned to duty.

Mrs. Curl has been made manager of the new branch office at 12th and Filbert streets, vice Miss O'Donnell, resigned to go with the Postal company at Bellevue-Stratford Hotel.

NEW YORK.

WESTERN UNION TELEGRAPH COMPANY

EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer of the company, has recently completed a tour of inspection, which included visits to the offices at Albany, Buffalo, Cleveland, Columbus, Indianapolis, Cincinnati and Pittsburg, traveling in the private car of the company. Joining him and remaining during the time occupied in passing over their respective jurisdictions, at the outset were Belvidere Brooks, general superintendent of the Eastern division; E. M. Mulford, superintendent of the first district; C. H. Bristol, general superintendent, and G. F. Swortfiger, superintendent of construction, all of New York; C. Corbett, superintendent at Cleveland; T. P. Cook, general superintendent at Chicago; J. F. Wallick, superintendent, and C. S. Rhoads, superintendent of telegraph of the Big Four, at Indianapolis; I. N. Miller, superintendent at Cincinnati; E. B. Saylor, superintendent, and G. A. Cellar, superin-

tendent of the Pennsylvania lines west of Pittsburg, at Pittsburg, Pa., and Charles Selden, superintendent of telegraphs of the Baltimore & Ohio Railroad.

The new main office at Baltimore, Md., which is now being rapidly pushed to completion, will be ready for occupancy on March 1. This will be another one of the up-to-date modern offices.

Mr. Charles F. Swortfiger, of the office of the superintendent of construction, spent holiday week with relations in Chicago.

IN THE OPERATING DEPARTMENT.

Among the recent visitors to this department were: Superintendent F. E. Clary, of Hartford, Conn., and N. E. Smith, superintendent of telegraph of the New York, New Haven & Hartford Railroad, New Haven, Conn.

Mr. W. A. Van Orden, general wire chief, has resumed duty after a brief illness.

Mr. Charles A. Kilfoyle, secretary of the New York Telegraphers' Aid Society, also a member of the operating force, states that over four hundred dollars will be realized from the recent entertainment held for the benefit of the relief fund of the aid society.

Mr. A. Winder, one of the best known operators in this department, and formerly for many years chief operator in the Indianapolis, Ind., office, has become an efficient sender on the Vibroplex, by means of which his old time ability as an operator has been restored. Mr. Winder is seventy-one years of age, and suffered much from writer's cramp until this device gave him the needed relief. He also uses the typewriter, which makes him a first-class receiver. He bids fair to enjoy many more years of usefulness.

OTHER NEW YORK ITEMS.

Assessment No. 443 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Henry C. Bolles at New Bedford, Mass.; George E. Rainsford at Mount Savage, Md.; Jonathan James at Milwaukee, Wis., and Albert Beman at Independence, Ia.

The election for the officers and directors of the Serial Building Loan and Savings Institution will occur January 16. The nominations are as follows: President, David B. Mitchell; vice-president, James R. Beard; treasurer, Edward S. Butterfield; secretary, Edwin F. Howell; attorneys, John B. Sabine, Augustus A. Rich; directors, J. B. Taltavall, M. J. O'Leary, G. H. Schnitgen, H. C. F. Howell, John Brant, F. C. Leubuscher, M. W. Ravens, H. F. Hawkins, W. H. Jackson, G. W. Blanchard, M. S. Cohen, C. F. Leonard, T. A. Brooks, W. J. Quinn and J. P. Clolery.

Nominations for the Electric Building Loan and Savings Association presents the same ticket for the executive officers as those named for the Serial. The directors are: J. B. Taltavall, M. J. O'Leary, John Doran, G. H. Schnitgen, H. C. F. Howell, John Brant, W. J. McNickle, F. C. Leubuscher, Henry Zweifel, M. W. Ravens, H. F. Hawkins, W. H. Jackson, G. W. Blanchard, M. S. Cohen and P. O. Purcell.

The auditors are: M. M. Davis, W. H. Davis and James P. Cullen.

THE NEW YORK TELEGRAPHERS' AID SOCIETY.

Statement for quarter ending December 6:

Balance on hand September 6, 1905		$18,147.67
Receipts		1,585.00
Total		$19,732.67
Disbursements.		
Sick benefits	$1,091.36	
Deaths	200.00	
Expenses	195.20	1,486.56
Balance on hand, December 6, 1905		18,246.11
Total		$19,732.67
Gain in quarter		98.44
Relief Fund.		
Balance on hand September 6, 1905		$4,243.74
Receipts		361.35
Total		$4,605.09
Disbursements, relief		224.70
Balance on hand December 6, 1905		4,380.39
Total		$4,605.09
Total amount of deposit		$22,582.40
Cash on hand		44.10

J. H. Driscoll, F. D. Murphy, W. T. Rogers, auditors.

POSTAL TELEGRAPH CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Minor M. Davis, traffic manager, has returned to his office from an extended Southern business trip.

Mr. John F. Skirrow, associate electrical engineer, is reported to be improving. He has made several visits to the office recently.

IN THE OPERATING DEPARTMENT.

The check boys and girls were remembered by the force on Christmas and all went home happy.

B. A. Scanlon has returned from a three months' trip spent at his home in Newfoundland.

Among the arrivals are: H. N. Wiley, W. I. Schultz, W. F. Gainfort, W. S. Frankenfield, J. O. Curtis, J. E. Reeve, G. M. Strache, S. E. Rottman, J. J. Montall, Miss J. Menting, Miss A. Hartley, W. Winthrop and W. Yoell.

Mr. C. A. Adams of the eastern division is at his desk again after an absence of six weeks due to sickness.

H. C. Robinson has been sick for the past four weeks with appendicitis.

G. Dettviller is now located with Logan and Byron, brokers.

R. Woodford has been added as a clerk in the service department.

Mr. C. W. Ortt is now on the leased wire board nights.

The Hammond Typewriter.

The Hammond typewriter has steadily fought its way to extended recognition among the telegraph operators as a machine admirably adapted for telegraphic work. The essentials of a telegrapher's typewriter are good manifolding, little noise, perfect alignment, durability and speed. In all of these important phases many an operator will bear willing and generous testimony to the Hammond's worth. It has two keyboards, one, the "Universal," for those who have used other makes of machines and do not care to learn a new style; the other, "Ideal," so-called for those who desire to acquire a higher speed in manipulating the instrument. A feature much in favor with the Hammond, which must be regarded as a measure of great convenience, and certainly as an aid to speedy work, is that from twelve to fifteen blanks may be placed in the carriage at one time. When a message is completed, and the blank is at the top of the carriage, the operator has simply to touch a lever, draw out the message, and the other blanks readily fall back into place ready for instant use. Another admirable point is that the carriage will admit of any width of paper, making it possible to insert a continuous roll for use in press messages and specials. The work being always in view, the operator never loses sight of his copy, and thus may the more quickly detect any errors in checks before withdrawing the message from the machine.

The Hammond Company, whose address, as will be seen in their advertisement on another page, is at 537-551 East Sixty-ninth street, New York, issue an eight-page leaflet entitled "Why Telegraph Operators Should Use the Hammond Typewriter," and this, together with other desirable printed matter, will be sent to any operator writing for the same. The general manager of the company states that sales have been larger than ever this year, more Hammond typewriters going distinctively to telegraph operators than in any previous season.

Novel Service of the Messenger Boy.

Nowhere in the world, say travelers, do messenger boys take the risks and do the unheard of things they do in Los Angeles, Cal.

The stranger stops and stares in amazement to see a messenger boy awheel, hands off the handle bar, and a huge tray bearing somebody's breakfast or lunch nicely balanced on his head. Sometimes there are two boys, one on the shoulders of the other and the tray atop the human pyramid.

As many tourists live in the downtown districts and often send out for their meals, the messenger boy has become an adept in carrying trays through the crowded streets.

Occasionally the tray comes to grief and somebody's breakfast or lunch mixes with the dirt of the street to the amusement of passers-by and the chagrin of the messenger. This is the exception. The rule is that tray and meal arrive safely at their destination.

Forgot What Electricity Was.

A Denver newspaper devotes a large space in an unavailing effort to answer a correspondent's question, "Does anybody know what electricity is?" As somebody has observed, that reminds us of a story.

"There is now in Prineville, Ore., a lawyer who, some years ago, was a college student back East. One day in the class-room the subject of discussion was electricity. The student had read all he could find in his text-book about electricity, and considered himself primed for the occasion. The professor opened the ball with this direct question, flashed peremptorily at this particular student:

"Mr. Blank, can you tell me what electricity is?"

Mr. Blank squirmed in his seat, hemmed and hawed for a time, and finally admitted:

"I did know, professor, but I have forgotten."

The professor gazed at the student with an expression of unspeakable sorrow. Then he said:

"Mr. Blank, you do not know what you have done. Alas! what a sad loss to science! You are the only man that ever lived who has known what electricity is—and you have forgotten."—Portland Oregonian.

Great North-Western Improvements.

(Communicated.)

The recent extensions of the lines of the Great North-Western Telegraph Company and the increase in its wire facilities to accommodate the constantly increasing business of the company, has been the subject of more or less public comment.

The Great North-Western Telegraph Company was formed in 1881, taking over at that time the lines of both the Montreal Telegraph Company and the Dominion Telegraph Company, which it still operates. Since that time an exclusive connection with the Western Union Telegraph Company has been formed and the company's lines so extended that they now reach every important city in Canada and a majority of the larger towns. Its lines even extend down into the State of New York, where a large number of offices are maintained. The company now operates 1,409 offices in addition to the city branches, and of that number 1,080 are exclusively Great North-Western offices. In four of the larger cities, the company owns its own building, in which the main office is located. In connection with the Western Union, direct wires are operated to the principal American cities, as well as to three cable stations and between the larger Canadian cities. In a dozen or more cities a modern call-box system is in use for the collection of telegrams. On account of the large number of exclusive offices and branches in all the leading hotels, the commercial traveler or American tourist will always find an office of the Great North-Western close at hand, from which communication can be had with 49,380 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, W. Union Tel. Co.
Pittsburg, Pa.—F. J. McKenna, W. 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.

Obituary.

James Sullivan, aged twenty-nine years, a telegrapher well known in western New York, died at Stockton, N. Y., December 13.

H. W. Perrin, aged fifty-six years, an old time operator, lately in the insurance business at Birmingham, Ala., died December 14.

Gentry Hagen, aged sixty years, a well-known telegraph operator at Baltimore, Md., died of acute rheumatism in that city on December 3.

Capt. W. R. Cato, who for the past thirty-five years has commanded many cable steamers including the "Great Eastern," died at London, England, on November 26.

George F. Marsh, fifty-six years of age, a native of Vermont, one of the best known citizens of Butte, Mont., and a well-known telegrapher, died at that place after a lingering illness on December 8.

George W. Griswold, aged sixty-eight years, a veteran telegrapher of Hamilton, Ohio, died of apoplexy December 17. He had been employed in the telegraph service at that point for forty-seven years.

J. D. Flynn, of Pittsburg, Pa., an old time telegrapher and a member of the United States Military Telegraph Corps, died of pneumonia on December 25, after a brief illness. Mr. Flynn had been in New York but three days previous to his death where he contracted a cold which proved fatal. Up to three years ago and for the previous ten years Mr. Flynn was superintendent of the Western Union Telegraph Company at Pittsburg, Pa. He was born at Cleveland, Ohio, December 25, 1846, and consequently died on his fifty-ninth birthday. He entered the telegraph service on the Grand Trunk Railway lines in Canada in 1859. In 1862 he identified himself with the United States Military Telegraph Corps and was located at Harpers Ferry, West Va. For many years he was in the Baltimore and Ohio service and was advanced to the position of assistant superintendent when he resigned to become superintendent of the Bankers' and Merchants' Telegraph Company at Chicago in 1884. In 1891 after acting as chief operator in a brokerage concern in New York for the previous five years, he accepted the management of the Western Union office at Pittsburg where on the death of Charles O. Rowe, two years later he succeeded to the superintendency.

Orders, if sent to Telegraph Age, Book Department, for any book required on telegraphy, wireless telegraphy, telephony, electrical subjects, or for any cable code books, will be filled on the day of receipt.

[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. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

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TELEGRAPH AGE

No. 2. NEW YORK, JANUARY 16, 1906. VOL. XXIV.

CONTENTS.

SOME POINTS ON ELECTRICITY.

Questions Answered.

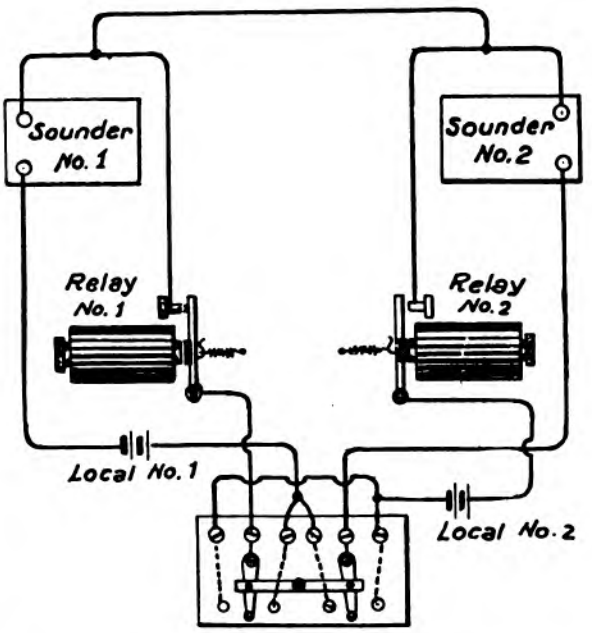
BY WILLIS H. JONES.

Some time ago a correspondent requested this journal to show how a double three-point switch could be connected with the sounders of two separate single-line relay circuits in such a manner that by merely turning the switch lever to the left the respective relays would then control opposite sounders; that is to say, exchange sounders, temporarily, from one circuit to the other, and thus avoid the necessity of changing an operator's position.

The accompanying diagram, Fig. 1, illustrates the manner in which the connections may be arranged, and how, in fact, the inquirer writes he has since been using it with satisfactory results.

It is hardly probable, however, that there should be much demand for the double-switch arrangement when one three-point switch may be used, as shown in Fig. 2, and perform practically the same service in a much simpler manner.

In the latter arrangement, however, but one sounder circuit (the one used) will be closed, as the other is left open by the shifting of the switch lever to the other disk. With the double-switch



6 Point Reversible Switch.

FIGURE 1

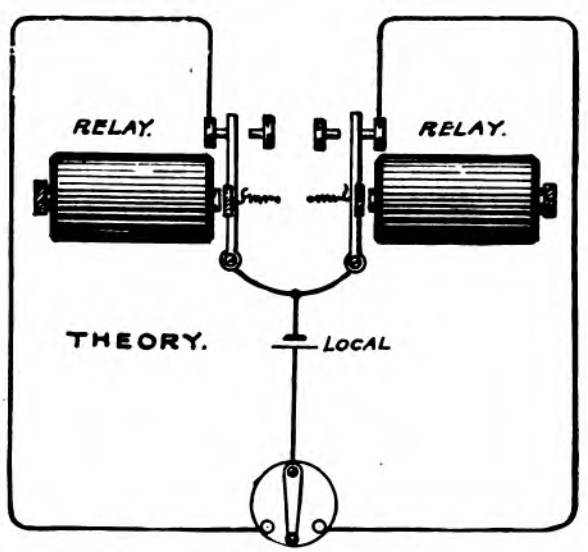


FIGURE 2.

method neither local circuit is opened by the shift.

SKIN EFFECT AND DRIP.

Another correspondent desires to learn the

meaning of the term "skin effect," as sometimes applied to the action of an electric current flowing in a conductor under certain conditions, and he also wishes to know what constitutes a "drip" in an electric circuit.

The word "skin" is used because it fittingly describes the manner in which the current due to an alternating-current dynamo is distributed throughout the metal composing the conducting wire.

It has been demonstrated that when an alternating current is caused to flow through a wire the current is not distributed evenly throughout the mass of the conductor, as is supposed to be the rule with direct currents, but flows in a much greater volume at or around the circumference than it does through and near the center. In fact, it is believed that no current at all flows through the center of the wire, especially when the frequency of current alternations is great. The density of the current is always greatest at the surface, and decreases rapidly toward the center of the conductor.

Because the current volume thus lies principally on or around the surface, it forms a so-called electric skin, hence the appropriate application of the word.

The skin effect properly relates to apparent alterations in the value of the ohmic resistance of a metal conductor due to this peculiar distribution of current.

As an alternating current is not permitted to utilize the central portion of the wire, the "skin effect" produces therein an alteration in the conductivity of the circuit equivalent to that which would result from a reduction in the gauge or carrying capacity of the conductor. For this reason the normal resistance of the conductor is apparently increased, and the effective value thereof regulated by the weight of that portion or remaining proportion of the mass actually utilized in conveying current.

Again, as the value of the "skin effect" in a conductor increases with the diameter of the wire, and the frequency of current alternations, it follows that this phenomenon is not merely an interesting curiosity, but a formidable factor, which must be considered in the selection of a proper conductor for an alternating current.

In reply to the second question we would state that a "drip" in an electric circuit is any device that will cause the water flowing along the wire to drip to the ground before reaching the point where the conductor enters a building. Usually it consists of a half loop, like the letter U, and is connected between two insulators in the "leading in" conductor between the line pole and the station office.

[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.]

Recent Telegraph Patents.

A patent, No. 808,451, for a signaling system, has been granted to Maynard W. Hamblin, of New York. Complete fire alarm system, also adapted to messenger calls employing various detail arrangements in the receiving relays and circuits.

A patent, No. 808,366, for a telegraph transmitter, has been issued to Benjamin P. Hayes and Sigel H. Gill, of Topeka, Kan. A typewriter transmitter having a drum with segments or contacts thereon which is released to move by the various keys. The purpose is to give a more uniform distribution of the transmitting impulses.

Personal Mention.

Mr. Charles A. Tinker, formerly general superintendent of the Eastern division of the Western Union Telegraph Company, New York, has gone to Pasadena, Cal., where he will spend the winter with his daughter, Mrs. Tracey Smith, now a resident of that place. The evening before his departure, Mr. Tinker, who has just reached his sixty-eighth birthday, was tendered a complimentary dinner by a neighbor. It was a delightful little affair, at which a number of telegraph men were present. After dinner speeches were made by Mr. Tinker, Col. A. B. Chandler, James Merrihew, Walter C. Humstone and others.

Obituary.

A. D. McCormick, formerly an Associated Press operator at New London, Conn., died of consumption at Norwich, Conn., December 23.

Sir Henry C. Fisher, C. M. G., a director of the Eastern Telegraph Company, London, Eng., and until 1898 controller at the Central Telegraph Office of the General Post Office, died in London on November 30. He was seventy-two years of age.

Michael M. O'Donnell, aged forty years, a Detroit operator, died in that city December 23 of pneumonia. For the past fifteen years, Mr. O'Donnell had been connected with the Western Union Telegraph Company, and for five years has been manager of a branch office.

The Submarine Cable.

Mr. Charles S. Priest has been appointed electrician of the Commercial Cable Company with headquarters at New York, vice Charles Cuttriss, deceased.

The difficulties of maintaining remote cable stations in mid-ocean are illustrated in the following special dispatch from Victoria, B. C., of December 24: "The steamer Miowera, which arrived yesterday from Australia, reports that when she arrived at Fanning Island the cable staff were without provisions and were living on cocoanuts."

The statement is published in Caracas, Venezuela, that the French Cable Company refuses to pay the municipal tax necessitated by the annulment of its contract. A delay has been granted extending time for payment to the middle of January. In the event of the closing of the cable, in order to avoid interruption of the service the national government is preparing swift steamships to carry cablegrams between Macuro and Trinidad, for transmission by the English cable.

A banquet was recently given at Cologne by the German-Dutch Telegraph Company to celebrate the opening to traffic of the company's cable between Menado, Yap, Guam and Shanghai. In addition to the directors of the company, there were also present representatives of the German and Dutch Governments and of the allied concerns, the German Atlantic Telegraph Company, and the Nordenham cable factory, which made the cable in question. State Secretary Kraetke, who delivered the first speech, gave a review of the political development of the scheme and mentioned that he frequently had occasion to report the progress made to the Kaiser, who took great interest in the work, as also did the Queen of Holland.

Resignations and Appointments.

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

Mr. H. O. Turner has been appointed manager of the office at Live Oak, Fla., vice E. C. Griffen, resigned.

Mr. H. H. Honnoll, formerly repeater chief at Memphis, Tenn., has accepted a position with the American Telephone and Telegraph Company, of that city. Mr. Honnoll was relieved by Mr. S. G. Quisenberry.

Mr. H. B. Froehle, bookkeeper for the past three years of the Dayton, O., office, has been promoted to the position of chief operator, vice E. J. Lane, retired on pension. J. R. Clark takes Mr. Froehle's position at the bookkeeper's desk.

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

Mr. John Baskerville has been appointed manager of the Scranton, Pa., office, vice G. R. Rigdon, resigned on account of ill health. Mr. Baskerville has been connected with the office for fifteen years, his entry thereto being as a messenger boy.

Mr. J. C. Smith, cashier of the Postal Telegraph-Cable Company, Detroit, Mich., has been promoted to the managership of the office relieving Mr. H. J. Kinnucan of the duties thereof. The latter will now devote his entire time to the superintendency of the district over which he presides. Mr. E. W. Monnien, who has been in the service at Detroit for a number of years, has been advanced to the position of cashier.

The Railroad.

Mr. N. D. Ballantine, formerly superintendent of telegraph of the Kansas City Southern Railroad, Kansas City, Mo., now superintendent of car service, Chicago, Rock Island and Pacific Railroad, has removed his headquarters to Chicago, Ill.

Mr. E. J. Little, superintendent of telegraph of the Great Northern Railroad Company, St. Paul, Minn., was a recent New York visitor. He came East on business connected with the service. He visited Baltimore and Washington before returning to his home.

Henry V. Miller, inventor of the Miller block signal, in which he was engaged in promoting, and who at one time was superintendent of telegraph of the Chicago and Alton Railway, died in Chicago December 27, last. He was born in Marion, Ohio, February 14, 1848.

The Railway Signal Association met at the Grand Union Hotel in New York, Tuesday, January 9. The following papers were presented: "Signaling on the East Bengal State Railway," by George K. Rogers; "The Care of Storage Battery as Used for Signaling Devices," by H. W. Lewis; "Preliminary Report of Installation and Maintenance of Storage Batteries," by I. S. Raymer; "Line Wire," by F. F. Fowle.

The directors of the New York Central and of the railroads allied with it have decided to pension their old employees, and a committee has been appointed to prepare a plan. An age limit will be established, and there will be regulations for the retirement of the superanuated, similar to those now in force on a number of other roads. The members of the committee are Vice-Presidents W. C. Brown and John Carstensen, General Superintendent Deems, of the mechanical department, and the general managers of the four principal roads in the New York Central system—Messrs. A. H. Smith, W. H. Marshall, R. H. L'Hommedieu and C. E. Schaff. Before long this committee will make its report, establishing the rules and regulations, and naming the date when pension allowances will begin. The Boston and Maine Railroad has also determined to establish a pension system.

General Mention.

Mr. Frederick Louck, an operator of the Baltimore Western Union office, was married on December 23.

The Philadelphia, Reading and Pottsville Telegraph Company, operated in connection with the Western Union Telegraph Company, has moved into a new and modernly equipped office at Pottsville, Pa.

Mr. D. J. O'Connor, who recently resigned his position as chief despatcher of the Grand Trunk Railroad, Stratford, Ont., has taken up his residence in Toronto, in connection with a fraternal assurance organization.

Mr. Paul S. Pearman has entered the service of the brokerage firm of W. G. Phillips and Company on their relay circuit out of Cisco, Tex. Mr. Phillips himself is a well-known old time telegrapher of Chicago.

Mr. T. W. McKenzie, a Canadian Pacific Railroad station agent at Kenton, Man., has secured patents in the United States and Canada on a device that will call any office he may desire, sign his own call and do it as perfectly as any operator can.

Mr. A. A. Briggs, chief operator of the Postal Telegraph-Cable Company at Cleveland, Ohio, was presented recently with a gold watch and chain by the employees of the company, the presentation being made through E. W. Collins, the superintendent.

A bill has been introduced into the New York State Legislature creating a board of control of public utilities in New York city, including street, elevated and subway railroads, ferries, electrical subways, gas, electric light or power, steam, water supply, telephone and telegraph corporations.

Aerial cables will often rust and break down in the interior when there is no manifestation of this on the exterior. Sometimes it can be detected by a certain slackness and yielding to pressure at the point infected. Corrosive water and fumes may be responsible for this hidden decay.

The Western Union Telegraph Company at Long Branch, N. J., has removed from its office in the Patten Building, corner Broadway and Third avenue, which it has occupied for the past fifteen years, to 187 Broadway. Entire new office equipment has been placed in the new quarters.

Mr. Frank B. Knight, general agent of the American Telephone and Telegraph Company, Dallas, Tex., a former telegrapher and at one time manager of the Western Union office at Omaha, Neb., has the sympathy of his friends in the death of his wife, which occurred on January 1.

The "Pacific Goldsmith," of San Francisco, of December 1, 1905, shows a print on its front cover of Mr. I. N. Miller, Jr., superintendent of the American District Telegraph Company, of that city, which operates a burglar alarm system in connection with its other features, the efficiency of which is highly commended.

T. W. Midkiff, an operator at Hoxie, Ark., was deliberately shot and killed December 28 last, by a man because a reply to a telegram sent by the latter was not received as quickly as he wished. He was told that he might expect a reply about four o'clock in the afternoon, yet returned to the office before two and demanded an answer. On being informed that it had not been received, he drew his revolver and shot Midkiff through the head.

The Western Union Telegraph Company at Ashland, Ore., will, when the premises are finished, remove from its present quarters in the Sherwin-Van Sant building, to a new office, 20x 88 feet in size, on the first floor of a new building now under construction adjoining the Bank of Ashland. This change will afford needed room for the growing business of this office. The equipment in every particular will be strictly up-to-date.

The reunion of the Old Time Telegraphers in New York in August last, in many ways the most notable gathering of the Association ever held, witnessed the coming together of many former friends, whose separation in some instances had been that of years. One such meeting was that which occurred between W. G. Brownson, of Toledo, O., and Henry A. Reed, of New York, both forty-niners of the telegraph. They had not seen each other in fifty-three years and the greeting between the two men, who happened to be located at the same banquet table and who have now passed the allotted three score years and ten, was most cordial. Both have long since abandoned telegraphy and achieved success in other vocations, Mr. Reed as the managing head of the Bishop Gutta Percha Company, of New York, and Mr. Brownson as the medical electrician of the Electro-Chemical Ring Company, of Toledo.

Wireless Telegraphy.

Wireless telegraph messages from Guantanamo, Cuba, have been received at the Charlestown Navy Yard, Boston, a distance of 1,700 miles.

A patent, No. 808,641-642, for wireless telegraphy and telegraphic keyboard apparatus, has been obtained by Patrick B. Delany, of South Orange, N. J.

General A. W. Greeley, chief signal officer of the United States army, announces that the Signal Corps of the army has perfected the invention of wireless telegraph receivers which will enable the army to intercept and read the messages of every system of wireless telegraphy in use.

After an exhaustive examination and nearly three years' experience with the wireless telegraph apparatus installed by the Telefunken Company in 1902, at Rosalia and Guaymas, Mexico, the Mexican

government has awarded this company another contract. The Rosalia and Guaymas plants have enabled the government to maintain an uninterrupted communication across the Gulf of California. The points to be connected under the new award are Mazatlan, Sinaloa and San Jose del Cabo, the distance being about 325 kilometres.

The collection of meteorological observations from vessels at sea by means of wireless telegraphy and the simultaneous issuance of weather forecasts and storm warnings to these vessels, based upon the observations thus collected, is the latest work on which the United States Weather Bureau has entered. A special code has been prepared by means of which exact information as to date and hour, latitude and longitude of the vessel, the atmospheric pressure and temperature, the force and direction of the wind, and the character of the sky is all compressed into four words. The system may enable the telegraphing to transatlantic liners of information as to the limit of fog and ice on the Grand Banks, so that, by slightly altering their course, they may steer clear of these dangers.

The information of a syndicate to supply the English provincial newspapers with news from London by wireless telegraphy is being considered, says a special cablegram to a New York newspaper. H. Cuthbert Hall, managing director of the Marconi Company, told a reporter that his company had been approached by a number of newspapers in the North of England, who suggested the formation of an agency for the transmission of news to them by wireless. On the possibilities of wireless proving effective for inland work Mr. Hall said: "We could erect a high-power station, from which we could send messages to any part of England, and they would be received simultaneously in the different towns. We could distribute news at the same special speed as the post office and with no higher percentage of errors, and by the medium of an agency the smaller towns could be supplied with news from London at a cost within their means. Before wireless could be used for this purpose of transmitting news the postoffice authorities, which control the telegraph in England, would have to grant permission."

The Chicago Record-Herald has assigned Mr. Walter Wellman, the journalist, to reach the North Pole in a Santos-Dumont airship, the start to be made in April. From an easily reached base of operations in Northern Spitzbergen he will have but 550 geographical miles to go to the pole, and a like distance for the return voyage. The whole 1,200 miles means but 100 hours of motoring at 12 miles an hour. Santos-Dumont has repeatedly made from 19 to 23 miles an hour with small airships equipped with relatively small motors. The airship will be the largest practicable one ever built. It will be 196 feet long and its greatest diameter will be forty-nine feet. Seven housand pounds will be the weight of the ship and its equipment complete, leaving 8,000 pounds for cargo. The ship will be provided with three motors, with a combined energy of seventy horsepower. Wireless telegraphy stations will be established at Spitzbergen and Hammerfest, Norway, 600 miles distant. Further than this a wireless equipment will be carried in the airship, and it will be the effort to send frequent, if possible, daily dispatches to the outside world throughout all the time the expedition is in the arctic regions, even from the pole itself, if the courageous aeronauts have the good fortune to reach it.

Reminiscences of the Early Days of the Telegraph in England.

F. W. Dore, a former English telegrapher, contributes to the Transmitter of Sydney, New South Wales, an interesting reminiscence of the telegraph of the old days in England. He says: "Shortly after leaving school, in the year 1845, I attended a lecture at the Polytechnic Institute, Bristol, England, the subject being the electric telegraph, which at that period was in its infancy; in fact, the general public scarcely knew of its existence. In the following year, 1846, Messrs. Cooke and Wheatstone patented their invention, and a company was incorporated to exploit it. Several gentlemen were added to the directorship, with Mr. J. L. Ricardo as chairman, and Mr. Wishaw as secretary.

"Telegraph lines were being erected to some of the large towns, such as Birmingham, Manchester, Liverpool, etc. The first city placed in telegraphic communication was Southampton, ninety miles from London, and for some months this was the only place thus reached from the metropolis. The telegraph was completed to the temporary office in the Strand, near Waterloo Bridge, so that the line might be near it. There were about fifty students hard at work learning the Cooke and Wheatstone systems, myself being among the number. We had several double and single needle instruments connected on short circuit, and in the year 1847 the new office was opened in Founders Court, Lothbury, City, London. It was a very large and handsome building, with open ceiling, side counters and galleries. The counters were for taking in telegrams, which were sent for transmission up to the galleries. The opening of the building was a great event, but the public were not sufficiently enlarged or telegraphically educated in their ideas as to telegraph communication, and various curtailments had to be made. The number of instruments was considerably reduced until such time as a more substantial hold had been made on the people. The instruments were of a very showy kind and much too expensive. They were simply a double galvanometer type, with the alphabet added on; the single-needle were the same, excepting the alphabet, with elaborately carved mahogany cases.

"In the meantime, Professor Alexander Bain introduced his stupendous electrical printing telegraph, which was to astonish all Europe by transmitting a thousand words per minute.

There is no doubt of its being one of the greatest wonders in telegraphy that was ever known, but the system was never carried out, simply because of its expense. I will describe it as near as possible in detail. First, there was a large open square box, about the size of a small dining table; a large amalgamated brass cylinder on a small axis was placed right across the box. Chemicals were provided in the shape of liquid ammonia, prussiate of potash and nitric acid. These were all mixed together, and prepared paper of the same size as the cylinder was dipped in a bath containing a solution of the above and then placed around the cylinder, which was made to revolve by a wheel like a steam engine, always taking care to keep the solution quite damp. The main line wire was connected by a steel pliable needle with a brass suspender, and as the machine revolved the matter was transmitted from the sending station on to the cylinder. All the printing had to be translated as it was read off, so that it required three hands to receive the matter at the rate of one thousand words per minute. At the sending station all the letters had to be punched out to their proper size, ordinary narrow cartridge paper being used; the paper reel was then fixed to its proper position and a steel pliable needle passed over the portion cut out, and as it passed over the rollers on to the metal ones underneath, the circuit was complete, and it found its way to the terminal station through the cylinder. The company gave Professor Bain a fair trial, but as the expense was enormous they gave up the idea of using his very clever invention, so that those operators who had been employed were disbanded, and, like Othello, their occupation was gone.

"Professor Bain was awarded £1,000 by the Royal Society of England for his discovery of the earth wire.

"I was more fortunate in being kept on, as I had already learned the needle telegraph. I was, therefore, sent for by the secretary and ordered to Liverpool, where I remained until the agitated state of Ireland caused me to be transferred, through no fault of my own. The telegraph company received a parcel of press matter by the Dublin steamer almost daily; the contents were transmitted to the London press agent. However, one morning one of the packets contained a hoax informing the Government that the whole of the south of Ireland was in open rebellion. The Cabinet was summoned, with Lord John Russell as Premier. On discovery of the hoax the staff at Liverpool was removed. I was sent to Normanton, an important junction in Yorkshire, where I remained three years. Many things happened during the time I was stationed there. On one occasion the London Times sent down a special reporter to furnish a report of the speeches of Richard Cobden, John Bright, etc., at the Corn Exchange, Wakefield, three miles distant. Four columns of news were transmitted in about five hours, a great feat in those days, and when it appeared in close print was set down as a triumph of telegraphy.

The charges for transmitting a telegram in the year 1848, in England, were not considered high, the telegraph being new to the public. From London to Liverpool was twelve shilligs for twenty words; Edinburgh and Glasgow, sixteen shillings; Manchester, ten shillings; and between Manchester and Liverpool, a distance of thirty miles, two shillings sixpence. But ultimately, upon the Electric Telegraph Company receiving opposition from the Magnetic and British Telegraph Company, the rates were reduced to a maximum of five shillings for twenty words for any distance. Comparing these rates with those of the present time, it will be seen what strides have been made in the advancement and progress of telegraphy."

Philadelphia Electrical Aid Society.

The annual meeting of the Electrical Aid Society, held January 8, in the Odd Fellows' Temple, was, as usual, largely attended. Harmony and good fellowship prevailed during the entire evening, especially so during the banquet which followed the business session. Expressions of regret came from all sides when it became generally known that Mr. Frank E. Maize, who has been president of the society for several years, declined because of lack of time to take the office again. Resolutions of regret were passed; also a vote of thanks to the retiring president for the good work performed by him during his term of office. Mr. Andrew S. Weir was unanimously elected president, to succeed Mr. Maize. Other officers elected were: J. W. Fitzpatrick, vice-president; W. E. Vanarsdale, recording secretary; R. C. Murray, Jr., financial secretary; H. W. Hetzel, treasurer. Executive committee: F. E. Maize, J. H. Wilson and M. A. Derr; trustees: C. A. Stimpson, J. H. Kelly and H. Bernstein; auditing committee: C. Christine, H. Wobensmith and L. Mintzer. Membership was increased during 1905 by 113, making the total number 586. There were four deaths during the year. Sick and death benefits paid during 1905 amounted to $2,106, leaving a surplus on hand of $4,293.11. Mr. C. B. Wood was elected an honorary member of the society.

Dangers in Loading and Unloading of Poles.

BY ROBERT ELLIS.

Among all the occupations fraught with danger, in which men hazard their lives, and of which we rarely hear recounted in detailed description, is the calling of the linemen, whether it be in the telegraph, the telephone, or the electric light service. It is a hard life from every point of view, and no occupation other than that of the lumberman can be compared with it for its arduous character. It is a life closely allied with that of the lumber jacks, of which they are accessories, shown in the initiative step taken when these stalwart sons of the forest lay low the mighty trees. The timber, after being cut and permitted to season, is hauled to the streams, down which it floats to the distant mills, where it is stripped of its bark. It is then ready for transportation by rail to points where railroad or line construction is projected. The poles are then set, their tops wedged and gained, uniformly armed, braces put on, and then, with the addition of steel pins and green petticoat glass, you have the complete transformation of the once green decked monarchs of the woods.

Almost simultaneously with the completion of the rail roadbed, the telegraph company prepare the way for construction. A sufficient number of flat cars or gondolas are at once requested from the railroad company along whose road it is proposed to erect a telegraph line. The cars are placed alongside the poles, which lay parallel to the tracks ready for distribution. The first thing to do is to select two of the lightest and straightest poles for skids, but these must be of such stoutness as to withstand the heavy weight which will roll over them; the tops of the skids are placed on the top of the side frames of the gondolas, within five feet from both ends, and then fastened with wire, if possible. On the flat car, the ends of the skids are placed on the edge of the flooring of the car, and fastened at each end to the sockets with wire; the butts of the skids invariably being against the foremost tier of poles, affording a brace. Two of the most skillful linemen are selected to remain on the car in order to cant or pry the poles into position, when rolled onto the car, the rest of the men with their cant hooks and steel bars begin prying the interlocking poles. As soon as one is released, the cant hooks are applied deftly, and soon the pole is rolled aboard. If the poles are unusually heavy, a rope of seven-eighths inch thickness is used, one end of which is fastened to the suspension rod on the other side of the car, and a rolling hitch made on the middle of the pole to be loaded; the other end is passed up to the men stationed on the car, whereby they commence hauling the pole up the skids. The accumulated slack is taken in by another man, and held securely, as inch by inch the pole creeps up the skids, while half a dozen men selected for their skill in handling the cant hook are assigned to utilize the hooks to accelerate its movement.

In addition to rolling the pole up the steep incline, the cant hook men continually resort to the use of the hooks to straighten the pole, as the rope often slips from its center position, thereby shifting its position on the skids. The rope in question aids materially in the speedy handling of the poles and minimizes the danger which constantly threatens the canthook men in this undertaking, whereas, if one man's canthook cuts out, while the pole is just about to be deposited, at the same time that the others are taking a fresh hold, the pole would come tearing down upon them from the top of the skids, which in some cases are placed at about an angle of forty-five degrees, and would crush those who are so unfortunate as to be in its path. Of course this only applies to poles handled without the use of rope.

In loading flat cars, it is first necessary to cut sufficient hardwood stakes; these are to be made wedge-shaped and driven firmly into the sockets of the cars which they are loading, on the opposite side of the car. As soon as a sufficient complement or a minimum carload has been thrown in, they are enclosed with the same number of stakes as on the other side, and then strapped securely with wire, this being done to obviate any danger of their getting away while the cars are in motion. The same procedure is undergone with the gondolas, only that an increasd number of poles can be tiered in these cars.

After the cars have been loaded and strapped, they are ready for distribution, the railroad company assigning an engine to haul the cars away.

At the point of distribution, the minimum speed allowed is six miles an hour, as the giving and taking of slack of train is liable to throw the men between the cars, if they are not already protected by crude nets.

When the first pole is to be thrown off, at a given signal from one of the men detailed on the engine, who counts the revolutions of the engine driver, which determines the location for the pole, the men cut a couple of the foremost stakes to the level of the first tier, and the top of the pole is then carried over the front end of the car, allowing the top of the pole to approach close to the ground; the butt is then thrown over, clear of the back end of the car. This method of distributing poles is much safer, where the liability of damage to material is concerned, than by throwing them off with both butt and top striking the ground simultaneously, as a good many poles break that way.

As soon as one tier of poles are unloaded, the stakes are cut further, and so on until the last tier is picked up and thrown off.

In the gondola, the last tiers are picked up bodily and pried over, the men picking up the top and carrying and extending it over the side

of the front end of the car, while one or two of the men follow up with steel bars resting on top of the frame, and immediately under the middle part of the pole; the pole being then evenly balanced, the butt is pried over and to the ground. If the poles are extremely heavy, the rope is recommended as in loading, as the risk is always diminished when the rope is resorted to, but if the rope is not used, and any of the stakes give way, while they are in the act of hurling a pole over, then there is trouble ahead for the linemen, for the poles would then be released, and roll indiscriminately off the cars, engulfing any of the men who were unfortunate enough as to go with them.

The Magnetic Club of Philadelphia.

The annual meeting of the Magnetic Club of Philadelphia was held in that city on Saturday evening, January 6. The reports of the secretary and treasurer exhibited a satisfactory condition of the club. It was decided to hold only two banquets annually, one in February and the other in October. The next dinner will take place on Saturday, February 24.

The following officers were unanimously elected: President, John C. Sager; first vice-president, F. W. Griffin; second vice-president, F. H. Lincoln; third vice-president, J. W. Reed; fourth vice-president, J. D. Israel; secretary, C. B. Wood; treasurer, H. W. Hetzel.

Governing Committee, for a term of two years: W. S. Burleigh, E. C. Boileau, W. C. L. Eglin, J. W. Kelly, C. Curtis Ingalls, A. H. Manwaring, A. G. Wallace. A. S. Weir was elected chairman of the governing committee.

The Forgotten Brown.

"There was William J. Brown, who put through the House the appropriation of $30,000 to build the first telegraph line between Washington and Baltimore. He did the world an immense service, yet at the next election he received hardly enough votes to count. The opposition put up a man who ridiculed the idea of sending messages by lightning, and he beat Brown by thousands of votes."

Speaker Cannon related this incident in his holiday statement as evidence of the power of the people to wipe a man off the political map when they felt so inclined; to settle him so that he will soon be forgotten. Mr. Cannon's illustration was a good one, even though it showed that the people sometimes use that power without the best judgment, and relegate to obscurity a man they should delight to honor.

It can be taken for granted that the Speaker has not erred about the record of the forgotten Brown, though the histories and the encyclopedias fail to mention him as an important factor in securing from Congress an appropriation of $30,000 "to test the practicability of establishing a system of electro-magnetic telegraph in the United States." That honor has always been accorded to Hon. John P. Kennedy, a distinguished citizen of the Baltimore of sixty years ago, who was then chairman of the House committee to which the bill had been referred. Brown, for aught the records show, may have been the father of the bill in the House at the session of 1842, but years before Morse had humbly petitioned Congress to aid him, but the incredulous lawmakers of those days ridiculed his invention as a chimera, and refused to listen to his arguments. If Brown, in a later Congress, offered the bill, had it referred to the Kennedy committee, and aided in securing a favorable report and final passage, then let him be forgotten no longer, but put his name well up in the long list of those whom Americans delight to honor.

Baltimore has a right to make a plea for the forgotten Brown, for to this city came the first telegraph message sent over any considerable distance, though tests had been made a few months before for short distances outside of Washington. It was on Friday, May 24, 1844, that the line between Washington and Baltimore was completed and magnetic and recording instruments were attached to the ends of the wires in the Supreme Court Chamber at the capital, and in the depot of the Baltimore and Ohio Railroad, then on Pratt street, near Light, in Baltimore. Everything being ready, Morse, in Washington, sent a messenger to Miss Annie Ellsworth, the daughter of the Commissioner of Patents, to inform her that the telegraph awaited her message. He had promised her this honor as a reward for having given him the earliest intelligence of the passage of the appropriation bill. In response to his announcement she sent for transmission that famous and reverent message, the first formal dispatch ever sent by telegraph: "What hath God wrought!"

Grand Trunk Pacific Telegraphs.

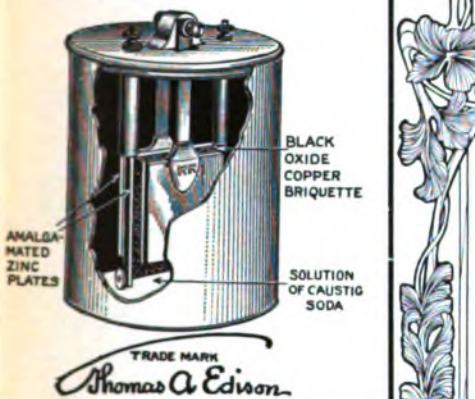
Application will be made to the next session of the Canadian Parliament for the incorporation of the Grand Trunk Pacific Telegraph Company, with power to carry on a telegraph or telephone business anywhere in Canada. The company asks the right to use the wireless system if it sees fit to do so; also to connect with or enter into arrangements with other companies in Canada. The telegraphs upon the Grand Trunk Railway, the parent company, are now operated by the Great North Western in Canada in connection with the Western Union Telegraph Company in the United States. Mr. A. B. Smith, of the Great North Western service, was recently appointed to take charge of the Grand Trunk Pacific telegraphs.

Chapter II

ON AMPERES and SIGNALS

The amount of electric current that may be drawn from a primary battery, operating signals or telegraphic instruments, depends, first, upon the weight of the zinc electrode (each ampere hour consumes just 1.2283 grammes), and, second, upon the amount of local action; that is, consumption of zinc without any current in the external circuit. In some types of batteries local action is considerable and it will be large in any battery where the zinc electrodes are not thoroughly amalgamated with mercury. The usual method of amalgamating is by rubbing mercury or salts of mercury upon the outside of the zinc. The result of this is that only the outside is affected and, if the zinc is entirely consumed in the battery without reamalgamation, during the latter part of its life it is attacked by local action.

Now, although mercury boils at 680°F., and is easily affected by sulphur fumes, we have discovered in the manufacture of EDISON batteries a method by which we can incorporate 2% of mercury in the zinc electrodes as they are cast. This insures that the mercury is



there all during the life of the battery just where it is wanted, and that the method is effective is shown by the following test made by Dr. A. E. Kennelly upon four 300-ampere-hour EDISON cells taken at random from stock:

Weight of zinc before test.....	10,017 grammes
" " " after "	8,567 "
Zinc consumed	1,450 "
Zinc consumption calculated from ampere hours.....	1,444 grammes
Lost by local action.....	6 "

The voltage was practically uniform, while the internal resistance decreased steadily during the test.

In the selection of batteries for the operation of signals, you are practically limited to the copper oxide cell, of which the EDISON is the most improved type. It is a question of economics; let us quote you figures.

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REMITTANCES to Telegraph Age should be made invariably by draft on New York, postal or express order, and never by cash loosely enclosed in an envelope. By the latter method money is liable to be lost, and if so remitted is at the risk of the sender.

NEW YORK, JANUARY 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.

It has been proposed that a new department of the government at Washington be established, to be called the "Highway" department. It is designed to give the new department the supervision of all steam and electric railways, telegraph and telephone lines, waterways, pipe lines and express companies doing an interstate business.

In Response to Our Friends.

TELEGRAPH AGE was the recipient during the holidays of many congratulatory letters and messages expressive of good will from its friends in all parts of the world. Representatives of the telegraphs of numerous foreign governments who receive TELEGRAPH AGE regularly, kindly sent their compliments and well wishes. Notably among such assurances were those received from Kashiro Kawasumi, of Tokio, Japan; Gati Béla, Buda-Pesth, Austria-Hungary; John Gavey, London, England; and W. R. Howard, Wellington, New Zealand. The Central Executive Association of the Irish Post Office Clerks, Dublin, Ireland, also sent a greeting. From this country the remembrances from operators, chief operators, managers and superintendents and presidents were numerous and hearty. And last, but not least, was the message from our old friend, P. V. De Graw, Fourth Assistant Postmaster General, who never forgets his old-time telegraph associations.

In acknowledging these testimonials of friendship, of affection and of esteem, frequently so cordially expressed, TELEGRAPH AGE is deeply sensible of the good will thus made manifest on the part of so many toward this journal. It will long be treasured as one of the most appreciated and pleasant experiences occurring in many years of journalistic life; and the sincere thanks that are returned herewith for so generous a measure of expression must, from the nature of the case, be comprehensive in utterance as they are in sincerity of meaning.

Changes in the Personnel of the Telegraph.

A retrospect of life, even of but a few years, is apt to be startling in its revelations. The frequency of change, almost unnoticed during the period of occurrence, in the thick of which we ourselves may be actors, becomes more apparent when it is looked upon and estimated as a whole. Men in active and intimate association to-day become separated to-morrow, frequently dropping wholly out of one another's lives as completely almost as if they had never met; and the query of but a few years hence discloses the fact that in a distant place perhaps, far removed from earlier scenes, the friend whom we knew so well in former years, has climbed successfully the ladder of promotion, or has gone into other business beyond our ken, or may be worn out and with strength exhausted has laid down his burden and passed over to the great majority.

We are led to these reflections because of the changes that have occurred in the personnel of the telegraph about which we have been telling lately in these columns. We have gone back but a decade, or to be more exact, to 1894, the date when Telegraphers of To-day was published by the Editor of Telegraph Age, for data in our search for such changes as have occurred. The story as told indicates greater changes than perhaps any of us have realized, if, indeed, we have ever stopped to consider fitly the full extent and meaning involved therein. It has aroused interest and surprise in all departments of the telegraph service the country over, and numerous letters expressive of reminiscence, of inquiry and of sympathy have reached us from those who have been especially touched by the narration. A sense of companionship has been felt in the

hearts of many, for after all when we pause long enough to recall the past, with some of us too frequently permitted to drop into comparative oblivion, to bring up in memory's review those whom we formerly knew and esteemed and trace the record of their lives, a tenderness of thought and emotion is evoked to which, in this work-a-day world of ours, we are too prone to be strangers. It is good, then, sometimes to pause long enough to meditate, to bring the old days, often so fragrant with association, to fresh recollection, for in the long transcript of change we have indicated there is abundant thought for reflection, an opportunity presented for looking backward that cannot fail to confer benefit in retroactive impulse.

The reader who has followed carefully the four articles as they have appeared, the last elsewhere in this issue, cannot fail to have noticed the numerous changes due to death and other causes that have occurred in the ranks of those who have been prominently identified with the telegraph. Within the period named the executive heads of both the Western Union Telegraph Company and the Postal Telegraph-Cable Company have been changed. One vice-president has died, several general superintendents have likewise passed away, and death has also claimed a dozen or more district superintendents. There has been a gradual and constant shifting of telegraph forces, a pushing forward and a dropping out.

While the telegraph possibly may not afford a high official position for all in its employ who are possessed of intelligence and ambition, the ever recurring changes in the personnel in every department of its work is nevertheless constantly opening places of preferment for energetic natures and bright minds. The future of the telegraph is vested already in the hands of those who in some manner are now contributing to its progress, and thereby directing its energies. Fidelity of purpose, largeness and clarity of vision are attributes of character that will finally gain recognition and reward, all of which may be clearly recognized from the lesson to be drawn from the changes in the telegraph to which referance has been made.

Legal Intelligence.

A messenger company is not liable for losses occasioned by its boys unless special arrangements are made with it, according to a decision of the full bench of the Massachusetts supreme court, rendered January 5, in the suit of George B. Haskell against the Boston district messenger company, to recover $58.33, collected by a boy sent to him by the company in response to a call.

The plaintiff gave the boy a receipted bill for rent and sent him to collect the money. He did so, but failed to return it to the plaintiff, who then sought to hold the company for the amount.

He contended the company acted as a common carrier in receiving the bill and undertaking to bring back the money. The court says the evidence did not tend to show that. It says the company undertook to furnish messengers to be used by its employers in any way in which messengers properly could be employed. If special or peculiar service was wanted, special arrangements were to be made for it.

In the ordinary conduct of its business the defendant did not assume any control of the work in which the messengers were to be employed, and usually had no knowledge of it until after it was completed. Even then it had no knowledge of the nature of the message delivered or the particulars of the service.

The employer was left to direct the messenger to determine what he should do and how he should do it, subject only to an implied understanding that he should not be called upon to render service of a different kind from that which can properly be performed by messengers. In this service the messenger became, for a time, a servant of the employer, while he was still in the general service of the defendant.

The court holds that the company is not a common carrier or insurer of everything intrusted to the messengers and that it impliedly contracts that the messengers whom it furnished are suitable and proper persons for the performance of the ordinary duties of messengers so far as the exercise of ordinary care in the selection and employment of them will enable it to procure such persons.

"If in the delivery of Christmas presents, or of bills, statements, catalogues, etc," say the court, the defendant become a common carrier, it is liable as such. But that can be only by an arrangement different from that made by this plaintiff.

The court holds that the company is not liable for the dishonesty of its messengers under its ordinary implied contract, unless there was a failure to use proper care in the selection of the messengers.

Mr. Bates Recalls the Death of Lincoln.

Mr. David H. Bates, who was a cipher telegraph operator in the War Department during the Civil War, and whose reminiscences have found frequent expression in TELEGRAPH AGE, is quoted in a western paper regarding a day great and terrible in the history of our country:

"On the afternoon of Friday, April 14, 1865, the day of his assassination, Mr. Lincoln made his accustomed call at the War Department telegraph office. He came earlier than usual, however, because, as we afterwards learned, of his expected visit in the evening to Ford's theatre.

"Although I was on duty at the time, I have no distinct remembrance of the occasion, for what occurred a few hours later was so appalling that memory retained nothing clearly except that

which took place after the awful news was received.

"First came word that the President was shot; then, horror following fast upon horror, the severe attack upon Secretary Seward, the frustrated efforts to reach and kill Secretary Stanton, Vice-President Johnson, and other members of the Government; and, as the successive accounts crystallized, a fearful dread filled every soul lest it should be found that the entire cabinet had been murdered. An hour or more of this awful suspense, and we received a message from Major Thomas T. Eckert, who had gone quickly with Secretary Stanton to the house on Tenth Street to which the President had been carried. This news simply assured us of the present safety of Stanton, while confirming our worst fears concerning the President.

"A relay of messengers was established between Major Eckert and the War Department, and all night long they carried their portentous news in the form of bulletins, in the handwriting of Secretary Stanton, addressed to Gen. John A. Dix, commanding general, New York city, and which were distributed to the press throughout the country. As these bulletins were spelled out in the Morse telegraph characters over the wires to leading points, it seemed to us whose fingers manipulated the keys, that never were sadder signals formed. Our hearts were at once stunned and on fire.

"The awfulness of the scenes transpiring before us, hushed us into silence, except for an occasional outburst of sorrow and amazement, and tears of which none of us were ashamed, were freely shed. As the hours slowly passed, hope revived as to the president's life being spared, but at last, about 7.30 A. M. the tension broke, and we knew for a certainty that he was dead. Then we looked out upon the light of day, which before we had not observed, or at least with consciousness, and the force of the blow seemed to be increased by recalling the previous day when we had last seen the President. We thought of his daily visits, and most of all, in the close presence of our great sorrow, did we think of his loving heart and the many evidences he had given us of the entire absence from that heart of anger, or resentment toward his country's enemies."

Why Technical Americans "Fail."

Sir William Preece, in distributing prizes at a recent English technical school commencement, is reported to have said:

I am frequently asked to recommend young men for positions of responsibility in various parts of the world, and often ask both Americans and Germans why, if their technical education was so very much superior to ours, they preferred Englishmen for foreign work, and the answer is that the American and Continental systems of education are really too good; that these men can quote formulae and data on any conceivable subject, but that when sent away from home in charge of work requiring initiative and self-reliance, these men fail entirely because they can only work to instructions and to formulae. The Englishman, on the other hand, who is not so well educated, will tackle almost anything, and will carry it out to a successful issue.

A contemporary remarks, of course with no intended sarcasm: "So that is it. Americans fail entirely because they lack initiative and self-reliance, spirit and energy, nerve, vim and go, snap and ginger. By inference they are dependent creatures, meekly receiving instructions but not venturing beyond them; strong on precedent, but weak on originality; theoretical rather than practical; timid, not bold; and, presumably, mild, modest and shrinking. Strange that we haven't heard of all this before."

Pensioning a Faithful Employee.

After loyal and faithful service for more than half a century, Edward J. Lane, the oldest telegraph operator in Dayton, O., has been retired on a pension by the Western Union Telegraph Company as a mark of appreciation of his faithful service to them for more than fifty years. Mr. Lane's reminiscences are entertaining and interesting, touching, as they do, the history of Dayton during a most interesting period of the city's history. He has seen the business of the Western Union grow in Dayton from one operator who was office boy, bookkeeper, lineman and messenger, to the present large business force, with many employees and departments.

Mr. Lane can tell many interesting tales of his experience, and his retirement on a pension is a reward and tribute to his loyalty and faithfulness and the appreciation of his services by the company. He has always had the highest esteem of the officials of the company, and they hope he may live long to enjoy the rest and recreation he so much deserves.

The appreciation of Mr. Lane of his company's provision thus made for his old age is shown in his unbounded thanks to W. W. Brown, the manager of the Dayton office, and to I. N. Miller, of Cincinnati, the superintendent of his district, as well as to the executive head of the company in New York City.

Announcing the New Year.

Telegraphic signals announcing the year 1906 were flashed from the Naval Observatory at Washington by the telegraph companies. The signal was ticked off at 12, 1, 2 and 3 o'clock, so as to conform to the midnight hour for Washington, Central, Rocky Mountain, and Pacific Coast time, respectively. The midnight signal was repeated to all points readily available by the telegraph companies through the United States, to Honolulu, Guam and Manila, and Mexico; also to points in the West Indies and, where possible, cities in South America, England and France. The signal was also flashed to the wireless telegraph stations with a view to its communication to ships at sea.

Sale of the Maine Telegraph Company to the Western Union.

The Maine Telegraph Company in effect went out of existence January 4, when the final steps were taken in the trade perfected some time since by which the Western Union Telegraph Company takes over the stock of the former.

The wires of the Maine Telegraph Company were leased by the Western Union fifty years ago, the lease expiring on Thursday, January 4. The lease was for a gross amount each year. There were 2,250 shares of stock of the Maine Telegraph Company, and the par value of these shares was $50. By the terms of the sale, the shareholders receive $57.50 a share for their stock. All of the shares were turned over except nineteen, which had not come in. After the transfer of the stock a new board of directors was chosen, F. A. Wilson and Hon. Charles E. Bliss being elected to membership in the same.

A. R. Brewer, secretary of the Western Union Telegraph Company, Rush Taggart, general counsel, and G. W. E. Atkins, superintendent of the control department, represented the Western Union at the time of transfer.

The Maine Telegraph Company's lines extend from Boston to Portland, over both divisions of the Boston and Maine Railroad; thence to Bangor on the highway along the coast, and also on the Maine Central Railroad in the interior of the state, and from Bangor east to the New Brunswick boundary, terminating at Calais, making six hundred miles of poles and eight hundred miles of wire. It is not generally known that Professor Samuel F. B. Morse himself, the inventor of the telegraph, was one of the incorporators of this company, and that the fifty years' lease made in 1855 was signed by Peter Cooper as president of the American Telegraph Company, and Hiram O. Alden, president of the Maine company.

The controlling consideration which led to the leasing of this company's line was the fact that it covered part of the land route between Hearts Content and New York City over which Atlantic cable messages must be transmitted, and in making the lease this was the governing factor with Peter Cooper, Cyrus W. Field and others connected with the American Telegraph Company, and with Hiram O. Alden and James Eddy, who were officers of both companies.

Of all those connected with the Maine Telegraph Company in that far-off time, we can recall but three among the living, namely, William B. Clum of the Postal Telegraph-Cable Company, New York, and C. E. Bliss, of Bangor, and Henry H. Ward, cashier of the Western Union Telegraph Company, New York.

When the Maine Telegraph Company was projected by Messrs. Alden and Eddy, and subscriptions to the stock solicited in towns through which it was proposed to locate the line, such was the skepticism at that time with regard to the practicability of communicating by electrical appliances, viewed as a business venture, that citizens of several localities were in a measure coerced into giving their support to the enterprise by the scarcely serious intimation that it would be necessary for them to do so if they desired offices established in their towns. And yet almost from the very completion of the work the stock paid ten per cent. dividends, as it has continued to do to this day. When it is remembered that but two assessments of twelve and a half per cent. each were called in for the construction of the line, it is seen that the financial profit of the originators of the enterprise was considerable and, presumably, that the doubting Thomases were correspondingly chagrined.

The History, Manufacture and Properties of Drawn Copper Wire.

BY THOMAS B. DOOLITTLE,

IN THE HARVARD ENGINEERING JOURNAL.

(Continued from page 8, issue of January 1.)

In recent years great improvements have been made in the process of manufacture, which cover all operations from the ingot to the finished product. At the time recorded above it was the practice to roll a billet of copper, say of six or eight inches in width, into a long sheet and then, after being annealed, it was taken to a slitting machine and slit into square rods. These rods were tapered by means of a hammer, in order that they might be inserted far enough through the drawing die to be grappled on the opposite side, after which they were ready to be drawn into wire. This method of starting with a square rod had a distinct disadvantage for the reason that the corners were likely to lap and fold over in the process of drawing, thereby producing flaws or bad places in the wire, these flaws becoming more and more troublesome in the smaller sizes of wire. After having been drawn through a certain number of "holes," the surface of the wire becomes hardened to an extent which requires that it should be annealed before any further reduction in size is practicable. The new process is substantially as follows:

The copper is received from the smelting works in the form of wire bars, which are approximately fifty-four inches long, with an average diameter of about three and three-fourths inches, and weigh about two hundred pounds each. These are delivered as commercial copper wire bars.

The first operation is to put the bars into what is termed a "continuous furnace," the bars going in at one end of the furnace and taken out at the other. In their passage through they are heated to about 950° Centigrade, at the rate of about two bars per minute.

The heated bars are then put through a series of grooved rolls. Each succeeding groove being smaller, it results in a reduction of the three and three-fourths-inch bar to a diameter of five-sixteenths inches. These are now called rods, and are

taken up on a reel in the form of a coil about thirty inches in diameter. These coils are then taken from the hot-rolling department, and are cold at that time. They are then plunged into a bath of sulphuric acid and water for the purpose of removing whatever oxide has been formed in the hot-rolling operation. After about twenty minutes in this solution, the oxide is removed and the rods are then taken and thoroughly washed with clean water under a high pressure from a hose; after which they are immersed in a vat containing a lubricant of tallow and soap. The rods are now ready for the drawing process.

The rods are substantially drawn on what is termed by wire manufacturers a "continuous wire drawing machine." That is to say, the five-sixteenths-inch rod goes in at one end of the machine, and, after passing through several dies, each one reducing the diameter and hardening the wire, it finally is drawn around a block to the finished size, say .104".

In making this reduction, the copper is reduced in diameter from No. 1 wire gauge to No. 12 wire gauge, or, in technical terms, the wire is "eleven numbers hard." This process gives the wire the greatest amount of tensile strength possible from commercial copper and yet preserves its elasticity. The cost of production is enormously reduced by the new process. Whereas, under the old process, a very skilled workman was required for each single drawing, an attendant is now able to care for several continuous drawing machines that are run at a speed unapproachable by the old method. In the smaller sizes of wire, diamond dies are employed which, in themselves, represent a very considerable investment.

Commercial copper in its soft state has a tensile strength of about 28,000 pounds per square inch, with an elongation of about thirty-six per cent., and by the cold-drawing process above described, the tensile strength is increased by each number drawn, and the elongation is reduced; therefore when the copper wire is drawn eleven numbers hard, it has a tensile strength of about 64,600 pounds per square inch, with an elongation of about one per cent. The wire is then taken from the wire-drawing blocks, so-called, and is carefully inspected for tensile strength, elongation, torsion and conductivity. The inspected wire is then carefully packed by wrapping each coil with burlaps, so that it does not become bruised or damaged in any way by transportation.

The cost of hard drawn copper wire fluctuates with the price of ingot copper, and at present writing is quoted at sixteen cents per pound. The relative cost of copper and iron wire, say of No. 12, is three and three-fourths cents for iron and sixteen cents for copper.

The advantage of copper over iron, besides what is shown in the table herewith, is that it is practically indestructible except from mechanical injury, and, if it receives mechanical injury, it can be made over into new wire at a cost of about two cents per pound, while iron, which is subject to rapid deterioration from rust, is worthless when taken down.

The output of hard drawn copper wire has steadily increased from year to year.

The comparative properties of No. 12 N. B. S. gauge copper and iron wire are given in the following tables, this being the size in the largest general use as telephone toll line conductors:

No. 12 N. B. S. Diameter in Mils		Resistance per Wire Mile 68° F. ohms	Inductance per Pair Mile Millicurles	Effective Resistance per Wire Mile ohms	Electro Static Capacity per Pair Mile microfarads	Miles equal to 1 Mile Hard Drawn Copper for Telephone Transmission
S ft copper	104	5.1	3.66	5.1	8220	1.02
Hard drawn copper	104	5.2	3.66	5.2	8220	1.00
Iron B. B.	104	36.0	18.00	47.0	8220	0.26

No. 12 N. B. S.	Diameter in Mils	Weight per Wire Mile lbs.	Tensile Strength in Pounds	Torsion in 6 inches	Elongation Per cent.
Soft copper	104	173	290	50-75	40.
Hard drawn copper	104	173	550	25-45	1.
Iron B. B.	104	153	450	45	18.

These figures represent average commercial conditions. The soft drawn copper wire is assumed to have a conductivity of 99 per cent. of that of pure soft copper, while that of the hard drawn is ninety-seven per cent.

The wires of a pair are supposed to have a separation of twelve inches on centers. In calculating the inductance and effective resistances, a frequency speed (2Pi n) of 5,000 has been taken, while assuming a permeability of 100 for the iron wire.

Much of added interest could be written were the writer to disregard the individual trade secrets that must be respected.

The following manufacturers are producing hard drawn copper wire: John A. Roebling's Sons Company, Coe Brass Manufacturing Company, Ansonia Brass and Copper Company, Holmes, Booth and Haydens Company, National Conduit and Cable Company, American Steel and Wire Company, The Waclark Wire Company, Standard Underground Cable Company, American Electrical Works, the Bridgeport Brass Company.

I am indebted to the officers of these companies, and also to Mr. Charles F. Brooker and Dr. Hammond V. Hayes, for valuable assistance in the preparation of this paper.

Pine Orchard, Conn., November 1, 1905.

F. O. Nourse at Atlanta.

Mr. Frederick O. Nourse, who has recently been appointed general inspector of the southern division of the Western Union Telegraph Company, with headquarters at Atlanta, Ga., was advanced to that position from the management

FREDERICK O. NOURSE.
General Inspector, Southern Division, Western Union Telegraph Company.

of the Macon, Ga., office. Mr. Nourse, before going South, three years ago, had been the general traffic chief at the main office in New York, where he was held in the highest esteem both for his ability as a telegraph man and for his personal qualities of mind and heart. On his retirement from telegraph employ, in 1902, his associates in the New York office united in presenting him with a handsome gift, which was accompanied with resolutions of a flattering character.

Mr. Nourse comes of sturdy New England stock, having been born at Littleton, N. H., on October 3, 1859. His entire business life, dating from his seventeenth year, began with country service, continuing in the metropolis and at the South, where he has been well received, and where he has won golden opinions. He is a well-informed man, possessing an intimate acquaintance with the telegraph, and he will bring to his new post a dignified, capable and pleasing personality.

Edwin L. Huntley Becomes Postal Manager at Omaha.

Edwin L. Huntley, recently appointed manager of the Postal Telegraph-Cable Company at Omaha, Neb., there succeeding C. O. Fuller, resigned on account of ill health, an announcement made in TELEGRAPH AGE, December 16 last, is a native of Missouri, in which state he was born in 1870, at Clinton. His early life was passed in Ohio, and it was at Ostrander in that state that he began his telegraph career in the railroad service, in 1885, when but a lad of fifteen. Two years later he went to St. Paul, Minn., still continuing in railroad employ, until finally, in 1890, at Sioux City, Ia., he entered the service of the Western Union Telegraph Company as an operator. In 1892, following his marriage at Sioux City, he became identified with the Postal at Omaha, in which city he has since resided. After a brief connection with the main office, his first assignment was with the daily World-Herald of that city. At the same time he became a representative of The United Press. When the latter discontinued its news service in 1897, Mr. Huntley's services were employed in connection with The Associated Press; subsequently he was placed in charge of the Board of Trade office, then newly opened, of that organization. It is from this latter position that he has now been called to the head of the Postal local interests at Omaha. Mr. Huntley owes his appointment to an all-around knowledge and grasp of the telegraph in general, and specifically as it exists in

EDWIN L. HUNTLEY.
The new Postal Manager at Omaha, Neb.

Omaha. He has been a careful student, a close observer, faithful in positions of responsibility, and his selection to so important an office, which is as well an overland cable repeating station, is based solely on the personal worth of the appointee.

Changes in the Telegraph.

In bringing to a close the series of articles that have run through several issues of Telegraph Age, under the caption of "Changes in the Telegraph," the story of which has been restricted exclusively to the mention of those whose pictures appeared in Telegraphers of To-day, that standard work brought out by the publisher of this paper in 1894, and who have since climbed the ladder of advancement in the telegraph service, who have gone into other occupations, or who have died and so passed from this earthly sphere, a long recital, extended far beyond the limit first intended, we are pleased to note the widespread interest that has been aroused by the narration. This is shown by the numerous calls that have been received for extra copies of the paper containing the portrayal, some from across the Atlantic, for the publication has made mention and brought into view many who practically had been lost sight of by their old-time friends and associates. There has been a delight as well as a pathos in preparing these sketches, for the changes of but a decade are many, a feeling which has been shared alike by hundreds of telegraphers who have closely followed the written account.

The press has always had in its service some of the brightest of telegraphers. This branch of telegraphic employment has ever served as an exceptionally fine school and training ground for ambitious men, and from the ranks of those so employed many exceptionally able men have graduated. Some have won fame in the editorial chair and in other phases of literary work; others have gone into different fields of endeavor, while all such, as a rule, have pressed successfully onward.

In 1894 Walter P. Phillips was the general manager of The United Press, New York, a concern which, after a brilliant record, went out of business in 1897, for reasons not necessary to record at this time. In his telegraphic days Mr. Phillips, who is of New England birth, was a famous operator, speedy and accurate, and for the achievement of receiving and copying 2,731 words in a single hour's time, in 1868, when twenty-two years of age, he was presented by Professor Morse with a gold pencil and penholder, suitably inscribed. Mr. Phillips, who is a graceful writer, has contributed much to the current literature of the day. He is now identified with the Columbia Phonograph Company, of New York, manufacturers of the graphophone.

The United Press claimed some very clever men in its management. Albert L. Suesman, also a New Englander, a boyhood friend of Mr. Phillips, who taught him telegraphy, was the general Western manager of The United Press, with headquarters at Chicago. He is now in the telephone service at Kansas City, Mo. P. V. DeGraw, a native of Princeton, N. J., now nearing his fifty-third year, was the general Southern manager of The United Press at Washington, D. C. His newspaper work as correspondent at the National Capital has been of a highly creditable character. It was the stepping-stone to acquiring wide public acquaintance, a fact which finally caused his selection to the office of Fourth Assistant Postmaster General. Frederick N. Bassett, also a New Englander, almost identically of Mr. De Graw's age, was the general Eastern manager of The United Press at New York. His telegraphic abilities and long newspaper experience have proved a valuable asset in his career. He is considered an excellent judge of newspaper service, and is now the North Eastern manager of The Publishers' Press Association, at Boston, Mass. Charles H. H. Cottrell, who filled the position of cashier of The United Press at New York, is a native of Cleveland, and in addition to a long apprenticeship in both the railroad and commercial telegraph service, once held a position in the London office of The Associated Press. He has an excellent reputation as being one of the best telegraphers in this country, and is now in the employ of the Western Union Telegraph Company, New Orleans. Robert W. Martin, who hails from Dutchess County, New York, was cable editor of The United Press in 1894. He was a military telegrapher during the latter part of the Civil War. He is a man of large telegraph experience, and ranks among the best as an all-around expert operator. He is now a member of the operating staff of the Western Union Telegraph Company, New York. Fred Catlin, of the staff of The United Press ten years ago, a Pennsylvanian, and a brilliant operator, favorably known by his former connection with telegraphic tournaments held in New York, is still located in the metropolis, where he is doing excellent telegraphic work for a Wall Street banking house. Another well-known member of The United Press staff was John W. McLaren, one of the best of the Canadian contingent of operators in this country, who has a long record to his credit of varied and excellent work performed, is now a member of the telegraph staff of the New York Herald. Frederic G. Mason, who was the auditor of The United Press, a native of Illinois, and who is now in his forty-sixth year, a son of S. C. Mason, storekeeper of the Western Union Telegraph Company at Chicago, and a forty-niner of the telegraph, now occupies an important position in the Fidelity and Casualty Company, New York. George W. Conkling, who represented The United Press at Newark, N. J., being at that time but twenty-three years of age, has since developed into one of the foremost telegraphers in the United States. He is possessed of remarkable skill and speed, and has received the first prize in almost every telegraph tournament in which he has taken part. He is now employed in a Wall Street banking house.

Another well-known old-timer and brilliant telegrapher, who, at the time Telegraphers of To-day made its appearance, was assistant superintendent of leased wires of The Associated Press, New York, E. W. H. Cogley. A native of Pennsyl-

vania, where he was born just sixty years ago, he has now retired from active telegraph service, and is living quietly in his native town of Lewistown.

Among those prominently identified with the press service at the time before stated, and who have since died, may be mentioned Albert S. Ayres, assistant day manager of The United Press, well known as "Patsy" Ayres, and one of the phenomenal operators of his day. He died at Cincinnati, May 18, 1905, aged fifty-five years. William G. Jones, of The United Press staff, who came from Parkersburg, Pa., where he was born in 1850, had an extended telegraph experience. In the Centennial year he was agent of The Associated Press at Philadelphia. He died September 1, 1904. Roderick H. Weiny, a native of Keokuk, Iowa, was the electrician of The United Press in 1894. He was an accomplished telegrapher, and a well-known inventor of telegraphic apparatus. The Weiny-Phillips repeater was the joint production of Mr. Weiny and W. P. Phillips. He died at his home in Glen Ridge, N. J., October 31, 1903, aged forty-five years. W. H. C. Hargrave, a member of the executive force of The United Press, prior to which for many years he was manager at Philadelphia of the bureau of The New York Associated Press, came from St. Louis. He died September 12, 1894, aged forty-one years. Another death is that of Thomas H. Reilly, which occurred February 28, 1901, just after he attained his fifty-first year. In 1894 Mr. Reilly was day editor in New York of the New England Associated Press. He was a well-informed man, who had seen a good deal of the world, and his press and general telegraphic knowledge was extensive.

Among other than press operators who have died since Telegraphers of To-day was issued is S. P. Peabody, of Columbus, Ohio, who passed away February 14, 1899. He held a high official position with the Baltimore and Ohio Railroad Company. He was an old-time telegrapher. He served in the United States Military Telegraph Corps during the Civil War, where he saw much active service, rendering an excellent account of himself. Joseph B. Stearns, who was a well-known individuality in telegraph circles, acquired distinction and wealth by the invention of the duplex system of telegraphy, the royalties on which amounted to immense sums. A native of Weld, Me., where he was born February 28, 1831, he died July 4, 1895.

Early in the publication of these sketches reference was made to J. D. Flynn, of Pittsburg, Pa., a former superintendent at that point of the Western Union Telegraph Company. Mr. Flynn died, after a very brief illness, on December 25, 1905, as recorded in our issue of January 1. Born on Christmas, 1846, his death occurred on the recurrence of that day fifty-nine years later. It is recorded of Mr. Flynn that during his service as a military telegrapher in the Civil War, he was captured by the enemy and placed in a Southern prison. His youthful appearance was such—for he was but fifteen years of age—as to excite the sympathy of his guards, who purposely afforded the young prisoner an opportunity to escape.

John Gavey on the Telegraph, Telephone, Etc.

(Concluded from page 16, issue of January 1.)

Wireless telegraphy, so called, has attracted a great deal of intermittent attention for many years past. The various possible methods of communication between two localities not directly connected by wire may be divided under five heads: (1) Leakage across the earth or water between two parallel wires erected on opposite sides of a position which has to be bridged. (2) Electro-magnetic induction between coils placed vertically or horizontally. (3) The combination of the two above systems by the erection of two parallel overhead wires connected to earth at their extremities. (4) Electrostatic effects from vertical conductors. (5) The Hertzian system.

Many attempts have been made to establish communication across rivers, arms of the sea, etc., by the first method, and they have met with varying success, but the system is one the application of which has a limited scope.

The second method has but a limited range; it has only been rendered possible by the use of telephones; but inasmuch as the effective energy available for signals diminishes as the cube of the distance between the coils, the limit beyond which no signals can be received is very rapidly reached.

The third method, which, prior to the invention of the Hertzian method, was fully investigated by the Post Office, has met with a certain measure of success, and at the present time there are two installations still at work in England. One of them connects Rathlin Island with the mainland at Ballycastle, the parallel wires being at an average distance of eight miles apart. The second instance is an installation establishing communication between the Skerries, a series of rocky islets off the coast of Holyhead, with the telegraphic service on Holyhead Island itself. The parallel wires are at an average distance of three miles apart. The latter installation is worked telephonically; that is, the wires are fitted with telephone transmitters and receivers, and telephonic speech is actually transmitted from wire to wire.

The fourth system of communication, by purely electrostatic effects, without the emission of free waves, has not been developed on a practical scale.

The fifth, or Hertzian system, has created world-wide interest, and its development in the course of the last few years has been very marked. As is well known, the method is based on the classical researches of Hertz; it was made possible in the first place by the original inventions of the coherer by Branley, improved later by

Lodge, and finally developed into a practical system by Marconi.

It may be of advantage to briefly review the gradual development of the art from the date of Marconi's early work. It will, no doubt, be remembered that after a period of experiments, first in Italy, then in England, a crucial trial was made in the year 1896, under the auspices of the Post Office, across the Bristol Channel, from Lavernock Point, first to the island of Flatholm, and then to Breamdown, near Weston-super-Mare. At that period, what has by some been termed the "whip crack method" only had been tried; that is to say, a powerful spark coil was connected, one terminal to the vertical conductor, the other to the earth. This arrangement emits a very powerful impulse, which is damped down almost immediately, and it is probably the first single impulse alone which affects the receiver at a distance. Elementary attempts at tuning were made by various experimenters during this period, but the art was not sufficiently developed to admit of any really useful results being obtained. The coherers were probably far too sensitive, and the difficulty experienced in the early days was rather due to their not decohering than their failing to respond to the electrical waves. In course of time this difficulty was remedied by the use of an oscillating transformer in the receiving circuit which admitted of the use of less sensitive coherers, and excellent results were obtained; but owing to the fact that every receiver within a certain definite range of a given transmitting apparatus responded to each impulse, and all receivers were affected by all transmitters within range, it appeared at first as though Marconi's attempt to increase the effective limit of his apparatus would tend to restrict rather than to extend the use of the system. He and others interested in wireless telegraphy, therefore turned their attention to the establishment of syntony between the transmitting and the receiving apparatus, and a marked degree of success has attended their efforts. This syntony is usually effected by connecting one or more closed oscillating circuits to the source of energy, and coupling these either direct or through an oscillating transformer with the vertical antennae, the closed oscillating circuit and the vertical antennae being in unison; that is, having the same frequency. A closed oscillating circuit includes a capacity and inductance, and therefore for each primary impulse a train of waves is generated. The first portion of the wave has not such an amplitude as when the whip crack method is used, but this is more than counterbalanced by the effect of the long train of oscillations, which results in restricting to a great extent the visible effect to receivers tuned in harmony, other receivers not so tuned not responding when a certain critical distance is passed. In the next place, by a judicious combination of oscillating circuits with antennae of suitable capacity, the amount of energy that can be utilized for the transmission of signals may be increased from the small limits imposed when an ordinary induction coil is used to practically any given amount—an utter impossibility with the original method of working. Of course, where a very powerful exciting system is in use, the radiating surface must be increased proportionately, and the well-known method of multiple antennae has been designed to achieve this end. At the receiving station the tuning is effected by the addition either of inductance or of capacity, the receiving installation being brought into as perfect syntony with the transmitter as is possible. In addition to this, special devices have been introduced in the receiving circuit for the elimination of waves of other periodicities so that even whip crack transmission can to a great extent be eliminated. The effect of having the transmitting and the receiving apparatus in harmony was shown in an admirable manner by the Post Office experiments recently carried out and described by Messrs. Duddell and Taylor, which gave graphical measurements of the energy received under both conditions.

The receiving apparatus has undergone many modifications since the original filings coherer was invented. There is, for example, the single-point contact, consisting of a pointed carbon lightly resting on a slightly oxidized steel surface; the Brown radioscope, consisting of a lead electrode resting lightly on a surface of peroxide of lead; the Lodge-Muirhead revolving disc, touching lightly on a mercury surface; the Schaffer, so-called anti-coherer, consisting of a fine razor slit across a silvered glass surface; the Italian Navy coherer, in which one or more globules of mercury are enclosed between carbon and steel contacts—all of which are dependent for their action on imperfect contacts; the Bolometer and electrolytic methods claimed by different inventors; and finally, Marconi's electromagnetic receiver. Many of these have been associated with variations in the original method of combining the different electrical elements of each circuit, and have been denominated "systems." I will not, however, enter the thorny path of attempted discrimination between those that may be considered as systems or those that can only be described as methods.

A great deal has been said by rival inventors as to the possibilities of wireless telegraphy, and some exaggerated claims have been made on their behalf which have led to counter statements by some interested in other methods of communication. While on the one hand it may be fairly assumed that wireless telegraphy is not, under any circumstances, likely to supplant, or even to compete seriously with inland methods of intercommunication, there is no doubt that there is a very distinct and important sphere of utility awaiting its further development. For intercommunication between ship and shore and ship and ship, much has been done, although much remains to be done. For intercommunication be-

tween neighboring coasts there is also a possible future, but this depends almost wholly on the further development of the methods of syntony or tuning. There appears to be no doubt that in cases in which the wave lengths used on two systems differ to a considerable extent a very marked degree of success has been obtained in the avoidance of mutual interference. Where the wave-lengths, however, are not very widely apart in frequency there is in each case a definite range within which interference arises, and simultaneous working is impossible. That the tuning methods will be improved I think there can be very little doubt. The progress that has been made between the year 1896, when it took a week to receive a few elementary signals over a distance of nine miles, and the present time, when such remarkable results have actually been obtained, is so great that it does not imply the possession of an unduly sanguine disposition if one ventures to predict further improvements, which may be expected to increase the freedom from mutual interference, the speed, and the reliability of this method of communication. It does not appear to be very probable that it will seriously compete with the highly developed cable communication in the near future, although it may in many instances supplement that service.

"Farmer" Lawton's Indian Romance Like Fiction Page.

The building of the Denver and Rio Grande Railroad into Durango, Colo., twenty-five years ago, was the great event of the day, says the Denver Republican. For weeks after southwestern Coloradoans talked of but little else. Gradually it and other things that transpired about that time were forgotten, and the wideawake people of the San Juan set to work developing that wonderful rich section.

The Southern Utes, whose reservation had been penetrated by the new road, were inclined to be ugly. They had no more use for a railroad than they have now for automobiles, and it required much persuasion upon the part of the railroad officials to convince the redmen that the road was a benefactor to them.

Obstacles were not easily overcome, the Indians could not be made to understand the importance of the slender little telegraph wires along the railroad's right of way, and were continually borrowing pieces of it for arrow points and to strengthen their bows. John J. Harris, state senator, at present a merchant and banker at Dolores, Colo., was then superintendent of telegraph for the Rio Grande. Mr. Harris is considered one of Colorado's able law-makers, but he was no match for the cunning Utes, and was about to throw up his job when "Old Farmer" Lawton, of the Western Union Telegraph Company, of Denver, went to his relief.

Together they hurried to Ignacio's domain, the "Old Farmer" taking a physician's high voltage galvanic battery with him. A short circuit was made of one of the wires between two poles, and fifty or sixty of the more mischievous Utes were invited to grasp the wire with their naked hands while Mr. Harris would explain its simple but very important duties.

The first shock threw them all on their knees, and, of course, they were unable to let loose. As the current was increased, and their antics became more alarming, the rest of the tribe ran away, leaving them to their fate.

Harris, who was not the gentle, kind-hearted senator that he is known to-day, wanted to get an ax and behead the whole bunch as an example to others that might have a desire to interrupt the telegraph business of a big railroad, but the "Old Farmer" said "No," and continued to pour the electric fluid into the Indians until he thought they had enough to last them a while. When the current was gradually turned off, and after they had the kinks out of their badly drawn up hands and arms, the Indians began to dance around their captors and call them "heap big medicine men."

One old buck who had suffered with rheumatism for years felt so relieved he insisted on giving the boys his best blanket and one of his prettiest daughters.

As both Lawton and Harris were engaged to their present wives, they began to think they were good subjects for a breach of promise suit, or something worse, when Mr. Harris got out of his part of it by taking the blanket and thanking the old chief.

The dusky maiden then took her stand by the "Old Farmer," and wherever he moved she was at his feet ready to do his bidding. Finally he led the trembling girl to her father's wigwam, and after kissing her beautiful brown (but somewhat dirty) hand, told her that she would be much better off with her papa. But that was not Indian custom, and did not go either with the girl or her dad. She ever lived a single life after until, last week, while gathering wood, she fell over a cliff and broke her neck, going to the happy hunting grounds believing that she was the "Old Farmer's" lawful squaw.

This story probably would have been buried with her had not Mr. Harris repented for taking advantage of the "Old Farmer" in the early days. On Christmas he sent him the old blanket with the following note attached:

"My Dear George: I hope this will not revive bygone memories, but wishing to clear your conscience of a dual life, I now send you the most valuable blanket ever woven by a squaw, and I trust that you will receive as much real benefit and comfort out of it for the next twenty-five years as I have for the past quarter of a century. Believe me, your true friend. "J. J. H."

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.]

ST. LOUIS, WESTERN UNION.

Mr. Paul Kainey, after a two weeks' vacation passed at Pulaski, Tenn., has returned to work.

Mr. R. C. Cowardin, who worked the Chicago and Dallas bonus wire, has resigned to accept the position as operator with Barnhart, Frazier and Co., New York.

Mr. J. L. White, formerly manager of the Baton Rouge, La., office, has returned here to work.

J. J. McCruden, who recently worked the Dallas bonus wire, is now working the Little Rock wire, Mr. A. J. Moorehead succeeding him.

Among the chiefs who received Christmas gifts from the office force, were Messrs. C. W. Henry, J. H. Korner and Col. M. D. Crain.

The Magnetic Dancing Club, composed of telegraphers, will entertain their friends at Louisiana Hall, on January 18. Refreshments will be served and telegraphic souvenirs will be presented to each one attending.

CHICAGO, WESTERN UNION.

J. S. McCurdy was presented with a beautiful gold watch at Christmas time by members of the Masonic Lodge.

Miss Lena Grower and Mr. Clay, both of this office, were married December 16.

Charles White, of the St. Paul division, has gone South for a few weeks, in the hope of benefitting his health. During his absence the assistant division chief will be in charge, assisted by John Foster.

Dell Jones and wife are with us once again. Mrs. Jones is working at the buzzer in the Metropolitan department.

Division Chief Frank M. Crittenden was elected a delegate to the Cook County cabinet, also to the secretaryship of Morse Council, No. 347, National Union, at their recent annual meeting held here. Mr. Crittenden has been a hard worker for the National Union for several years.

Henry Jahn, who for some time has been almost blind, has so far regained his sight as to be able to return to work.

Miss Alma Guy, formerly of this office, but who now resides in New York, and who some years ago became totally blind from some disease contracted while in the performance of charitable work, was lately made the recipient of a joint letter from members of this staff, who hold her in affectionate remembrance. She has almost wholly recovered the sight of one eye and was able to write a letter in response.

Mr. Evan T. Jones has been appointed Western wire chief nights, vice J. F. Stickel, resigned.

Mr. Evan P. Jones has been appointed assistant night loop chief, vice Fred Letourneau, appointed to late night force.

Manager Paris L. Mounts, of the Terre Haute, Ind., office, was a caller here recently. Mr. Mounts is one of the old timers in the telegraph business, having been manager at Pana, Ill., Richmond, Ind., and various other points in the Indianapolis district.

SACRAMENTO, CAL., WESTERN UNION.

This office is undergoing some much needed repairs, and a series of fourteen dynamos are being installed under the supervision of H. S. Converse, of San Francisco, electrician for the Pacific Coast, to replace some 2,400 cells of gravity battery. The potential electric motive force varies from 55 to 350 volts. The highest voltage will be used for the overland and Portland, Oregon, wires.

The personnel of the office consists of G. W. Waterbury, manager; A. Culton, chief operator; J. F. Allen, assistant chief; M. Nelis, night chief, and R. Buell, W. L. Fingland, S. P. Aubry, P. R. Moore, J. W. Heiss, J. W. Goenner, operators at the main office. At the branch offices, D. Bevan is at the State capitol building, Miss E. T. Allen at the Gold Eagle Hotel, and E. Sandal at the Southern Pacific depot. Miss Annie Bovyer is bookkeeper; Miss Carolyn Moncur and Mr. E. C. Williamson, delivery clerks; Miss McBurney and J. Newman, check clerks. Mr. C. H. Brookman looks after the battery and Mr. William Walsh the clock circuits.

NEW YORK.

POSTAL TELEGRAPH-CABLE COMPANY.

EXECUTIVE OFFICES.

Mr. Isaac Smith, superintendent of tariff, has arranged the 1906 book showing the revised tariff, list of offices and instructions and rules of this company. The work bears evidence of much care on the part of its compiler, and its growth in bulk from year to year is the best evidence of the steady expansion and growth of this company. The present volume embraces over 600 pages, and is full of valuable information. A series of maps showing the submarine cables and land telegraph connections of the world indicates how thoroughly this company is enabled to reach all portions of the globe.

IN THE OPERATING DEPARTMENT.

Mr. C. C. Errickson, of this office, has been transferred to New Brunswick, N. J., as manager at that point, relieving Mr. Harry Witt, who returns to this office.

Mrs. B. C. Lamplugh has been confined to her home for the past three weeks, owing to illness.

Frank Yule, of the Philadelphia division, has secured a leave of absence, which he will spend at his home in Chicago, Ill.

Miss Marie Hassinger, formerly with this company at Newburg, N. Y., is among the arrivals and has been assigned to the city division.

Miss Katherine Erb and Miss Ethel Ward have been promoted from the check to the operating force.

Mr. H. L. Linder is looking out for the Southern traffic and Washington during the session of Congress.

Mr. George Hinman is in charge of all direct pony wires to the broker district from the main office.

Mr. E. F. Murray has been assigned to the "Globe" newspaper.

P. J. Holland, of the Cotton Exchange, has been transferred to the main office.

WESTERN UNION TELEGRAPH COMPANY.

EXECUTIVE OFFICES.

Mr. John C. Barclay, assistant general manager and electrical engineer, and Mr. Charles H. Bristol, general superintendent of construction of the company, are making a Southern trip in the interests of the service. They will visit, accompanied by the various district and general superintendents through whose territory they may pass, Atlanta, Jacksonville, New Orleans, Galveston, Memphis, Hot Springs, and other large telegraph centers.

The rearrangement of offices on the sixth floor enables Mr. Barclay to secure a much needed additional office. The present order of rooms along this corridor gives C. H. Bristol, the general superintendent of construction, hitherto located on the second floor, a room adjoining that of Mr. Barclay, next coming that of Thomas F. Clark, vice-president, beyond which are two rooms devoted to the necessities of G. W. E. Atkins, superintendent of contracts, the remaining large space, as heretofore, being occupied by J. B. Van Every, vice-president and auditor.

Mr. Belvidere Brooks, general superintendent of the Eastern division, has recently moved his offices from the sixth to the fifth floor of the building. The new quarters are commodious, well lighted, ventilated and suitably decorated, and in every way adapted to the special requirements of the service.

The construction department of the Eastern division, leased wire, time service and other departments are now so grouped together as to greatly facilitate the work of the division.

Mr. Frank J. Scherrer, accompanied by his wife and daughter, spent the new year holidays with relatives in Chicago.

The tariff book for 1906 has made its appearance. As usual much care has been expended in its make-up by Mr. William Holmes, superintendent of tariffs, under whose direction the work is done, and those for whom it is intended will find the volume of great reference value. It will be noticed, following out the initiative of the preceding issue, that the money transfer pages are printed on colored paper, a convenience of arrangement that will be appreciated. The Alaskan map has been amplified and brought up to date, while a new cable map has been introduced showing Western terminals of the transatlantic cables by which this company routes its messages to Europe and beyond.

It has been suggested that the name of Dey street be changed to that of Electric street. The proposition is based on the fact that at its starting point on Broadway the Western Union Telegraph Company is located, while diagonally across the way, nearer to Church street, the telephone company has its headquarters. Besides these great corporations, representing millions of dollars, several electrical supply houses, such as W. R. Ostrander and Company, the Manhattan Electrical Supply Company and others, abut on this thoroughfare, which also shelters many electrical engineering concerns. In fact, the electrical interests appear to be largely represented on this street, while the immediate neighborhood furnishes storeroom for many of the largest electrical concerns in the city. It seems fitting that the name "Electric," which stands for one of the greatest and most rapidly growing industries in this country, should receive recognition by the application of the name to the one street in the city most appropriate to receive it.

IN THE OPERATING DEPARTMENT.

Morse Lodge, No. 171, Order of Columbian Knights, composed largely of telegraph men, held their annual installation ceremony January 9. It was one of the most enthusiastic fraternal gatherings ever witnessed by the members, most of whom are also members of the Royal Arcanum and other societies. J. P. Vanderschot of the supply department was installed as president and made an address. The next meeting will be held on the second Monday in February, and invitations are extended to all members of the craft to be present.

Mr. W. H. Murphy, one of the best known operators in the Central Cable office, a few nights ago was attacked and knocked down in Brooklyn, his skull being fractured by the blow. Mr. Murphy's condition was quite serious, but he is now convalescing. He has worked the Galveston circuit for fifteen years, and so popular was he on the wire that his associates in the Texas metropolis, on learning of his misfortune, at once sent word to New York to the effect that they desired to be counted in in making Mr. Murphy's period of convalescence as pleasant and comfortable as possible.

Mr. J. D. Hinnant, one of the most expert telegraphers in New York, resigned his position as clerk in charge with the Anglo-American Telegraph Company's Stock Exchange office, and has entered the service of the Cable office at 16 Broad street.

William Lynch and F. D. Byrne, of the Duxbury, Mass., cable station, spent the holidays with friends in this city.

A daughter was born to Mr. J. F. Nathan of Manager Hamblin's office, on January 8.

Henry C. Butt died December 17, last, at his home in Brooklyn. For many years he was connected with the Cotton Exchange office of this company.

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**

M. F. Gaffney, aged forty-two years, who for twenty-seven years had held responsible positions in the Commercial News Department, died of apoplexy on January 3. His entire business career was spent in the service of the company. His funeral, which occurred on the fifth inst., was largely attended by his office associates.

OTHER NEW YORK ITEMS.

Mr. G. W. Hickey, of New York, recently renewed his subscription to Telegraph Age, which now covers a period of twenty-four years, he being one of the first to take the paper. It may not be generally known that Mr. Hickey is a brother of the late Matthew E. Hickey, who was so well and favorably known in telegraph circles in New York city a quarter of a century ago. He was noted for his dry wit, his fund of stories, and for the practical jokes he was wont to play upon his associates at the key. He was one of those in the employ of the Western Union Telegraph Company in 1878 during the yellow fever epidemic, who volunteered to go South when such action meant practically the exposure to almost certain death. He served his company faithfully at Chattanooga and at Memphis during the prevalence of the dread disease at those places. He died in 1893. Another brother, Mr. F. J. Hickey, is now the general agent of the Wells Fargo Express Company in New York City, a former operator and a member of the Old Time Telegraphers' and Historical Association.

The annual ball of the Walla Walla Social Club, which is composed of telegraphers, will take place at Majestic Hall, 125 East 125th street, on Friday evening, February 2. Tickets or information may be obtained from J. P. McGovern of the Harlem office, East 125th street, of the Western Union Telegraph Company.

The annual meeting of the Magnetic Club was held on January 11, in the Western Union building, 195 Broadway. The nominating committee, consisting of T. L. Cuyler, Jr., F. J. Scherrer and M. R. Cockey, presented the following ticket, which was unanimously adopted, and the gentlemen named duly elected:

President, Col. Albert B. Chandler; first vice-president, Marston R. Cockey; second vice-president, George H. Usher; third vice-president, B. M. Downs; fourth vice-president, D. W. McAneeny; secretary, F. J. Scherrer; treasurer, R. J. Murphy. For governors to serve two years: Gardner Irving, T. E. Fleming, T. L. Cuyler, Jr., and E. M. Mulford.

Telegraph Operators' Signs.

Telegraph operators always have personal signs which they place on all messages they send or receive. Usually they use two of their initials or take two letters from their names. For instance, James Black will probably use "J B" as his sign. In many cases, however, they choose their signs in peculiar ways.

"We once had a man working here who signed 'K E' because he had taken the Keeley cure," said a Kansas City chief operator recently. "He afterward went back to drinking and then used 'B Z,' deriving it from 'booze.' Another fellow signed 'P S' because he used to say he received a poor salary.

"A woman operator we had here used to sign 'H K,' her initials, until one day her beau jilted her and married another girl. After that she signed 'B H,' which, we understood, meant 'broken heart.'

"In an Eastern office where I once worked there was a hoodoo sign. It was 'K Q.' The first man who used it there was killed by a train; the next one went crazy and the third died of typhoid fever. After that nobody in the office dared use the hoodoo sign. The story about its being a 'jonah' traveled over the country, and to-day you'll find very few operators signing 'K Q.'"—Kansas City Times.

Toronto, Ont.

(Communicated.)

The city of Toronto is the second largest city of Canada, having now a population of 265,000. Situated on Lake Ontario, it has a delightful climate, and is less than an eighteen hours' journey from either Quebec, New York or Chicago, and only a night's ride from Montreal or Ottawa.

In Toronto are located the general offices of the Great North Western Telegraph Company. It is also one of the most important relay offices of the company, connecting with the large number of offices in Ontario, as well as by direct wire service with Montreal, Winnipeg, and through its exclusive connection with the Western Union Telegraph Company the larger cities of the United States.

The company, in addition to a large number of branch offices, operates an extensive ticker service for both New York markets and the local exchanges of Toronto and Montreal. In Toronto are located the head offices of a number of the larger Canadian banks, one of which is now engaged in erecting a fifteen-story office building for its home.

Toronto, also, has one of the most extensive street railway systems on the continent, and boasts of the most modern hotel in Canada, costing upward of one million dollars.

North of Toronto are the Muskoka Lakes, famous as a summer resort, and reached by the Grand Trunk Railway and the Great North Western Telegraph Company.

This is one of the many points at which exclusive Great Northwestern offices are maintained, and by using the lines of that company communication can be had with 49,380 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.

Book Notices.

A novel production in book making is the volume written by Frank P. Sibley, entitled "All by Wire," described as "a telegraphic explanation of a telepathic union of hearts." It is made up of a numerous set of telegrams printed on fac-simile Postal and Western Union telegraph blanks, the whole ingeniously woven into a story, the reading of which will excite interest and mirth. The preface reads, "Love telegrams need no diagrams," while the dramatis personae are given under the head of "The Wire Workers."

Mr. George Evans of the German-Atlantic Cable Company, Cologne, Germany, has issued an international hand book designed for the use of telegraphers, and printed in three languages—German, French and English. The first part of the book, which altogether embraces 330 pages, is devoted to daily calendar purposes covering the entire year. Then there is a list of telegraph companies with tables giving their respective routes, and other details of information. The volume also contains the important articled points of the international service regulations adopted at the International Telegraph Conventions. The book also contains numerous references to recent advances that have been made in telegraphy.

Talk Through Telegraph Instruments.

A strange thing in connection with putting in telephones in the Northwestern offices, says the Rochester (Minn.) "Record," is the fact that the telegraph instruments convey the voices just as if they were telephones. Standing in the office of the Northwestern depot you will hear the dots and dashes being clicked off in double quick time, and then from near one busy little relay will emanate a voice sounding above the tireless ticking. You look under the desk and out of the window, but no one is in sight. Put your ear down and locate the voices and you find that they are coming from the telegraph instrument in front of you. No receiver, no transmitter, no—and still those shrill, piping tones keep up, sounding phantom-like in the distance. It appears that the battery is so strong at division points that the telegraph wires catch the current from the telephone and the magnets in the telegraph instruments act as a transmitter. But it is all very peculiar.—Telephony.

Friendship improves happiness and abates misery by the doubling of our joy and the dividing of our grief.—Cicero.

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

For Sale.—Yetman machine, first-class condition. Practically new. Price $80. Address "Machine," care Telegraph Age, New York.

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.

Commercial Cable Co.

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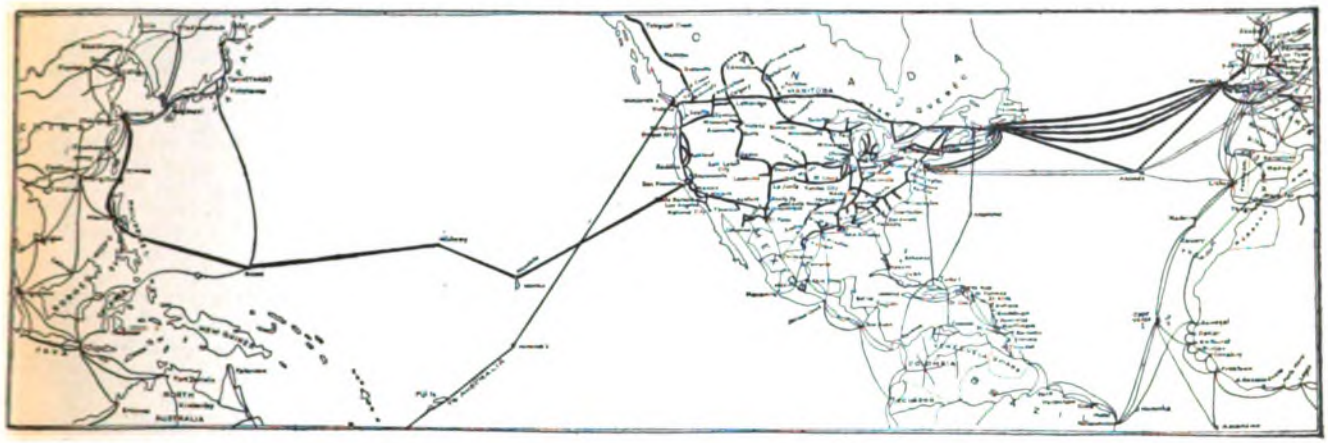

The Most Extensive Combined Ocean and Land Telegraph System—Over 24,000 Miles of Cable.

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THE REASONS WHY THE POSTAL TELEGRAPH-CABLE COMPANY IS THE ONLY SUCCESSFUL COMPETITIVE TELEGRAPH SYSTEM EVER MAINTAINED:

Its proprietors and management determined from the first to establish a permanent business based on sound principles and business-like methods, and have steadfastly adhered to that policy.

Its employees are intelligent, diligent, energetic and enthusiastic. They are in sympathy with their employers and are working for the company's interests, recognizing that their interests are identical with the company's interests and that unless the Postal service is the BEST, public patronage cannot be retained.

Every man in the "Postal's" service is proud of the company's success.

These are the reasons why the "Postal" Company has been successful in the past and will be successful in the future.

The progress of the Postal Telegraph System is evidenced by the continued extension of land lines, the numerous and important railroad connections recently made, the valuable connections with the German cables, the Pacific cable, the Direct West Indies cable, the Bermuda cable, etc.