TELEGRAPH AGE.

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THE TELEGRAPH AGE

No. 21. NEW YORK, NOVEMBER 1, 1903. Vol. XX.

CONTENTS.

SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

The Motor.
An Elementary Description for Students.

The manner in which an electric current is enabled to cause a heavy coil of wire, called an armature, to revolve rapidly between the polepieces of a strong magnet, has always been a perplexing problem to electrical students, and even to those somewhat well advanced in the study the phenomenon is often not quite clear. Electricity and magnetism is said to be intangible and without weight, yet we see it exert a force sufficiently powerful to move objects ranging from the delicate needle of a galvanometer to the ponderous machinery of a trolley car. Wherein, then, lies the source of power?

The answer to this question is that the power derived is the opposing force that magnetic lines of force exert on an object which compels the latter to lengthen their journey. These magnetic lines are analogous to a number of small elastic rubber threads stretched between two connecting points, their normal position being in a straight line. As long as the threads are not interfered with, that is to say, not forcibly pushed up or down at the centre, or any point between the two connecting points, they can exert no force in either direction on a pencil or other object touching but not displacing them. If, however, the pencil is forcibly moved in either direction so as to carry the threads with it, the latter develop a working power equal to that of the extra tension they derive from the externally applied force. If the thus distorted threads are permitted to recoil, that is to say, resume their original straight line position, they will obviously exert their temporarily enhanced strength against any light object that is placed within the sphere of their motion, and if this force is sufficient the said object will be compelled to move along in the same direction as the relaxing threads.

If we now substitute magnetic lines of force for the elastic threads streaming in a straight line between two points, and then compel the object to be moved to convey from an external source a separate army of similar lines of force, the two forces will fight a battle for right of position in the field. The result of the struggle will be a lengthening of the original straight route by

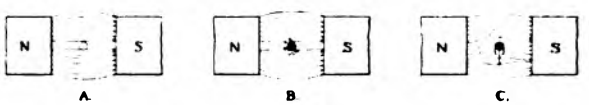


FIG. 1.

a twist of the line upward or downward. If the wire conveying the externally applied force is held in a rigid position, the fighters surrounding it in an endeavor to shorten their journey, bear down on the wire and try to push it out of the way, as was the case with the expanded elastic threads and the pencil.

If, however, the said wire is not held rigidly, but connected in such a manner as to move freely, the applied force, with a foot in an unanchored vessel, so to speak, will exert a backward force on the wire as well as an upward push against their magnetic opponents, with the result that the conveying vessel, or wire itself, is shoved along, as a small boat would be should a man stand in the vessel and push off from the shore with an oar. If the reader will examine letter A, B and C, in Fig. 1 closely, he will probably get a clearer idea of the illustration.

A represents the field magnet of a motor with magnetic lines of force flowing in straight lines from left to right between the two poles. The small circle near the centre is to represent an end view of a copper wire passing through the lines of force at right angles thereto. If no current of

electricity is sent through this conductor the lines in the field will not be disturbed or twisted in the least.

The moment, however, a current from an external source traverses the wire the lines of force in the field become distorted in a manner similar to those shown in C and the disarrangement gives them a greater tension. The disarrangement is caused as follows: Every wire conveying a current of electricity is surrounded by magnetic lines of force which encircle the conductor and travel at right angles to the direction of the current, as shown by the dotted lines in B. Now, it is obvious that the direction traveled by the circular lines while moving above the conductor must be directly opposite to that taken by them in returning below the wire. Hence it follows that when a conductor carrying a current of electricity accompanied by magnetic lines of force travelling in small circles, say in the direction that the hands of a clock move, is placed in a magnetic field where the lines of force all flow straight in one direction, the two forces above the wire will combine their strength while those below will oppose each other. The conductor is thus urged downward into the weaker field and this start is the beginning of the rotary motion which may be maintained in the armature of a motor composed of many similar conductors so long as the current from an external source is constantly supplied.

While the power expended against one conductor is comparatively small it must be remembered, as previously stated, that a motor armature contains a great number of them and it is the multiplicity of such impulses that make a powerful aggregate. The greater quantity of current from an external source that is sent through the coils of the motor and the stronger the magnetic field, the greater will be the power developed.

As resistance in a conductor always consumes, uselessly, a portion of the electrical power producing the current, the ohmic resistance value of a good motor is usually very low, and for that reason the battery which runs the motor must never be turned on suddenly while it is not running, unless an artifical resistance coil is first placed in series with the motor armature and gradually cut out by means of a movable lever as the speed increases. If this precaution is not taken the armature will be destroyed by too great a volume of current, unless the fuse protects it by blowing out.

The reason that the resistance coil is not necessary after the motor is running is, that the motor itself begins to act as a dynamo as soon as its armature begins to rotate, and generates an electromotive force of its own which is opposite in direction to that of the external pressure. This back pressure, or counter E M F, as it is called, increases in value in proportion to the speed attained by the revolving armature. If there is no load, it may equal (almost) that of the external pressure, hence under these conditions the latter is shorn of its power to such an extent that the feeding current is greatly reduced. The student will now readily see that an electric motor and a dynamo are practically one and the same thing. If you rotate the armature of such a machine mechanically from an external source of power, the armature will develop electrical power, and we call it a dynamo. On the other hand, if we send a current of electricity from another source through the armature, the latter will rotate and by means of a belt and pully be compelled to do mechanical work. Then we call it a motor.

Figure 2 represents the standard fuse and holder recently adopted by the Western Union Telegraph Company. This pattern is well received by insurance underwriters on account of the impossibility of an arc forming when the lead

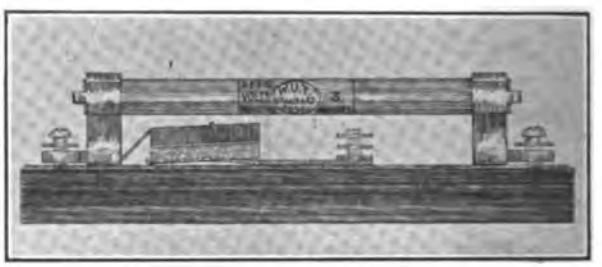


FIG. 2.—WESTERN UNION STANDARD FUSE.

is "blown out" or melted. The fuse is encased in a cylinder fibre tube, which latter is filled with powdered asbestus. The moment the lead melts the orifice is quickly filled by the powder and any flame or arc which might at first develop, is quickly smothered.

The Cable.

The Alaska cable from Juneau to Sitka has been completed and an office established at the capital city. Connection with Sitka was made October 7.

Mr. H. C. B. Underdown, a director in the Direct United States Cable Company, was a recent visitor to the United States making an official tour of the company's stations on this side of the Atlantic.

Mr. E. Grigg, manager of the St. Croix, West Indies, cable office of the West India and Panama Cable Company, who has been sojourning in the United States for the past three months, sailed for home on October 22.

Mr. Charles Cuttriss, electrical engineer of the Commercial Cable Company, has returned from the Philippine Islands, where he has been superintending the connecting up of the new Pacific cable belonging to his company. Mr. Cuttriss was quite ill while in Manila, and although now much improved in health, will take a needed rest of some weeks at Hot Springs, Va.

Lacking a beacon to show the clear way to a safe anchorage within the coral atoll known as the Midway Islands, in the Pacific Ocean, the

schooner Julia E. Whalen has become a wreck on the reefs surrounding the islands and, with her cargo, is a total loss. Her crew of six and several telegraph operators, who are to be stationed there by the Commercial Cable Company, saved their lives, but the supplies sent for their support and comfort through the winter months were lost with the vessel. By the way of Honolulu, nearly fifteen hundred miles distant from the little group of islets, the news of the loss of the vessel was brought to the officials of the Commercial Cable Company in New York. A relief expedition will be sent out at once, as the men are said to be suffering for food and clothing. Chosen as a way station for the new Pacific cable to Honolulu and Manila, the Midway Islands are low, lying only six to twelve feet above the surf, which incessantly beats upon the coral beaches. There is no lighthouse to guide the mariner to any one of the numerous channels, and steps will at once be taken to induce the Government to provide guiding lights. The Julia E. Whalen, a schooner of one hundred tons, was formerly of the T wharf fishing fleet, of Boston, and was sent to the Pacific Coast a few years ago during the Klondike gold excitement with a party. After a trip to the North the schooner was bought by parties in the Hawaiian Islands. She sailed from Honolulu two weeks ago, the company having found it a difficult task to obtain a vessel for the trip. Not the first to be lost on the island reefs is the Whalen. In 1887 the bark Wandering Minstrel was wrecked there. Captain Walker, his family and the crew spent two winters and fourteen months' time on the islands before help came.

Wireless Telegraphy.

An interesting article appearing in the October 17 issue of the "Scientific American," entitled, "The Kamm Typewriter for Use With Wireless Telegraphy," describes an ingenious new office printing typewriter for utilization with wireless telegraphy, or if necessary with wires, which has been devised by Leo Kamm, an electrical engineer of London, England.

A special despatch from Port Townsend, Wash., of October 17, says: "The plant of the Pacific Wireless Telegraph Company was thrown open to the public here today. The apparatus worked satisfactorily on the initial message, which advised President Roosevelt of the completion of connections at Fort Casey on Whidby Island with the land lines of the big telegraph companies. Following this a large number of congratulatory messages passed between Fort Casey and this city."

According to a despatch from Peking, the first wireless telegraph station of Marconi on the Coast of China was opened October 17 in the presence of the Diplomatic and Military Corps and representatives of the Board of War and the Board of Foreign Affairs. Congratulatory messages were exchanged with the Italian flagship Vettor Pisani, which was lying off Taku. Wireless telegraphy, as an auxiliary defence for the Legations was first suggested as a mutual plan between the Legations, but to Italy is due the credit for the realization of the scheme. It is reported that the Chinese Government has already offered worship to heaven to confound the electrical spirits.

Dr. Lee De Forest, the inventor of the De Forest wireless telegraph system, is in England with his chief assistant, H. M. Horton, and two outfits of the De Forest wireless telegraph apparatus, whether he has gone at the request of prominent men connected with the British Post Office, the Admiralty and others. A demonstration is to be made between Holyhead and Dublin, and all the facilities of the Post Office have been put at Dr. De Forest's disposal toward this end. Sir William H. Preece is interested in the enterprise. The matter of speed of transmission of the De Forest system will be especially observed. It is the intention of those interested in Great Britain to incorporate the British Empire De Forest Company upon the completion of these tests.

Suit was commenced on October 5 in the United States Circuit Court at Trenton, N. J., to test the patent rights of the Marconi Wireless Telegraph Company of America. Action is based on the testimony of Emerson Dolbear, of Somerville, Middlesex County, Mass., who says that he is the original inventor of space telegraphy, and asks a preliminary injunction restraining the Marconi Wireless Telegraph Company from making further use of the invention and an accounting from the corporation for alleged infringement of his patent rights. Dolbear's patent rights were granted October 5, 1886, the patent number being 350,199. He sold his rights to the International Wireless Telegraph Company March 14, 1903. The latter concern brings the suit. It is alleged that the Marconi company has known full well of the patent rights of Dolbear, and that Marconi and his assigns have been repeatedly warned by Dolbear to discontinue the manufacture and use of space telegraphy instruments, but that no heed has been paid to the warning.

A similar case is brought by Reginald Fessenden, a citizen of Virginia, who is now living at Bayonne, N. J., and who is an inventor of space-telegraph devices.

Telegraphers' Mutual Benefit Association.

Assessment number 413 has been levied by the Telegraphers' Mutual Benefit Association to cover the claims arising from the deaths of Wm. H. Morton, at Dallas, Tex.; George W. Henry, at Oil City, Pa., and J. V. W. Hermance, at Atchison, Kas.

The annual meeting of the association will be held in Room 60, 195 Broadway, New York, on Wednesday, November 18, at 4 P. M.

A New Type of Telegraph Switchboard.

There has recently been installed in the Postal Telegraph-Cable Company's office at Newark and Guttenburg N. J., switchboards of an entirely new type. It is the invention of Mr. John F. Skirrow, electrician of that company, and it is primarily intended for use in intermediate offices. The design embraces in its construction some radical departures from the existing types of boards now in use in the telegraph service.

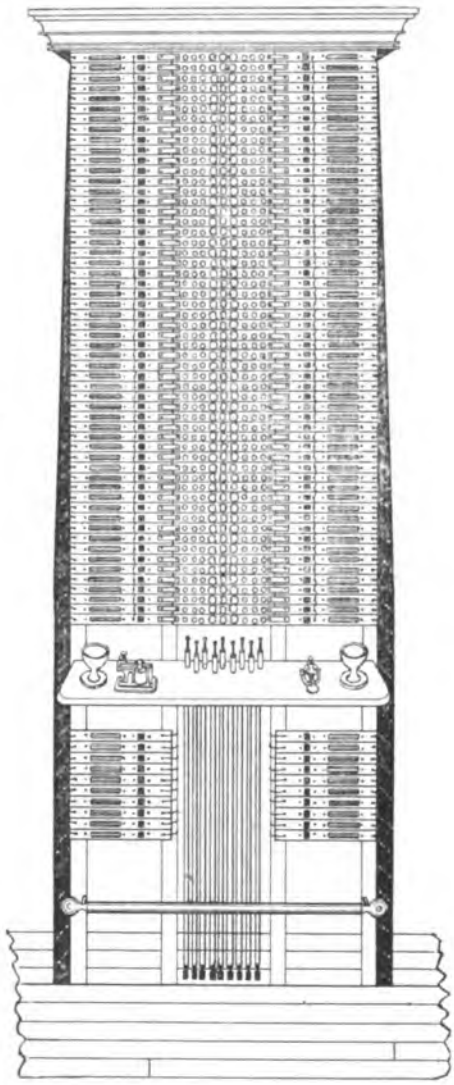


Fig. I.

The inventor appears to have overcome some of the objections inherent in other forms and to have evolved a model calculated to attract attention.

Mr. Skirrow has given years of study to the problems involved in telegraph switchboard construction, and his switchboard and terminal frame system adopted by the Postal are recognized by that company as its standard for large offices.

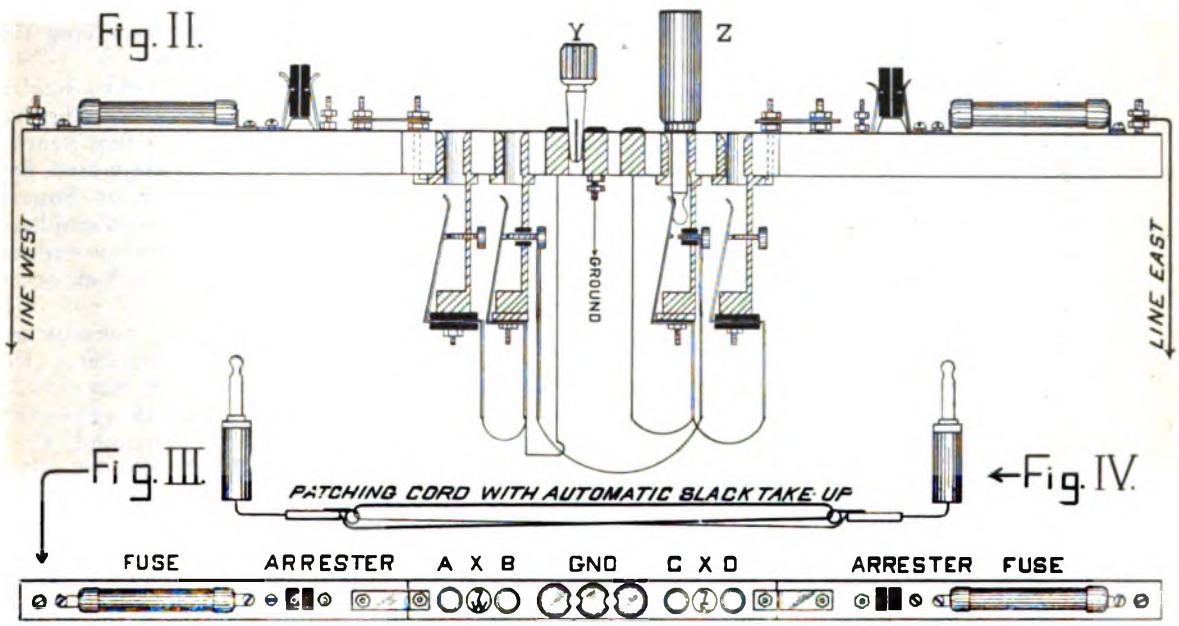
In designing this new type of board the aim was to provide, first, a switchboard for intermediate offices so arranged that every patch or connection that could possibly be required might be made by any one of ordinary intelligence and without any electrical knowledge whatever. Second, a board that could be placed if desired at some point where no operator was stationed, but where the office could be reached by telephone and patches made by any person accessible by telephone; third, a board in which the capacity could be increased by one wire units as desired, providing equipment for one wire, fifty wires, or 1,000 wires, or more, as growth might require, and yet retaining its flexibility no matter what its capacity; fourth, a board that would accommodate a large number of circuits in a very small space; fifth, a board so constructed as to be practically fireproof and possessing high insulation; sixth, a board that would preserve uniformity of construction and design in all sizes of boards, so that repair parts could be carried in stock available for use in any board; seventh, a board complete in itself carrying all of its fuse and arrester equipment conveniently arranged, the board itself being ready to set in place as a whole when received from the manufacturer, instead of having to be assembled where erected, thus saving labor in the original setting up or in changing its location when desired.

In this board of which Fig. 1 gives a general view, the wire terminals consist of horizontal strips, each strip containing four round type jacks and three discs. In series with each strip are two twenty-ampere fuses mounted in combination with carbon-plate lightning arresters of new design, the plates of which can be instantly removed for examination or renewal. The terminal strips and combined fuses and arresters are mounted upon four vertical bars of angle iron which stand upon the floor and rise to a height of seven feet. Bracketed to these bars at a height of thirty inches from the floor is a shelf which carries the test set, consisting of a 150-ohm sounder and key, receptacles for plugs, etc., and the plugs and cords for the test set and other tables or loops connected to the board. In series with the cords are placed one-half ampere fuses and sensitive arresters to protect them and the instruments. These arresters are mounted horizontally on the frame below the shelf in a manner similar to those above the shelf which carry the line wires.

The line wire strips, fuses and arresters begin four inches above the shelf, and as each series occupies a space one inch in width, the height required for a fifty-wire board is fifty-four inches above the shelf. The terminal strips and the fuse blocks are each ten inches in length so that the total width of the board, allowing for connecting latches between the separate parts, is thirty-three inches. A corresponding switchboard of the old spring jack type would occupy a space of about twelve feet in length by eight feet in height, and this would not include the fuse and arrester equipment. Without the fuse

and arrester equipment the new board measures but ten inches in width.

The terminal strips referred to are arranged as shown in Fig. 3, the four jacks being connected in series. The outside or end jack in each case is a series or looping jack, the inner jacks are patching jacks. Each wire is connected via its fuses and arresters through one of these strips, the actual connections of which are shown in Fig. 2. Jacks A and D are used only to cut in test or other instruments or loops, while jacks B and C are used exclusively for patching. Patches are made by using single cords with a single connection plug on each end (See Fig. 4). Between each pair of jacks is a "marker," as shown at X, Fig. 3. To make a patch such as, say, 6 east to 7 west, it is necessary only to place one of the plugs of a patching cord in the patching jack marked 6 east, and the other plug in patching jack marked 7 west. To ground a wire the discs



are used, the centre one being grounded, a pin (Y) placed at either side will ground the wire east or west as desired. To open a wire a plug (Z) is inserted in the patching jack east or west as desired.

It will be seen that none of the connections require any electrical knowledge on the part of the manipulator, it being necessary only to place the plugs in the marked holes, as instructed, to obtain the desired results.

As the strips are independently attached to the frame they may be added to or removed at will. The board is so arranged that it stands eighteen inches away from the wall, the cables that connect it being run from the floor up the sides of the angle irons.

When it is desired to accommodate more than fifty wires (and it must be borne in mind that this fifty-wire board is equal to a one hundred-strap board of the old type) another board is set up along side of the first, and so on. Cords from one board to the other give the necessary connections. At the Guttenburg, New Jersey, office three of these boards are erected side by side accommodating one hundred and fifty wires in and out, a total capacity of three hundred wires. The total width of the combined boards is nine feet six inches. They replace boards which occupied a space of thirty-five lineal feet.

It will be noticed that when all the wires are straight and regular in this board that there are no pins, plugs, or cords in it, and there is therefore no liability of loose connections from these sources. It is also impossible for any one manipulating the board to accidentally cross up all the wires by placing connections upon a wrong row of discs.

As every chief operator knows, it frequently happens that an operator when closing his office for the night will mix up the board when cutting out the wires, rendering them useless until he reports the following morning. In this board pulling out all the plugs when closing and cutting out the office makes everything straight and regular.

This type of board makes possible a uniform intermediate office telegraph switchboard system, in which every board has interchangeable parts, and the operation of which requires no skilled knowledge, a desideratum in modern switchboard practice, and long sought for by telegraph engineers.

The Telegraph Tournament.

As we go to press the great telegraphic tournament at Philadelphia, of the American Telegraphers' Tournament Association, announced for October 30 and 31, is beginning its exhibition. The preparations for this affair has been extensive, a wide and enthusiastic interest in it has been aroused, and the indications now all point to the finest tournamental contest of the kind ever held in this or any other country. The great hall of the Auditorium of the National Export Exposition Building in which the tournament will be held, has been especially prepared to meet the needs of the contestants. The receiving contest will take place on the band stand, while the senders will send from the main platform of the hall.

Mr. F. M. McClintic, of Dallas, Tex., the winner of the famous Carnegie medal at Atlanta, Ga., who has entered this year again as one of the contestants, has been in Philadelphia for a week past where he has been in constant practice, preliminary to the event. The Carnegie medal, together with other trophies previously won by this distinguished telegrapher at other contests, have been on public view from a jeweler's window in Philadelphia for some time past. Besides these interesting articles a handsome silver cup donated by a few members of the Consolidated Stock Exchange of New York, to be awarded to the "most perfect Morse sender," in a special sending message class, has also been on exhibition, and all have attracted a large amount of attention.

The Derby Desk Company, of New York, has donated a handsome oak desk to be offered as a prize.

An exhibit will be made at the Tournament by the Yetman Transmitter, consisting of twelve instruments.

The telegraphic manufacturing companies have been liberal in their contributions of apparatus, keys and sounders, for use at the tournament, notably among them might be mentioned the names of J. H. Bunnell and Company, Foote, Pierson and Company and Manhattan Electrical Supply Company, all of New York.

In order to secure absolute fairness of decision, and to prevent any suspicion of favoriteism, the different judges of the various contests will occupy a private room, apart from the contesting operators, the merits of whose special work they will be called upon to decide. Each contestant will be given a special number, knowledge of which will be lodged exclusively with the secretary. The matter, as received or sent, to be passed upon will be given to the judges by number and not by name, of which they will of course not be informed, and decisions will be rendered accordingly. The announcement of the names of winners will be made by the secretary, Mr. C. B. Wood, who alone will be able to perform this service.

GENERAL RULES FOR GOVERNMEMT OF CONTESTS.

Speed, formation of letters, spacing and adherence to copy will determine the winners in all sending contests.

In all receiving contests, the general appearance of messages, as if intended for public delivery, will be left to the choice of the contestants. This refers to the general form of the message, lines, spacing, punctuation, etc., in the date, address and signature.

The month and year must appear on each copy, although not transmitted.

The ordinarily accepted abbreviation for the month will be permitted, but the year must be in full.

Each message to be timed as near as the actual time as possible, as if intended for immediate delivery. Clocks will be arranged conveniently.

The text of every message must be copied as sent. Each omission, or addition will be counted as an error.

The contests will be as follows:

FIRST EVENT—2 P. M., FRIDAY OCTOBER 30.

Railroad Operators, Sending and Receiving Contest.

The winner of the sending contest to send for the receivers. Open only to operators who have been in actual railroad service for five years or more. Each entry must be accompanied by a letter from the Division Operator or Superintendent under whom the applicant was employed.

Class A—Sending. Sending twenty ordinary railroad messages. First prize, cash, $50; second prize, cash, $25.

Class B—Receiving. Receiving twenty ordinary railroad messages on typewriter. First prize, cash, $50; second prize, cash, $25.

The judges appointed to pass on this event are: Messrs. Andrew Keiser, J. L. Osmond, C. M. Schaeffer, Hugh Logan, W. T. Swem, C. M. Lewis, J. J. Mishler and E. T. Yearsley.

SECOND EVENT—3 P. M.

Ladies' Contest.

Class A—Sending. Sending twenty commercial messages. First prize, cash, $50; second prize, cash, $25.

Class B—Receiving. Receiving twenty commercial messages on typewriter. First prize, cash, $50; second prize, cash, $25. The winner in class A to send for receivers.

Judges: T. W. Bair, T. H. Bell, M. A. Baker, J. A. McNichol and H. C. Robinson.

THIRD EVENT—4 P. M.

Old-Timers Contest.

Open to all sixty years of age or over.

Class A—Sending ten messages and 300 words of press. First prize, cash, $50; second prize, cash, $25.

Class B—Receiving ten messages and 300 words of press on typewriter. First prize, cash, $50; second prize, cash, $25.

Judges: F. G. Lamb, T. P. Murphy, J. W. Dyer, M. Dunn and J. B. Bonner.

FOURTH EVENT—7 P. M.

For Best All-Around Operator.

Sending twenty-five messages and 500 words

of press. Receiving twenty-five messages and 500 words of press on typewriter. All straight work. The contestant having the highest total average to be declared the winner. First prize, cash, $300 and the Carnegie medal; second prize, cash, $150.

Judges: J. C. Barclay, J. P. Altberger, J. V. Berger, A. G. Saylor, B. Brooks, L. Lemon, C. E. Bagley, C. E. Stump, P. B. Hancock, A. Higgins, T. R. Taltavall and S. S. Garwood.

FIFTH EVENT—2 P. M., SATURDAY, OCTOBER 31.

Phillips Code.

Class A—Sending. Thirty minutes' trial. First prize, cash, $75.

Class B—Receiving. Thirty minutes' trial. First prize, cash, $75.

Judges: E. C. Boileau, G. R. Allen, J. J. Belzer, Walter P. Phillips and A. E. Marr.

SIXTH EVENT—3 P. M.

Broker operators. Open to broker operators only.

Class A—Sending. Ten minutes' trial; winner to send for receivers. First prize, cash, $100.

Class B—Receiving. First prize, cash, $100.

Judges: W. H. Conn, A. W. Wallace, W. D. Black, J. E. Janney and A. S. Weir.

SEVENTH EVENT—4 P. M.

Yetman Transmitter Special.

Class A—Sending press, fifteen minutes. First prize, cash, $50, and one Yetman Transmitter.

Class B—Receiving messages, fifteen minutes, on any typewriter. Yetman Transmitter. Winner of class A to send for receivers. First prize, cash, $50, and one Yetman Transmitter.

Judges: T. A. McCammon, D. Good, J. F. Ahearn, J. P. Williams, R. I. Smith, A. E. Marr, Fred Catlin and Robert Morton.

EIGHTH EVENT—7.30 P. M.

Championship of America.

Sending two hundred words of straight matter. First prize, cash, $300, second prize, cash, $150.

Judges: J. W. Reed, A. E. Sink, A. S. Spracklin, W. H. Jackson, C. P. Bruch, G. H. Usher, C. C. Adams, H. A. Yoell, J. Maxwell, F. M. Griffin, and J. J. Ghegan.

NINTH EVENT—9 P. M.

Receiving commercial messages on typewriter.

Automatic transmission, thirty minute trial. First prize, cash, $200, and a Fay Sholes, No. 6 typewriter; second prize, cash, $100.

Judges: J. P. McLoraine, A. P. Sell, J. Dolphin, J. F. McGuire, C. Shirley, J. F. Skirrow, E. Brylawski, H. M. Hughes.

Personal Mention.

Mr. W. E. Gilmore, of Orange, N. J., general manager of the Edison interests, who has been in Europe for the past three months on business connected with his companies, has returned.

Mr. J. J. Ghegan, vice-president and general manager of J. H. Bunnell and Company, New York, has the sympathy of his friends in the bereavement caused by the death of his daughter, Marcella, aged twenty-one years, who died on October 11, at her home in Newark, N. J.

Mr. Francis W. Jones, electrical engineer of the Postal Telegraph-Cable Company, New York, has been appointed chairman of Section G, which embraces the subject of electric communications of the International Electrical Congress, which is to meet in September, 1904, at St. Louis, Mo.

The Railroad.

The Atlantic Coast Line has recently installed between Florence, S. C., and Wilmington, N. C., what is known as the "composite system of the Southern Bell Telephone Company," over its quadruplex telegraph circuit, and it has proven to be a success.

Mr. George W. Dailey, assistant superintendent of telegraph of the Chicago Northwestern Railroad Company at Boone, Ia., has been appointed acting superintendent of telegraph of the entire system, vice G. H. Thayer, who has been on sick leave for several months past.

A patent, No. 740,461, for an electric-lighting apparatus for railway cars, has been granted to Roger M. Newbold, of Birmingham, Ala. Current is furnished by a dynamo driven by the car axle, the magnetization in the dynamo being varied automatically according to the current in the main circuit.

Mr. Andrew Keiser, of Philadelphia, superintendent of telegraph of the Pennsylvania Railroad, was a few weeks ago remembered by employes on the Pittsburg division with a chest of fine silverware, and on October 6 was presented with a handsome leather rocker. Mr. Keiser is a popular official with all branches of the service with which he is connected.

The annual meeting of the Railway Signaling Club will be held at The Wayne Hotel, Detroit, Mich., on Nov. 10. Reports are expected from the committees on signal and track circuits; on organization; on cost of installing iron and copper wire line circuits; on distant signals on three-position signals as compared with separate home and distant, and on automatic signaling for single track.

A patent, No. 740,505, for an automatic block-signal system, has been taken out by Asbury G. Wilson, of Wilkinsburg, Pa., assignor to the Union Switch and Signal Company, Swissvale, Pa. A neutral polar relay is in circuit with each insulated track section and a source of electrical supply. A circuit closer controlled by the neutral polar relay operates the signal mechanism, the circuit closer comprising a secondary coil forming a closed circuit, so as to cause a slow release of the circuit closer.

Resignations and Appointments.

Mr. George A. Brown has been appointed manager of the Western Union Telegraph Company at Binghamton, N. Y., vice James H. Arnott, resigned.

Mr. H. J. Carroll has been appointed chief operator of the Western Union Telegraph Company at Parkersburg, W. Va., vice W. P. Egan, resigned.

Mr. R. F. Ross, of New Orleans, La., has been appointed manager of the Western Union Telegraph Company at Selma, Ala., vice A. V. Dunn, resigned.

Mr. D. W. Hausam, of the Western Union Telegraph Company, Dallas, Texas, has transferred his services to the Houston, Tex., office of the same company.

Mr. H. M. Armistead, manager of the Western Union Telegraph Company, Salisbury, N. C., has resigned to enter the Postal service at Augusta, Ga. He is succeeded by Mr. A. H. Nash, formerly chief operator of that office.

Mr. R. Herring, manager of the Western Union Telegraph Company at Taylor, Tex., has resigned to accept a position in the San Antonio, Tex., office of the same company. Mrs. J. M. Watson has been appointed to succeed to the management at Taylor.

Mr. A. R. Stone, manager of the Western Union Telegraph Company, at Wheeling, W. Va., has been transferred to a similar position at Warren, Pa., where he is well and favorably known, and Mr. Harry Young, a former manager of the Wheeling office, who has been on the sick list for some months, has been reappointed to the position of manager.

Recent New York Visitors.

Mr. C. Corbett, superintendent of the Western Union Telegraph Company, Cleveland, O.

Mr. I. N. Miller, Jr., superintendent of the American District Telegraph Company, San Francisco, Cal.

Mr. Frank Jaynes, general superintendent of the Western Union Telegraph Company, San Francisco, Cal.

Mr. J. G. Kinney, a train despatcher on the Lehigh Valley Railroad, Sayre, Pa. Mr. Kinney was accompanied by his wife.

Mr. J. Levin, general superintendent of the Western Union Telegraph Company, Atlanta, Ga. Mr. Levin returned to the South accompanied by his wife and daughter.

Mr. H. W. P. Swisher, formerly manager of the telegraph department, Standard Oil Company, New York, now secretary to Mr. W. W. Splane, superintendent of telegraph of the company, Oil City, Pa.

General Mention.

The Western Union Telegraph Company is about to construct a new main office at Tampa, Fla.

Mr. W. J. Martin, manager of the Postal Telegraph office, Niagara Falls, N. Y., was married at St. Catharines, Ont., on October 15.

Mr. H. G. Haddon, at the annual meeting of the Martha's Vineyard Telegraph Company, held in Boston, Mass., on October 5, was reelected president and general manager of the company for the coming year.

Mr. C. M. Baker, assistant general superintendent of the Postal Telegraph-Cable Company, Chicago, Ill., in remitting to cover his subscription for another year, writes: "I am glad to see the AGE prosper and improve from year to year. We could not keep house without it."

"I am glad to renew my subscription. TELEGRAPH AGE is invaluable to myself and should be to all old-timers." This paragraph, taken from a recent letter received from Mr. J. E. Dunning, of Paterson, N. J., who many years since abandoned the key for commercial pursuits, goes to prove the saying that, "once a telegrapher, always a telegrapher."

Mr. W. E. Pierce, formerly a quad chief in the Western Union Telegraph Company at Pittsburg, Pa., who resigned on account of ill health some three months ago, and after an extended trip through California, has located at Ash Fork, Ariz., for the Postal Telegraph-Cable Company, where he has charge of the repeaters, days, at this newly established repeater station.

Mr. W. E. Conrad, chief clerk to General Superintendent Brooks of the Long Distance Telephone Company, New York, has accepted a position with the Central Union Telephone Company, at Indianapolis, Ind. Mr. Conrad was formerly in the telegraph service, his last position being that of chief operator for the Postal Telegraph-Cable Company, at Norfolk, Va.

Obituary.

John K. Reagan, aged forty-five years, an operator at Hornellsville, N. Y., died on October 6.

W. H. Higgins, aged thirty-eight years, an operator at San Francisco, Cal. died on October 9.

Thomas J. Clinger, one of the oldest and best known operators in the Western Union service, Philadelphia, Pa., died on Sunday, October 25.

Newell Cook, a train despatcher at Chattanooga, Tenn., a native of northern Ohio, and a well known old time telegrapher, died at Chattanooga, Tenn., October 7.

He that avoideth not small faults, by little and little falleth into greater.—Thomas a Kempis.

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NEW YORK, November 1, 1903.

The amount of information contained in each issue of TELEGRAPH AGE of the utmost practical value to the progressive operator who is ambitious to succeed, to acquire a more thorough knowledge of his profession, and not only to better qualify himself for the position he now occupies, and consequently for advancement, should prompt many to send in their subscriptions to this journal without delay. The first article in each issue, contributed by Willis H. Jones, under the standing heading of "Some Points on Electricity," contains more positive instruction concerning the telegraph, than can be found anywhere else, and worth more to the operator than many times the cost of the paper itself. Subscriptions should be sent direct to this office, or to any of our agents who may be found with both the Western Union and Postal companies in nearly every large centre in the United States.

We are prepared to furnish a limited number of bound volumes of TELEGRAPH AGE, which embraces 536 reading pages, besides the index, for the year 1902, at the uniform rate of $3 a volume. The binding is substantial and the lettering is done in gilt. The volume furnishes a complete record for the year named of the telegraph, the cable, wireless telegraphy and other allied interests, the whole constituting an interesting work of reference of the highest worth to all telegraphers, libraries, etc., to which the carefully prepared cross-index lends additional value. Single copies of the index for volume XIX, covering the year 1902, may be had at ten cents apiece. Our friends who require copies of the bound volume, or of the index alone, should send in their orders promptly so that they may be filled while the supply lasts.

A New Edition of Pocket Diagrams.

The popularity of Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students, continue to increase as time passes. Brought out late in June, a year ago, several editions have already been run through, such has been the phenomenal demand for this unique work. The volume met with instant appreciation on its appearance for the intelligence, simplicity and comprehensiveness shown in the writings of Willis H. Jones, its author, who is the conductor of the electrical department in TELEGRAPH AGE, had given him a wide and permnent place in the estimation of telegraphers as a favorite writer on all telegraphic subjects. During the past summer Mr. Jones has carefully revised his book, enlarging it with about one hundred pages of new matter, including a number of diagrams, thus materially adding to the value of the work, and bringing it in every respect strictly up-to-date. The increase of matter fully describes and illustrates important new apparatus used by both the Postal and Western Union telegraph companies.

In contemplating the early issuance of this revised work it is not too much to say that it will embody, as did, indeed, the earlier editions, the finest study and presentation of the many-sided subject of the telegraph, ever attempted. There is no other book like it, or even approaching it, in thoroughness or in original detail of statement. Its helpful qualities manifest alike to the beginner, to the student, to the operator and to all telegraphers of whatever grade and official position, were long since recognized. Herein lies the strength of the book. It is because Mr. Jones is a telegrapher himself—an engineer of high repute, a man active in his profession, that enables him to deal with his subject, not from the standpoint of the theorist, as with most writers, but from the plain, everyday practical side gained by the experience of personal contact. He himself knows what other telegraphers want to know, and has the particular gift of imparting his knowledge in a way that his readers, including the least expert, readily grasp. In fact, avoiding all technicalities as far as possible, his style is colloquial, simple and clear, bright and entertaining. He gains the confidence and enthusiasm of his readers and holds their interest like a master story writer.

The large sales of the preceding editions established a new record of circulation for works of this character. It found endorsement among the railroad telegraphers as well as among the commercial men. Throughout the world among men who send Morse the book has already found thousands of readers. The demand for it has been constant. It is as brisk to-day as it was a year ago, thus demonstrating the standard quality of the volume.

The revised work is now in press and will be ready, it is expected, during the month. It is of handy size, and is bound, as before, in flexible

black leather. There is an index of contents and another of diagrams. As these are given in detail they afford ready aid to the reader in his search for any specific subject, or part thereof, in which he may be interested.

The price of the book is maintained at the old figure, namely, $1.50. This includes the postage. All orders now being received will be filled directly the volume is ready, and the kindly indulgence of our friends in this matter is requested. Orders should be addressed to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

Western Union Telegraph Company Election of Officers.

The directors of the Western Union Telegraph Company who were chosen at the annual meeting held in New York on October 14, met at the general offices of the company, 195 Broadway, New York, on October 21, and reelected the old officers of the company as follows:

Robert C. Clowry, president and general manager; George J. Gould, J. B. VanEvery, Thomas F. Clark, vice-presidents; A. R. Brewer, secretary; M. T. Wilbur, treasurer; J. B. VanEvery, auditor, and George H. Fearons, general attorney.

Executive Committee: Thomas T. Eckert, chairman; Robert C. Clowry, John T. Terry, Samuel Sloan, George J. Gould, Russell Sage, Edwin Gould, Louis Fitzgerald, Frank Jay Gould, Jacob H. Schiff and James H. Hyde.

The Board of Directors are: Thomas T. Eckert, chairman; Robert C. Clowry, John T. Terry, Russell Sage, George J. Gould, Samuel Sloan, Edwin Gould, Louis Fitzgerald, Frank Jay Gould, Jacob H. Schiff, James H. Hyde, J. Pierpont Morgan, William D. Bishop, Charles Lanier, Chauncey M. Depew, Henry M. Flagler, John Jacob Astor, Oliver Ames, C. Sidney Shepard, J. B. VanEvery, John K. Cowen, James Stillman, Thomas F. Clark, William L. Bull, Morris K. Jesup, E. H. Harriman, Charles Lockhart, Samuel Spencer, Howard Gould and John J. Mitchell.

Farewell Dinner to Isaac McMichael.

A farewell dinner was tendered on October 19 to Isaac McMichael, superintendent of the Western Union Telegraph Company at Minneapolis, Minn., who retires to accept the position of general manager of the Great North Western Telegraph Company at Toronto, Ont.

As a testimonial, it was one of the most marked that has been given to any citizen of Minneapolis in many years. Prominent educators, holders of high offices and heads of important business institutions sat at the table and paid tribute to the sterling character of the honored guest of the occasion. The target sat proudly but modestly through it all and bore the rare compliments gracefully.

Seated about the elaborately decorated tables, which were formed in the shape of the letter T, were half a hundred of the prominent men of Minneapolis. The feast of edibles was as rich to each person present as the "flow of soul" must have been to Mr. McMichael.

E. J. Phelps was toastmaster, and, at the head of the table sat Mr. McMichael at his right. Numerous toasts were responded to, all praising in one way and another the work that the particular guest has accomplished, how he has merited his distinct promotion and wishing for him increased success in his new field.

Among those who responded to toasts, earnestly and eloquently, were J. C. Haynes, Mayor of the municipality of Minneapolis; Cyrus Northrop, president of the University of Minnesota; W. H. Eustis, formerly Mayor of Minneapolis; H. A. Tuttle, general manager of the North American Telegraph Company; J. P. Cassidy, W. A. Kerr, Conway McMillan, H. F. Stevens, St. Paul; J. P. Beckwith, W. L. Harris and Secretary Rogers, of the Chamber of Commerce.

Following is a full list of the guests at the dinner: Isaac McMichael, E. J. Phelps, H. F. Stevens, St. Paul; W. F. Bechtel, W. A. Kerr, Conway McMillan, Wallace Campbell, Hal. Watson, Frank M. Barnard, John A. Schlener, Col. Robers, James Marshall, J. C. Haynes, F. E. Mix, D. G. McIntosh, C. F. Ewe, J. F. Beckwith, Francis Woodward, W. S. Jones, W. T. Frazier, J. P. Cassidy, A. C. Paul, P. D. Boutelle, C. E. Lewis, T. F. Wadsworth, F. E. Barney, Theodore L. Hayes, W. E. Satterlee, M. S. Nicholson, H. A. Tuttle, W. L. Harris, W. H. Eustis, Col. Fahnstock, F. V. Hobart, J. L. Tracy, E. C. Thayer, S. C. Gilbert, D. W. Parsons, E. A. Montgomery and J. Swan.

Great regret is felt among the employes of the Minneapolis office, notwithstanding the fact that all join in rejoicing at the honor conferred upon the man who has been their chief for the past two decades.

In order to show their appreciation of his worth the members of his force, the afternoon of the day of the dinner, presented Mr. McMichael with a magnificent diamond stud. The presentation was a complete surprise, the recipient being taken wholly by storm, and the reading was given by Miss M. E. O'Brien, chief clerk.

Mr. McMichael was also presented with a beautiful watch and charm, on behalf of the managers, the presentation being made by Assistant Superintendent George W. Lloyd.

The Magnetic Club Dinner.

The fall dinner of the Magnetic Club will take place at the St. Dennis Hotel, 8th street and Broadway, New York, on November 18. This being the date on which the annual meeting of the Telegraphers' Mutual Benefit Association takes place the delegates thereto from out of town will as usual be the guests of the Club. Judging from present indications, it will be one of the largest attended dinners in its history.

Nathaniel E. Smith, Superintendent of Telegraph, New York, New Haven and Hartford Railroad.

Nathaniel E. Smith, for a number of years chief despatcher of the New York, New Haven and Hartford Railroad Company, and who was lately appointed to the newly created position of superintendent of telegraph of that road, with headquarters at New Haven, Conn., is essentially a self-made man. He was born May 14, 1855, at Southbridge, Mass., and until his fourteenth year his life was passed upon a farm. When but a child of five he had the misfortune to lose by accident his right arm. At twelve years of age his father died leaving a family of a wife and five children, yet the devoted mother, by hard work and self sacrifice, was able to give all of her children a high school education. Young Nathaniel supplemented this student life by a

NATHANIEL E. SMITH.
Superintendent of Telegraph, New York, New Haven and Hartford Railroad.

term at the famous Wilbraham Academy at North Wilbraham, Mass. Leaving his studies he became a bookkeeper for a paper manufacturer at West Dudley, Mass., and while there managed to "pick up" telegraphy. As there were no telegraph facilities at that place, however, he persuaded his employer to have telegraphic connection made with the office, he, himself, agreeing to learn the art sufficiently to accommodate all needs and take care of whatever additional business that might be influenced thereby. The advice was followed and with good results. After four years passed in this situation Mr. Smith obtained his first telegraph position in February, 1879, as a night operator at Franklin, Mass., for the old New York and New England Railroad. Speedily becoming proficient in his profession in the course of a few months he was transferred to the train despatchers' office at Boston, and a few months later still was promoted to a trick as train despatcher. In October, 1882, he resigned to accept a similar position on the old Shore Line division of the New York, New Haven and Hartford Railroad at New Haven. At that time the "Consolidated" road, now embracing lines 2,000 miles in extent, comprised but three short divisions, and Mr. Smith was the only despatcher required at New Haven, whereas now twelve are necessary. When the New Haven and Northampton road was absorbed by the larger company, other lines in the meantime having been leased, Mr. Smith was made chief despatcher of the system a position he has held up to the date of promotion to his present place, an office on this road he is the first to fill. This act advances a man in every way well qualified to meet the exacting duties of this important place.

A Flaw in the Metric System.

Adolphe Godot, a French physicist, has discovered that the metric system is all wrong, according to the Paris correspondent of the London Telegraph. The meter, as is well known, is supposed to be exactly the forty-millionth part of the earth's meridian, but it turns out to be nothing of the kind. The measurements, according to which the platinum standard meter kept at the Observatory was made, and which were effected by a commission of savants, including Arago, were incorrect. The meter is slightly less than the forty-millionth part of the earth's meridian. It is in this sense only that the metric system is wrong. It is supposed to be based on a "natural unit of length," and the natural unit in question turns out to be inaccurately calculated. For practical purposes the metric system, one might think, could go on working all the same quite well. But it appears that the incorrectness of the standard meter may have produced serious mistakes in astronomical calculations in which it was taken to be exactly equal to the fraction named of the meridian. Mr. Godot proposes to adopt a new meter, which would be equal to the tenth part of the height of the column of distilled water on a surface of one square centimeter (it is not stated how the centimeter would be determined), which represents the average weight of atmospheric pressure at sea level, that it is to say, in English measurement, 29.92 inches. The new meter would be equal to 1.03300 meters in the old metric system.

Mr. A. Pollak has issued a pamphlet describing the development of the Pollak-Virag high-speed telegraph. Since its exhibition at the International Conference at Paris, in 1900, the apparatus has been improved and is now claimed to be in successful use between Berlin and Frankfort, a distance of about 370 miles.

Hard Drawn Copper Wire.

BY FRANCIS W. JONES.

The great strength which is obtained in hard drawn copper wire (of over 60,000 pounds breaking strain to the square inch, which is very close to ordinary iron), with over six times better electrical conductivity than iron, with its almost complete immunity from oxidation and corrosion, insuring a negligible depreciation, and its small electro-magnetic inertia as compared with iron, are qualities which have made the use of copper wire very important to telegraph and telephone companies, and to meet the necessity of systems of communication requiring more rapid signals than Morse, the value of copper wire to telegraph companies for overhead construction will be still very greatly enhanced. But the full value of such wire, particularly its mechanical qualities, can only be secured by its most intelligent and careful construction and maintenance, from the fact that the strength of the wire lies entirely upon its surface, and that to secure the utmost tensile strength the wire has to be tempered to the verge of brittleness.

When telegraph wires were first strung upon poles, the length of the spans, the distance of wires apart, and the sags given, were decided purely by mechanical and financial considerations. The length of span having been fixed to require as few poles per mile as possible, the sag was restricted to such a distance that the wires would not swing together in the wind. Modern construction has been determined largely by the same considerations.

An exception was made by the American Rapid Telegraph Company and the original Postal Telegraph Company, several years ago, in placing their wires farther apart to obviate the effects of electrostatic lateral induction, but on the discontinuance of the rapid systems then used by those companies, the intermediate space on the cross arms was used for other wires, and within recent years the tendency has been to place the wires still closer together, and this has become possible by reason of the shortening of the spans by a greater number of poles necessary to support the increasing load of wires.

Notice was early taken by engineers of the temperature effect upon wires, as it was found that when they were put up in a high temperature, with but little sag, that they would snap during cold weather, so the engineers furnished formula according to which sags should be given to wires of different lengths of span when erected at various degrees of temperature.

Table No. 1 is constructed upon formula to be found in Munro & Jamieson's Pocket Book of Electrical Rules and Tables, 10 Edition, page 324, the co-efficient of expansion of copper being taken at .00000956 per degree Fahr.

The same formula has been observed by the engineers of Government telegraphs in India, and has also been reproduced, and tables of sags and strains have been constructed thereon, in a book published by one of the leading wire manufacturers of this country, but in the same publication, this company has nullified and discredited the British formula by

TABLE NO. 1.

	75-foot span.			150-foot span.		
Degrees Fahr.	Sag Inches	Strain lbs. No. 9 H. D.	Length wire in feet.	Sag Inches.	Strain lbs. No. 9 H. D.	Length wire in feet.
0	1.92	175.78	75.0009	7.68	175.78	150.0072
10	5.4			13.248		
20	7.44			17.28		
30	9.			20.16		
40	10.56			22.8		
50	12.048			25.2		
60	13.20			27.84		
70	14.4			29.76		
80	15.36			31.44		
90	16.56			33.6		
100	17.28		75.0737	35.28		150.1536
	225-foot span.			300-foot span.		
Degrees Fahr.	Sag Inches.	Strain lbs. No. 9 H. D.	Length wire in feet.	Sag Inches.	Strain lbs. No. 9 H. D.	Length wire in feet.
0	17.52	173.4	225.0253	31.176	173.3	300.0600
10	23.76			37.92		
20	29.04			43.8		
30	33.48			48.6		
40	37.20			53.4		
50	40.56			57.6		
60	43.68			61.44		
70	46.2			65.25		
80	49.2			68.5		
90	51.84			72.		
100	54.24		225.2421	75.6		300.3528

introducing an arbitrary table for the construction of hard drawn copper wire, as follows:

Temperature in degrees Fahr.	Spans in feet 75	150
	Sag in Inches.	
—30	1	4½
—10	1¼	5
10	1½	5¾
30	1¾	6¾
60	2½	9
80	3⅛	11¼
100	4 1-3	14

It will be seen that whereas in a 150-foot span, the British table starts with a sag of 7.68 inches at zero and requires a sag of over 35 inches at 100°, the table of the American firm starts with a sag of only 5 inches at zero and requires but a dip of 14 inches at 100°, which shows an enormous disagreement with the British formula published in the same book; and in addition to the table alluded to, of the American firm, it is also stated in connection therewith, that "in the East 3-inch dips are allowed at centre spans; in the West, where the variation of temperature is greater, 10-inch dip is allowed in summer and 8-inch in the winter. This construction applies to both copper and iron wire and has been found by actual experience to give satisfactory results."

In 1887 the engineers in France had discredited the British tables, and an engineer by the name of Barbarat had revised the formulas by taking into account the natural elasticity of copper which had been omitted in the tables constructed upon the British formulas.

The English engineers had also become aware of the discrepancy that existed between the tables and the actual happenings, and Mr. B. Hopkinson also

revised the formulas and published his revision in the English Electrician of January 25, 1901.

TABLE NO. 2.

	75-foot span.			150-foot span.		
Degrees Fahr.	Sag inches.	Strain lbs. No. 9 H. D.	Length wire in feet.	Sag inches.	Strain lbs. No. 9 H. D.	Length wire in feet.
—20	.055			6.75		
—10	.0625			7.2		
0	.9	375	75.000200	7.74	174.4	150.007396
10	1.0			8.46		
20	1.2			9.45		
30	1.26			10.65		
40	1.38			11.46		
50	1.65			12.96		
60	2.04			14.4		
70	2.46			16.2		
80	3.			17.85		
90	3.45			19.56		
100	3.96		75.003872	21.24		150.055700

	225-foot span.			300-foot span.		
Degrees Fahr.	Sag inches.	Strain lbs. No. 9 H. D.	Length wire in feet.	Sag inches.	Strain lbs. No. 9 H. D.	Length wire in feet.
—20	15.06			27.		
—10	16.26			29.10		
0	17.46	174	225.0251	31.14	173.4	300.0600
10	19.05			33.45		
20	20.46			35.46		
30	22.35			38.25		
40	24.150			40.8		
50	26.25			43.65		
60	28.50			46.44		
70	30.90			49.2		
80	33.06			52.2		
90	35.4			55.05		
100	37.8		225.1176	58.14		300.2086

Table No. 2 shows the sags that should be given to four different spans of hard drawn copper wire calculated from formula and table of sags furnished by B. Hopkinson and M. G. Simpson, and in this formula and table both temperature and elasticity have been taken into account, elasticity having been ignored in the formulas of the British engineers, so that for 150-foot span at 100° F., the revised table No. 2 requires a sag of only 21.24 inches at 100°, while the British table No. 1 requires a sag of 35.28 inches at 100° F.

It would appear that practical line builders have taken the maximum amount of sag that was permissible in various spans at the highest probable temperature or 100°, and have reduced such sags by uniform gradation to the minimum that was mechanically possible when the temperature was at minus 30°, trusting blindly to luck for the outcome.

Construction foremen everywhere have noted the want of agreement between the sags of wire in various temperatures and those that they should have, theoretically, by the usual formulas and tables which have been designed to give to iron wire a sag that in the coldest weather would not subject it to a tension above 1-3 of its breaking strain, and to hard drawn copper above 1-4 of its breaking strain.

The linear expansion of a wire for each degree Fahr. of rise in temperature is nearly .00000956, so that for 150-foot span a rise in temperature from zero to 100° would increase the length of the span nearly 1.75 inch causing the sag to increase about 27 inches as per table No. 1.

These figures merely record the operation of the natural laws and no engineering formula can vary them, but the tables call attention to the very trifling elongation of wire necessary to make a great difference in the sag.

The theory of Mr. Hopkinson was that the wire had considerable elasticity which allowed it to elongate slightly when the temperature fell, and when the temperature rose again this elasticity absorbed its natural proportion of the wire's elongation, so that elasticity did not permit the wire to contract so much as is figured by the British formula.

It is shown by Mr. John Gavey, the engineer-in-chief of the British Postal Telegraphs, page 336, Vol. 31 of the Journal of the Institution of Electrical Engineers, London, that a hard drawn copper wire, when under a very light stress, acquires a permanent set if the stress be maintained sufficiently long, and that a wire nearly No. 12 B. & S., with a breaking strain of 490 pounds, loaded with 110 pounds, recovered its original length upon removal of the load if it was not continued too long, but if the load was kept on for twenty-four hours a permanent elongation of 1-64 of an inch was produced in a length of about 40 feet and that this elongation was a function of the time the load was kept on, increasing to 1-32 of an inch in three days and 3-64 of an inch in two weeks.

It is shown that hard drawn copper wire will not respond to its natural elasticity after being loaded for a few hours, and that the elasticity has been killed, so to speak, or the wire fatigued and its natural elasticity disappears.

I erected on May 7 last a new No. 9 B. & S. hard drawn copper wire, between fixed supports, 124 feet 1 inch apart, with a sag of 4 inches, which equalled a horizontal stress of about 231 pounds, or roughly 1-3 of the breaking strain of the wire. The temperature at the time was 65° Fahr. On July 10, temperature 102° Fahr., the sag was 11⅛ inches, and later in the day, at 93° Fahr., the sag was 9¾ inches. On August 6, at a temperature of 65° Fahr., the same as when the wire was erected, it showed a sag of 9 inches, or 5 inches in excess of the sag that was given it when first put up.

A new hard drawn copper wire has a natural elasticity which permits it to elongate a very trifling amount (about 1-10 of one per cent.), when under not exceeding 2-3 of its normal breaking strain for a short period of time, but when the strain upon the wire, or the period of time increases, then the wire permanently elongates.

When a short piece of the wire has been placed under stress to the limit of its breaking strain, of about 670 pounds, for a No. 9 B. & S. gauge, it breaks, and the two pieces measured will be found to have sustained a permanent elongation which, according to the temper of the wire, generally ranges between one and two per cent., and a piece of the wire, 150 feet long, when subjected to a strain of 670 pounds, at the same rate of elongation, would stretch from 18 to 36 inches before breaking.

If such an elongation were possible to take place between telegraph poles, it would allow the wire a sag of 9 feet or over.

Hard drawn copper may be permanently elongated nearly up to its maximum limit of elongation,

and it will require as much strain to break such a piece of permanently elongated wire as if it had never been stretched.

What actually happens therefore seems to be this:—suppose a wire, when new, is given a sag of nearly 7¾ inches, between poles 150 feet apart, at 80° Fahr., the wire theen has a stress of about 1-4 of its breaking strain and the length of the wire is 150.0072 feet.

Should the temperature fall sufficiently, this wire will contract so that it will be subjected to a very heavy strain which will cause it to elongate unless the wire contains weak spots or kinks or places that have been slightly abraded or indented at the tie wires, in which case the wire will break at such weak points.

When this is the case the weak spots in the wire will, of course, prevent it from becoming permanently elongated beyond what it naturally elongates upon the poles as demonstrated by Mr. Gavey.

Should the wire have no unusual weak spots it will elongate sufficiently to prevent the stress in the wire raising to its breaking point.

It is evident that if linemen were to adopt the practice of taking up the sags by cutting out pieces of wire, that the time would soon arrive when the wire had stretched to the limits of its natural elongation and would break under the first stress imposed by low temperature or other cause.

It is shown by table No. 1 that an increase of temperature from zero to 100°, that a wire 150 foot span will only elongate 1.7568 inch. Whereas, the wire is capable of permanently elongating about one per cent. under sufficient tension, or as before shown about 18 inches.

The fact that a wire exhibits fatigue, after being erected with a proper sag for a short time, seems to nullify the calculations made by Messrs. Hopkinson and Simpson, from which table No. 2 has been made.

In view then of the fact that neither table 1 nor table 2 can be relied upon for the erection of hard drawn copper wires, it seems to be an inviting subject for electrical engineers to determine just what table, having a scientific basis, is practicable, taking into consideration the permanent fatigue of copper wire spoken of, the distance apart of wires upon poles, and the distance apart of poles as at present employed in telegraph construction in this country.

Mr. J. H. Arnott Retires at Binghamton.

The retirement of Mr. J. H. Arnott from the managership of the Western Union Telegraph Company at Binghamton, N. Y., closes a telegraphic career that began nearly forty-three years ago at Utica, N. Y., of which place he is a native. In 1860, when but fifteen years of age, young Arnott entered the telegraph service as an office boy for the late James D. Reid, at that time superintendent of the New York, Albany and Buffalo Telegraph Company. In 1863 Mr. Reid sent Mr. Arnott, who had then become an efficient operator, from Utica to Binghamton, there to establish an office for the company. This he did, but its separate existance was short, for in the following year, 1864, the New York, Albany and Buffalo Telegraph Company was merged with the Western Union. Mr. Arnott, however, was given the managership of the office which he has retained continuously up to this time. He is succeeded by George A. Brown, the veteran operator at the Erie railroad office. The retirement of Mr.

J. H. ARNOTT.
The Retiring Western Union Manager at Binghamton, N. Y.

Arnott from active life is made in order to secure needed rest. Through the entire history of the Binghamton office, the successfully guiding hand of Mr. Arnott is discernable, and he goes out with the respect and regret of his superior officers. The appreciation and value entertained of his services by the company is shown in the following letter:

"Binghamton, N. Y., Oct. 16, 1903.

"Mr. J. H. Arnott,

"Manager, Binghamton, N. Y.:

"My Dear Mr. Arnott—It is with deep regret that I learn of your determination to leave the Western Union Telegraph Company's service after so many years of association therewith.

"I have journeyed to Binghamton to make a personal plea with you to remain with us, and am sorry my mission failed. I must, therefore, accept your resignation, to take effect at your own convenience.

"I wish to thank you on behalf of the Western Union Company, and myself in particular, for the good and faithful service you have performed, and to say to you that we will welcome your return to us at any time. With best wishes for your welfare, I am

Yours truly,

"E. P. GRIFFITH,

"Superintendent."

Peter Vorhees DeGraw.

Eastern Press Representative of the Louisiana Purchase Exposition.

As his name implies, Mr. P. V. DeGraw is a Jerseyman. He was born in Princeton, in 1853, and educated in the private schools of that place. At thirteen years of age he became a messenger in the telegraph office of the Camden and Amboy Railroad Company at South Amboy, and at fourteen was appointed operator in the private office of A. H. VanCleve, the general purchasing agent of the road. Becoming an expert at the key, a couple of years later, Mr. DeGraw was called to Philadelphia, where he made his mark in the telegraphic world, enjoying the reputation of being one of the best operators in the country.

In 1874 he was selected as one of what was then characterized the "Big Eight" telegraphers, to man the first leased wire for the handling of press matter exclusively, that of the New York Associated Press, running between New York and Washington with drops at Philadelphia and Baltimore. One year later he was transferred from New York to Washington and placed on the reportorial staff of The Associated Press, a position he retained until 1882 when the New York and Western Associated Presses, which, up to that time, had been working together, severed their business relations, when Mr. DeGraw went with Mr. Walter P. Phillips, in the Washington Bureau of the Western organization, becoming manager of the bureau upon the withdrawal of Mr. Phillips the following year.

In 1885 he accepted the Washington manage-

PETER V. DEGRAW.
Eastern Press Representative, Louisiana Purchase Exposition.

ment of The United Press and in 1886 was made the General Southern Manager of that organization, also filling the position of assistant general manager of the Southern Associated Press, the two organizations being operated south of Washington practically as one news agency.

Mr. DeGraw retired from journalism and entered the commercial field, accepting the management of the Philadelphia office of the Columbia Phonograph Co., when The United and Southern Associated Presses combined with the Western organization forming what is now The Associated Press. He remained in Philadelphia until 1901, when, desiring to again take up his journalistic life, he accepted an offer tendered him by Mr. John R. McLean, of the Cincinnati Enquirer, and returned to Washington.

When the Louisiana Purchase Exposition opened its Eastern offices, Mr. DeGraw was appointed Washington Press Representative and upon the death of his friend, Julian Ralph, of New York, was appointed Eastern Press Representative of the Exposition, with headquarters divided between New York and Washington, a position he still holds.

Although practically out of the telegraph business since 1879, Mr. DeGraw has never lost his cunning at the key. Once he transmitted 490 words in ten minutes, which was for a long time the best sending record for a spurt. The knowledge of telegraphy enabled him to do his greatest piece of reportorial work; the sending of the bulletin which announced the death of President Garfield at Elberon, N. J., which he succeeded in getting to New York and thence throughout the country forty-five minutes before his adversaries could get a message on the wire. There were but two wires from Elberon and when President Garfield died, Attorney General MacVeagh entered the telegraph office and preempted both wires for the Government. While he was proclaiming his intention Mr. DeGraw reached inside the office and rushed a bulletin to The New York Associated Press announcing the death of the President.

Mr. DeGraw delights in lending a helping hand to his fellows and has done much for his profession in that line. One of the achievements of which he is especially proud is the fact that it was on his motion, shortly after his advent into the reportorial ranks at the Capitol City, that the now famous Gridiron Club was organized. He was secretary of the club for eight years prior to his taking up his residence in Philadelphia.

On the occasion of the dedication of the World's Fair at St. Louis, April 30 last, Mr. DeGraw conducted to the ceremonies, the largest party of Washington correspondents which ever left the city on a similar trip.

Our Hall of Fame.

Another name deserves to be recorded under this title. The partial retirement of Harvey P. Dwight, of Toronto, Ont., the veteran president and general manager of the Great North Western Telegraph Company, from the active management of that corporation, with which he has been so long identified, brings anew to general notice the forceful and pleasing personality of a man who has made a distinct and lasting impress in the annals of American telegraphy. Of Yankee birth, being a native of Jefferson County, N. Y., where he was born in 1828, he has achieved his fame in Canada. There he found a virgin field for telegraphic enterprise, and how well he has worked out the mission which fell to his lot to accomplish, the condition and extent of

HARVEY P. DWIGHT, OF TORONTO, ONT.
President of the Great North Western Telegraph Company.

the Great North Western Telegraph Company, as an exponent bears abundant evidence.

While still retaining the presidency of his company Mr. Dwight relinquishes some of the more active duties of management to younger hands.

Three years after the success of Morse had been demonstrated, the first telegraph line was established in Canada. Buffalo had effected communication with Niagara Falls, and it was desired to extend the wires on to Toronto. To that end the Toronto, Hamilton, Niagara Falls and St. Catharines Electro-Magnetic Telegraph Company was incorporated, with a capital of $16,000. The company built what was described as "an honest and well-appointed line." The Montreal Telegraph Company also entered the field in 1847, with a capital of $60,000, to construct a line from Toronto to Quebec City. Afterwards the Montreal company acquired the line to the Falls, thus giving it a service from Quebec to the rapidly growing American system. Meanwhile in the East the British North American Electrical Association was endeavoring to connect Quebec with the lower provinces. For some years the line ended at Riviere du Loup. Its first month's receipts were only $56, and the subsequent months were not financially successful. Consequently this company, and another concern—the American Telegraph Company—were eventually turned over to the Montreal company.

At Bellville, Ont., a young man of nineteen, who had come from the State of New York to enter the service of the company, was stationed as operator in 1847. This was H. P. Dwight. The young Belleville operator did his work so well that in a few months he was removed to Montreal, where he served under Orrin S. Wood, who is still living in New York, at the advanced age of nearly eighty-six years. In 1850 he was sent on to Toronto, where he soon became general western superintendent.

All this time the system was growing, and also the man who was to control it. Mr. Dwight's instructions on taking office as western superintendent were to extend the lines throughout Ontario as he thought advisable. Sir Hugh Allan was at that time president of the company. An important rival entered the field in 1868, when the Dominion Telegraph Company was organized. This company soon covered all important points between Detroit, Buffalo and Quebec. It offered vigorous competition. Finally, in 1881, the Great North Western Telegraph Company, which had been organized in May, 1880, absorbed both the Dominion and the Montreal companies under the general management of Mr. Dwight, who became president in 1893.

So far as Mr. Dwight's personality and conscious effort are concerned, there is not a shred of romance about him. He left a stump farm and entered the Oswego telegraph office because he had to. Had he been an Edison the new science of making geography write letters in dots and dashes would have developed him into a wizard. As it was he entered the pioneer enterprise in Canada because he had to make his living, and could do it easier with telegraph poles than with stumps. His aim was practical. His goal was extension. When he began to press the key in Belleville there was not a mile of railroad in Ontario or anywhere west of Montreal. Stage coaches were everything after the steamship. Dwight set out to make the telegraph a pioneer in development. He did it. Shanties in the woods and shacks on the prairie got into the world's nerve-line of thought, when as yet the locomotive engine was hundreds of miles and many years distant.

On many occasions Mr. Dwight has rendered services of the utmost importance to the Dominion Government. During the Fenian raid the distribution of operators along the frontiers where the trouble existed or was threatened was placed in his hands, and by this means the Government was in a position to act with a knowledge and promptness which would otherwise have been totally lacking. During the Northwest rebellion of 1885 he also rendered signal service to the Dominion Government along similar lines, his service in this connection having been publicly

acknowledged in Parliament by the Minister of Militia.

Mr. Dwight has always taken an active interest in civic Government, and has identified himself with every progressive movement in that direction.

Socially there are few men who stand higher in the community in which he dwells than Mr. Dwight. He has been an enthusiastic sportsman all his life, and from the time of its creation up to within a recent date was a member of the Ontario Fish and Game Commission. He is at present chairman of the Investigating Governors of the Royal Canadian Humane Association, in which he has taken an active interest for a number of years past.

Mr. Dwight, although nearing his seventy-fifth birthday, is still of active habits and in vigorous health, which he attributes largely to his annual vacation spent hunting and fishing among the lakes and streams of the Canadian woods in different Provinces of the Dominion.

The Earth as a Condenser and Its Role in Wireless Telegraphy.

In the past, ideas relating to the earth as an electrical factor have been extremely vague. This is mostly due to the fact that the first step of the development of the science of electricity was the establishment of an elaborate mathematical theory of electrostatics, and it became customary to set the potential of the earth once for all equal to zero. As in practice we have to do only with differences of potential, it does not matter how we fix the absolute value of the potential and we may fix it by assuming the earth to be at zero potential; then the potential of any other body is determined by its potential difference with respect to earth. This assumption is unattackable as long as we restrict our considerations to the values of the potentials of all points of any system of bodies at a given moment. But this aribtrary assumption has led to the popular belief that whatever changes take place in the electrostatic configuration of a system above earth, they have no appreciable effect on the potential of the earth; and as the geometrical dimensions of the earth are so very big compared with those of any electrical apparatus in common use, it has been popularly assumed that the potential of the earth remains unaffected by mundane electrical disturbances. This assumption, however, would be right only if the earth's electrostatic capacity had an infinite value, and it is easy to show that this is not the case.

To find the capacity of the earth, we may apply the formula well known in ordinary electrostatics, for the potential of a charged globe. If a globe of a radius of r cm. is charged with e electrostatic c.g.s. units of electric quantity, then its potential in electrostatic c.g.s. units is the ratio of e to r; hence the capacity of the globe, i. e., the ration of charge to potential, is r. If measured in electrostatic c.g.s. units, the capacity of the earth is, therefore, equal to its radius in cm., i. e., about .637,000,000. In order to pass from electrostatic c.g.s. units to the practical unit of microfarads, we have to divide by 900,000, and thus find the capacity of the earth to be 708 microfarads. It will then be seen that its value is not at all infinite, compared with capacities which are used in practice.

Dr. A. Koepsel, a German electrical engineer, well-known as the designer of some accurate measuring instruments, points out in an interesting recent article in Dingler's Polytechnisches Journal (June, 1903), that, in view of this comparatively small capacity of the earth, it is quite possible that the earth plays a very important role in wireless telegraphy; in fact, from his calculations it appears plausible that Marconi's celebrated ocean telegraphy was accomplished not by transmitting waves through the ether, but by setting the earth into resonance.

The question of the role which the earth plays in wireless telegraphy has often been discussed, and in Marconi's first experiments earthing of the receiver and transmitter was found to be necessary. Afterwards in Braun's system earthing was avoided, and, moreover, it was found that wireless telegraphy was possible from balloons without earthing; these facts were then considered as a proof that the earth plays no important role in the transmission, and that the propagation of the waves should be considered as analogous to that of light waves. There remained, however, one principal difficulty, namely, the explanation of the fact that the waves used in wireless telegraphy do not seem to travel in a straight forward direction, but follow the curvature of the earth. The argument that the wave length of these waves is very large compared with those of light waves, does not fully overcome this difficulty. Moreover, Braun's apparatus may be considered as only apparently independent of the earth, because he uses appliances which are certainly in some relation to the earth.

Dr. Koepsel discusses this matter from a new point of view. We know that the length of the vertical wire used in every wireless telegraphy station is in a very close relation to the wave length of transmission, it being one-fourth of the wave length. Dr. Slaby's analogy with a tuning fork is very instructive. The tuning fork is at rest at one end and its vibrations are a maximum at the other end; these two ends correspond to a loop and a node of the electric wave, and the distance between is one-quarter of a wave length. The vertical wire in wireless telegraphy is connected to one pole of the spark-gap, while the other pole is usually earthed. Now, Dr. Koepsel puts the question in this way: Cannot this earthing wire, together with the earth, be brought into resonance with the whole system? In this case we would have both poles of the spark-gap connected with what the author calls two resonance wires, i. e., two sources of reactance and capacity. One resonance wire would be the vertical wire; the other resonance wire would be represented by the combination of earthing wire and earth. What

Dr. Koepsel discusses mathematically is the question whether the electrostatic capacity of the earth, as above determined, has such a value that, together with the earthing wire, it can be made to represent a source of inductance and capacity, corresponding to the condition of resonance.

If we again apply Slaby's analogy with the tuning fork, Koepsel's argument may perhaps become clearer. We usually place a tuning fork on a resonance box, and this box must be so designed that it is in acoustic resonance with the fork. The tuning fork corresponds to the vertical wire in wireless telegraphy; the resonance box corresponds to the earthing wire, together with the earth. If we can arrange our whole system of electric wave transmission in such a way that the earth acts like a resonance box, we have, of course, in the earth a powerful help. For the transmission of sound to a distance the resonance box is much more effective than the tuning fork; likewise, in wireless telegraphy over very long distances, the role of the earth may be much more effective than the ether waves transmitted from the vertical wire.

The problem which thus is placed before the designer is, however, different in both cases. In the one case the tuning fork is given and we design the resonance box so that it suits the conditions. In the case of wireless telegraphy the earth and its capacity are given. The earth, together with the earthing wire, corresponds to the resonance box; therefore, while we still are at liberty to choose the earthing wire at will, yet the main element of our electric resonance box, i. e., the capacity of the earth, is fixed, and we must arrange our telegraph apparatus to suit the earth.

For the condition of resonance it is essential that the product of the self-inductance, L (in henrys) and the capacity C (in microfarads) of each "resonance wire" (as already defined) have a certain value. The earth and the earthing wire form one "resonance wire;" both together represent a certain set of values of L and C, of which C is determined by the fixed capacity of the earth. The product, L C, depends on the wave length used for the transmission. We are at liberty to choose the wave length of transmission and the self-inductance, L, of the earthing wire. We must choose both values so that C then becomes the value of the capacity of the earth.

Dr. Koepsel solves this problem by a method of trial. He calculates tables for wave lengths of different values: for each wave length he has a given value of L C, which has to correspond to a combination of a wire and a globe. He assumes wire of 1 mm. (0.04 in.) diameter and calculates for different lengths of the wire the size of the globe which must be added. He finds that the numerical value of the size of globe becomes more and more that of the earth, the larger the wave length and the smaller the self-inductance of the earthing wire.—Elect. World.

(To be continued).

LETTERS FROM OUR AGENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating eight 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.]

BOSTON, MASS., POSTAL.

J. P. O'Donohue has relinquished the agency of the Telegraphers' Mutual Benefit Association to Assistant Chief Operator W. T. Ellis. The latter is now engaged in the good work of bringing the advantages of the association to the notice of those who have not yet "seen the light," which we are glad to say are but few in this locality, owing to the energetic efforts of the retiring agent.

The marriage of L. A. Boone, of this office, to Miss Mary Anna Slattery, of New Haven, Conn., occurred in that city on October 14. After a short wedding trip the couple have returned to make their home in Boston. Mr. Boone has been appointed manager of the Court Square branch, vice R. J. Smithwick, transferred to the main office as assistant night chief.

B. E. Gayton has been transferred from the main office to the "Globe" office, nights.

D. O'Donnell and M. F. O'Donnell are recent additions to the day force.

D. J. Cauley has been transferred from the Chamber of Commerce branch to the main office, and is succeeded at the branch by J. J. Sullivan.

J. F. Nihen is another transfer from the Chamber of Commerce to the main office, H. E. Bishop succeeding him at the Chamber.

D. B. Fischaker is now at the Hotel Haymarket, and is succeeded at 310 Congress street by C. H. Whalen. J. A. Finn takes the latter's place at Clark's Hotel.

W. Manning is a recent arrival.

Resigned: J. Moore and F. R. Johnson.

DENVER, COL., WESTERN UNION.

General Superintendent T. P. Cook, of Chicago, accompanied by C. H. Bristol, general superintendent of construction, New York; C. B. Horton, superintendent, Omaha; D. R. Davies,

superintendent of construction, Chicago; L. McKissick, electrician, Chicago, and M. T. Cook, secretary to General Superintendent Cook, spent Sunday, Monday and Tuesday, October 18, 19 and 20, in Denver on a tour of inspection. They left Wednesday morning, October 21, going West, accompanied by Assistant Superintendent A. A. Gargan, of Denver. The party expects to make a number of stops before returning East.

Departures: C. E. Simpson for the East; Ed. Kriegbaum, to the Western Union at Salt Lake City, and H. L. Shannon, to Kansas City, Mo.

Arrivals: W. C. Rentfrow, from the Postal, this city; C. M. Worth, Leadville, Colo.; W. L. McCall, Cripple Creek, Colo., and Frank Shadell, Amarillo, Texas, all from the Western Union.

PHILADELPHIA, PA.

WESTERN UNION.

A. F. Neece, operator for this company at Williamsport, Pa., for a number of years, died October 15, of heart failure.

John J. Connelly has resigned to accept a position with Peter Wright and Son, this city.

"Bonus" seems to have the lead just now, the second New York and Pittsburg having been added to the list and more to follow.

W. E. Wineland now traffics the city line, Jersey's and Lehigh's at night and is doing well.

D. J. Deasey, a well-known operator, now located at Colon, Isthmus of Panama, was a recent visitor.

POSTAL.

The wedding of Mr. Horace K. Holtzinger, of this office, to Miss Miriam Dubois Frederick, took place on October 20, and was quite an event socially. The bride and groom left the day following the ceremony for Galveston, Tex., where they will take up their residence. Mr. Holtzinger will continue to be identified with this company at that place. Our congratulations and best wishes follow.

After a long absence in quest of health and rest, Mr. Geo. F. Layton has resumed his place at the "Ledger" office, Mr. Thomas J. Poppert returning to the main office, nights.

Manager R. B. Buckingham, of Norristown, Pa., has been transferred to York, Pa., to look after this company's interests. This change, which brings Mr. Buckingham back to his own home, naturally is quite agreeable to him.

Mr. John Moore, a former employe, more recently with the Pennsylvania Railroad at Atlantic City, N. J., visited us while en route to Pittsburg, Pa., where he will serve in the telegraph department of a grain broker's establishment.

TORONTO, ONT.

Mr. Donald Urquhart, who for the last twenty years has been engaged in the telegraph business, has broken away from the key, and is now representing the United Typewriter Company of Toronto. His many friends wish that he may be as successful selling machines as he has been as an operator.

RENO, NEV., WESTERN UNION.

Business in the sage-brush office has been very heavy the past month, sufficiently so to keep the full force working, including the night men.

W. F. Sedgewick has returned from his vacation of a month in the East.

Mrs. T. H. Brown has returned after a month's outing at Santa Rosa, California.

Burton C. Downing, of bicycle fame, from San Jose, California., lately joined our force.

Mr. W. F. Smith, resigned to take a course at Berkely College, California.

Superintendent F. H. Lamb, of San Francisco, paid us a visit recently.

Mr. T. P. Smith, general foreman from San Francisco, also stopped over a day.

There is some talk of moving the repeaters from this point to Winnemucca, Nev., in order to improve the service. This would make the distance the same on each side to San Francisco and Ogden.

The personnel here is as follows: C. F. Loring, manager; J. E. Palmer, day chief; J. H. Hadley, night chief; W. F. Sedgewick, all night chief. Operators: Mrs. T. H. Brown and B. C. Downing. George Palmer is clerk and A. B. Pike is the battery man.

BIRMINGHAM, ALA., POSTAL.

Henry C. Hornady, of this force, was found in an unconscious condition in his room on the morning of October 14. Investigation showed that he had taken an overdose of morphine. Every effort was made to save his life, but of no avail. He died at 2 P. M.

The cause of this act was attributed to despondency, due to the death of his wife, to whom he was devoted, several months previous. Mr.

Hornady was one of the brightest telegraphers in the South and was well and favorably known in several other large cities where he had worked. He also had devoted considerable time to newspaper work and stood high in this profession as well as in telegraphic circles. His remains were interred at Elm Leaf Cemetery, October 15. Floral offerings were many, among them being a handsome design from the Press Club, of which he was a member, and a beautiful wreath from the employes of this office.

Business at this point is showing a wonderful increase over last year. The summer business, which is generally the lightest of the year, was the largest in the history of the office, being fifty per cent. greater than the corresponding months of 1902. The fall business, which is greatly augmented by the movement of cotton, etc., shows even a larger increase. To handle this business a force equal to 55 men is required, and every one is kept busy, for messages handled seldom falls short of 12,000 a day.

Bonus records are high and compare more than favorably with those published from other points. This city is one of the largest centres for the telegraph fraternity in the South. The two commercial companies, together with the large number employed by the railroad trunk lines, centering here, bring the number up to about 400 knights of the key employed at this point.

Quite an addition has been recently made by the moving of the western division headquarters of the Southern Railway Company from Chattanooga, Tenn., to Birmingham. This city is growing more rapidly than any other in the South and "Greater Birmingham" now shows a population of nearly 125,000.

The large number of operators who have been employed in this city in the past twelve years, would hardly recognize the town should they visit the "Magic City" of the South now.

NEW YORK CITY.

WESTERN UNION.

Mr. D. A. Mahoney, a prominent member of the Philadelphia, Pa., Western Union force, after a residence of twenty-three years in the Quaker City, has decided to locate in New York in the near future. Mr. Mahoney in canvassing for funds in this city for the Philadelphia Tournament, made many friends and valuable acquaintances.

John V. W. Hermance, for many years manager of the Western Union Telegraph office at No. 120 Broadway, New York, died at Atchison, Kansas, on October 9.

Mr. M. L. Harner, southern chief, is absent on a vacation.

Mr. Willis H. Jones, quad chief, is absent enjoying a vacation at his old home in Wabash, Ind. His place is being filled by Mr. J. F. E. Hopkins.

Mr. John Brant, of the operating force and secretary of the Old Time Telegraphers' and Historical Association, has been absent from his post of duty for the past three weeks caused by illness. We are glad to announce, however, that he is now convalescing and expects to be at his desk again in the course of a few days.

The Church street office is probably one of the busiest branches in the city. It is located in the heart of the dry goods district, and the personnel is as follows: Manager, J. W. Woods; chief operator, Miss E. Coles; operating force: Miss J. Cohen, Miss A. Joyce, Mr. L. Schwartz; receiver, Miss L. A. Gibbon; clerks: Miss E. Sweeney, Mr. A. Rosenberg, Mr. M. Costello and a force of twenty-five bright and active messengers.

A reception and dance will be given to the members of the New York Telegraphers' Social and Dramatic Club and friends, on Friday evening, November 13, at Williams' Dancing Academy, 1,301 Broadway, Brooklyn.

Mr. C. A. Kilfoyle, financial secretary of the New York Telegraphers' Aid Society, and a member of this force has opened a new set of books for the society and has everything pertaining to its financial affairs in first class shape.

POSTAL.

A portrait of the late John W. Mackay, painted by Miss Cecile de Wentworth, which was recently on exhibition in New York, will be placed in the directors' room of the Commercial Cable Company, on the eleventh floor of this building. The portrait, which is full length, is an excellent one.

Col. A. B. Chandler, chairman of the Board of Directors of this company, has returned to New York from Randolph, Vt., where he spent the summer on his farm.

Mr. A. B. Banker, formerly a member of this force, but for the past five years assistant manager of Paul Smith's Hotel, in the Adirondacks, recently visited many of his New York friends. Mr. Banker first went to Paul Smith's as an operator, but possessing a pleasing disposition and being a man of keen business enterprise and judgment, his employers were quick to discover in Mr. Banker a valuable acquisition to their permanent staff with the result that he now holds a responsible position in this most famous of all Adirondacks resorts.

Mr. Minor M. Davis, traffic manager of the company, is making an extended trip to the Pacific Coast in the interest of the service.

The first annual ball and entertainment, under the auspices of the New York Local No. 16, of the Commercial Telegraphers' Union of America, will be held at the Amsterdam Opera House, 332-344 West 44th street, New York, on Friday evening, November 13.

The Russian-American Telegraph Project.

Forty years ago, after the failure of the first Atlantic cable, when the thought was generally entertained that it would be impossible to successfully work or maintain a long submarine cable such as would be necessary to connect England and Europe with America, the proposition to telegraphically connect the new world with the old by way of Behring Straits, received fresh impulse. The subject has been interestingly dwelt upon in this journal by James Gamble and R. R. Haines, of California, the former the leader and the other his chief assistant in the expedition undertaken by the Western Union Telegraph Company to survey a route along the North Pacific Coast for the construction of a telegraph line..

The expedition that sailed from New York in December 1864 in furtherance of the inter-continental telegraph enterprise is thus alluded to by a writer of that period:

"Late last fall and early in the winter, (1864) three vessels, the barks Milton Badger, Carrie Bell, and Matthew Lucas, laden with supplies and all the materials necessary for the erection of an extended line of telegraph, sailed from New York for Victoria, B. C., on the Pacific Coast. In mid-December, Col. Charles S. Bulkley, who had been superintendent of the military telegraph in the Department of the Gulf, and who is now Engineer-in-Chief of the 'Collins' Overland Telegraph Western Union Extension,' sailed with his surgeon and staff of assistants for San Frencisco. From thence he went to British Columbia and started exploring parties, and made such arrangements as were necessary, preliminary to the outset of the main expedition which started in March to carry a telegraph line along the Pacific Coast, through the British and Russian-American possessions to Behring Straits, to connect the United States telegraphically, with Russia and 'the rest of mankind' on the eastern hemisphere.

"The material part of the expedition was fitted out from New York so quietly as to attract but little attention. The wires, the insulators, the instruments and implements, everything but the bare poles necessary for the erection of the line, and all the supplies and clothing which the men will need in their long journey through thousands of miles of wild, and much of it unexplored, territory, have been sent, or will be forwarded from this city. The scheme to connect the old and new worlds by a vast overland route, is so gigantic, and involves so much more faith as well as fortitude than the first attempt to lay down a submarine line between England and America, that were it not for our war concerns and peace conferences, the Russian-American telegraph project would now be one of the all-absorbing subjects of public attention. As it is, the enterprise will probably proceed quietly, and we trust successfully, till, some three years from now, we shall wake up some fine morning and find the London, Paris, and St. Petersburg news of vesterday in our journals of to-day. Indeed, if all the telegraphic enterprises now projected and in operation, are then completed, we shall have intelligence but a few hours old from China, India, Japan, and 'the uttermost parts of the sea,' with our morning coffee every day.

"The governments of Russia and of the United States are both largely and peculiarily interested in this new enterprise. Great Britain has granted a charter for the construction of the line through her American possessions, and last July (1864) the Federal Congress, in chartering the company. directed the Secretary of the Navy to detail for the use of the surveys and soundings along that portion of the Pacific Coast, both of America and Asia, where it is proposed to establish said telegraph, one steam or sailing vessel, in his discretion, to assist in surveys and soundings, laying down submerged cable, and in transporting materials connected therewith. Secretary Welles' 'discretion' has already assigned the steam revenue cutter transferred from the Treasury to the Navy Department, which has been refitted and armed at San Francisco, to the service of the expedition. Another and larger steamer was also sent out from this side. With the vessels already employed, and those that will be engaged in the constant transportation of materials and supplies, the land and naval force of the expedition will number not less than two thousand men.

"New Westminster, the Gulf of Georgia, British Columbia, is the immediate base of operations. Col. Bulkley will take up the line from British Columbia, and as he carries it along will be able to 'report progress' daily. The first stretch will be from New Westminster to Fort Alexander, thence to Fort Frazer or Fort St. James, and thence to Fort Bahine, a distance, as the crow flies, of about four hundred miles. The country thus far has been explored and is settled 'in spots' by fur hunters and traders. Far beyond, on a nearly direct line to the Petty River, are forts and stations, here and there, belonging to or built for the Hudson's Bay Company; but the necessity for supplies and materials will keep the exploring party, and will establish the telegraph line nearer the coast, and the route proposed contemplates an exploration of three thousand miles through wild and heretofore almost untrodden territory, from Lake Bahine, the centre of British Columbia, to the Yukon River, the extreme limit of the British posessions in America. So far as is possible or practicable, the adjunct fleet will follow the land expedition. At numerous bays and indentations on the coast, supplies and materials can be set down, and one of the vessels which left here carried out a small, light-draught steamer, forty feet in length, which can run up almost any of the rivers emtying into the Pacific. Many of those numerous rivers have as yet to be explored; indeed the expedition ought to furnish us with a vast amount of information about a large but wholly unexplored region on this continent.

"'Great expectations' enter largely in the esti-

mates and prospects of the expedition. Thus, in the route from Bahine Lake to Yukon River, the company 'expect' to find the same character of country between the coast range and the interior Rocky Mountains as that which obtains and extends between the Sierra Nevada and the coast range. If this expectation is realized, they may expect to find quartz indications of gold and silver; and if they do, it would be well to spread the news as speedily and widely as possible to attract the needy adventurers of the known gold regions, who are always ready to go 'anywhere,' and who might be induced, if they did not strike gold, to follow the expedition, exhange the pick for the axe, help to fell trees and to carry on the line. Plenty of help will be needed, and it is among the expectations of the company that the stray fue hunters and natives the explorers may meet, can be made useful in piloting the advance, or in watching or taking care of the line as far as it has been erected.

"The few and far-between settlements in the earlier portions of the route will of course, be made available stations by the company, and, so far as is possible, the people employed by the Hudson's Bav Company, their hunters and traders, can make themselves very useful to the line without abandoning their present business. Portable houses are among the outfitting material of the expedition, so that, in regions destitute of timber, stations and quarters for the explorers can be set up. Imagination can picture the extensive mule caravan that will be needed to transport the insulators, wires, over some stretches, the bare poles, the provisions, the baggage, and all the necessary accompaniments of the expedition. In many places an abundance of game and fish will supply, to a great extent, the necessary food, but it will not do to depend upon the precarious supplies to be derived from an unexplored country.

"The Yukon, which is known and called in part of the Russian Possessions, the Kinchpak River is a very large stream, and opens five large mouths on Norton Sound, south of Behring Straits. It has been navigated from the sea to the interior three hundred miles, and when the explorers reach the river they will meet Russian traders and natives, as well as the vessels of their own expedition. From the Yukon River to Cape Prince of Wales, the nearest point to the Asiatic Coast, the route is easy; and from this cape to Cape East, the distance across Behring Straits requiring a submerged cable, is only thirty-six miles.

"But it is awfully cold up that way, and the year is made up, as an odd youth said of the Canadian calendar, of 'nine months of winter and three months of very cold weather.' Through a large part of the route in the British and Russian-American possessions operations will be practicable only three or four months in the year; and in view of the severity of the climate in the more northern regions, towards Behring Straits, the very fine map of the expedition now lying before us suggests other points for crossing from one continent to the other. Thus, from the coast across Cook's Straits to Nounivak Island, twelve miles, thence to St. Matthews Island, midway in Behring Sea, one hundred and seventy miles, and from there to Cape Navarin, on the Asiatic Coast, the distance in only two hundred and fifty miles—all short and practicable for submerging cables. Or from Cape Romanzoff to St. Lawrence Island it is one hundred and ten miles, and from the main northern channel of the Kinchpak, or Yukon River, to the same point, it is one hundred and thirty-five miles; the island is eighty miles long and from the island to the Asiatic Coast it is forty miles to Cape Choukotski, or two hundred and fifty-three miles to Cape St. Thadeus, south of the Gulf of Anadyr, and far enough south of Behring Straits to make it, perhaps, the most feasible point for carrying across the submarine cable.

"On the Asiatic continent the point to be reached is the mouth of the Amoor River. The route may extend by land the entire distance, or only to Penjinsk Gulf, and by cable across to Okhotsk Sea. To reach the mouth of the Amoor River will require a period of at least three years, and by that time the Russians will have completed the connecting line from this point to Irkoutsk, which is already connected by telegraph with St. Petersburg. Then, with or without the Atlantic telegraph line, the Puck prophesy of putting a girdle round the earth will be fully realized. The western extension line comprehends a scheme to run a branch line to Nagasaki, in Japan. India is, by telegraph, at the very door of England. Within the past three vears Russia has completed a line of nearly three thousand five hundred miles to the frontiers of China. The present scheme of Russian-American connection may be impracticable, but it is by no means impossible, or it would not have met with the encouragement which has authorized the enterprise. We shall soon see the line when we can touch with telegraphic fingers almost every point of importance on the globe."

Col. Bulkley's subsequent reports made from the Pacific Coast to Col. Palmer, the then secretary of the Western Union Telegraph Company, New York, afford an interesting account of the details of the exploring operations conducted by the expedition. Col. Bulkley died recently in New York City.

Girl Messengers.

A District Messenger Company which undertakes to supply the places of its striking messenger boys, whether on strike, or otherwise, with girl messengers is making a mistake, says the "Boston Post." The messenger service in a large city is no fit occupation for young girls—or for girls of any age, for that matter.

It should not be necessary to explain why this is a work in which girls ought not to be employed. The service which a messenger is called upon to perform takes him anywhere, everywhere, according to the necessity or the whim or the pleasure of the one who sends in the call. It may be entirely proper and decent, as it probably is in the great majority of cases; but in the minority, let us say, the messenger who is called in may be sent to very objectionable places on very questionable errands.

The company cannot provide against this, for it must send a messenger in answer to the call and has no means of knowing what the errand may be. The messenger must go to the address given him, in ignorance of what place he is going into; and sometimes he finds it a pretty rough place. A messenger corps of girls for general service is morally impracticable.

Indian Postal Humors.

In India letters containing dutiable articles undeclared must be opened by the addressee, possibly in some remote up-country station, in presence of the local postmaster, and then reported to Bombay or Karachi for assessment of duty before final delivery. The public, says a contemporary, are irritated at the delay, and at times take vigorous action by way of protest—like the peppery up-country colonel who, receiving back a set of false teeth sent home for repairs, for lack of which he had been living a retired life, clapped them into his mouth on being told they must go back to Karachi for assessment of duty, and defied all the departments to take them away while he drew breath. Another case is that of a lady who received a fine ostrich feather by post and duly opened it in the presence of the native postmaster, leaving it to him to settle if it was dutiable or not. After anxious turning over of leaves to find the correct classification that official decided: "Madam, it is rags and bones; it is not liable for customs."

Senator Fairbank's Telephone Scheme.

Senator Fairbanks, of Indiana, as soon as the regular session of Congress convenes, will take up a matter in which he is much interested. Just before the adjournment last spring, he offered a resolution calling upon the Postal Department to investigate the feasibility of using the telephones in the delivery of special delivery letters. The Senate would not make an appropriation at that time, as the proposition was new. Senator Fairbanks talks enthusiastically of the matter. He believes that the adoption of the rural telephone will make it possible for the farmer to receive his mail as quickly as the man in town. He would have it arranged so that the Postmaster could open the special delivery letter, and read it over the telephone to the man in the country. The rapid extension of telephone lines through the rural districts makes the scheme more easy than it would have been at the time he prepared it. He has talked with merchants and farmers and members of the Post Office Department, and they are all in favor of the plan. He says he intends to push the matter as rapidly as possible.—American Telephone Journal.

The Whole Family Used the Telephone.

Superintendent Preble, of the Black River Telephone Company, of Lorain, Ohio, says the American Telephone Journal, has some funny experiences, dealing as he does with all sorts of people. When the South Lorain exchange was opened one of the first to make application for a telephone was Joseph Dam. Mr. Dam explained that he wanted the telephone, but the rest of the family were somewhat opposed to it. The telephone was put in, however, and Mr. Dam enjoyed it very much. Mr. Preble says it was not long until the whole Dam family was using it.

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The advantages the telephone enjoys over the telegraph lies in the fact that the system can be worked by anyone whether he is expert or not. On the other hand the telegraph can only be successfully operated for telegraph purposes by experts and only after considerable training in that line of work.

Our Book Table.

"A B C of Electrical Experiments," by Prof. W. J. Clark, has lately been published. As the initial letters of the title indicate this is an elementary book adapted to the needs of beginners and students. It is written in simple language, free from all technical terms, has 146 illustrations and gives plain instructions for the making of batteries, magnets, electric bells, induction coils, X-rays, dynamos, motors, static machines, and the telegraph, telephone and wireless telegraphy, the latter written from an American standpoint. As any student can procure for himself the materials mentioned therein and can make for himself the instruments, or work out any of the experiments given in this book, its value will be apparent. The price is $1 and it will be sent post paid upon receipt of this amount. Address orders to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Lightning Flashes and Electric Dashes," always bright and entertaining, never loses its interest, and has maintained a strong hold on telegraphers as being one of the best books published of telegraphic literature, depicting with genial force and attractive circumstance, the humor, fun, wit and wisdom attributable to the fraternity. The sketches are the contributions of well known writers, the illustrations are well drawn and comical, and altogether the volume, which is bound in cloth, with gold lettering on the front cover, is well worth a place in the library collection of every telegrapher. There are but a few copies left of this excellent book, and in a short time this first work containing telegraph stories will be out of print. Those who desire a copy should lose no time therefore, but send $1.50 at once to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, who will send the volume postpaid, to any part of the United States.

"A History of Wireless Telegraphy," third edition, revised, by J. J. Fahie, the eminent English author, constitutes one of the most popular accounts yet published of the origin and progress of wireless telegraphy, showing fully what has been attempted and what accomplished in that fascinating field of operations and research up to the present time. All systems are reviewed, as well as many guesses considered. Marconi's method is treated with great thoroughness and this inventor's particular development of the science is brought down to the present time. For convenience of the general reader the contents of the volume are divided under three distinctive heads, or periods, so called, namely: First period—The Possible. Second period—The Practicable. Third period—The Practical. The revised work will prove a welcome addition to the literature of the matter discussed. Under the respective headings the classification observed will be of especial aid in tracing with logical sequence the development of wireless telegraphy. The price of the book is $2.50, express charges prepaid to any address in the world. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

"Wireless Telegraphy" is the title of a new and popular exposition on this interesting subject by G. W. Tunzelmann, B. Sc., the author of "Electricity in Modern Life." The volume has 104 pages, is fully illustrated, and includes chapters on ether and ether waves, the discovery and development of the coherer, the systems of Marconi, Popoff and others. It is a capital book, and affords just the line of information now in such demand regarding the topic treated. It will be sent on receipt of price, 75 cents, to any point in the United States or Canada, express charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Bound Volumes of Telegraph Age.

A gentleman who has lately ordered a bound volume of TELEGRAPH AGE for the year 1902, writes to us to the effect that if we will supply him with such a volume with the index bound therein, he will, in addition to his regular subscription, be very glad to place a permanent order with us for the same to be delivered to him each year, at a cost of $3 per volume. This would relieve him, he explains, of the necessity of saving each number as it is received, from which he often clips items and so spoils his file, thus making it undesirable for binding purposes.

Very likely there are others who value TELEGRAPH AGE much as our correspondent does, who mutilate their regular subscription issues and yet who wish to preserve bound volumes intact from year to year. All who require to be supplied are requested to notify us at an early date so that there may be no difficulty experienced in maintaining full files for the purpose.

We have on hand a few handsomely bound volumes for 1902, including the index, which may be had at $3 apiece.

The Signal Corps in the Philippines.

Thirty first-class operators received their discharge recently at the expiration of their terms of enlistment as Signal Corps operators in the Philippine Islands. Only two of them could be induced to reenlist. According to reports received from Manila, fifty Morse registers have been forwarded from Washington to the Philippine Islands where they will be used, it is said, to teach the Fillipinos the art of telegraphy in this primitive form. The same authority also states that all efforts so far made to teach the natives of the Islands to receive messages by sound have utterly failed.

The kindest thing in the kindest way.
Politeness is to do and say.

Our Book Table.

The new edition of "Maver's American Telegraphy and Encyclopedia of the Telegraph" is now ready for delivery. This edition is readily distinguishable from the previous editions by its binding, which is an elegant maroon cloth, and presents an attractive appearance. Any one of the new sections of the work should be worth the price of the entire book. For example, the sections on inductance, impedance, Pupins loaded conductors, Buckingham printer, the Roberson quad, British Post Office quad, open and closed circuit repeaters as used in Great Britain, and many others. Each subject is treated in the full and lucid style which characterizes the author's writings on technical subjects. Sent postpaid on receipt of price, $5. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

The "Twentieth Century Manual of Railway and Commercial Telegraphy" is the title of a thoroughly practical and instructive work on telegraphy, written by Fred. L. Meyer. It is one of the most complete, comprehensive and thoroughly up-to-date books of its kind on the market It is profusely illustrated with cuts and engravings, showing the technical parts of a telegraph instrument; accurate drawings in black and white and in colors, the latter showing the regulation practical color signals used on blocks and on trains and engines; full-page half-tone engravings and facsimile telegrams, train orders, railway messages, commercial and railway forms, etc. The book is printed from large, clear, perfect type, on extra heavy paper, and substantially bound in the best dark blue ribbed cloth, making it handsome and durable.

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The Old-Timer in New South Wales.

A correspondent in "The Transmitter," printed at Sydney, New South Wales, takes an old-timer of that country to task for his assertion that the present generation of operators in New Zealand does not compare in intelligence and capability with the operators found at the key previous to twenty-five years ago. As the same subject is one that is constantly being more or less widely discussed in America, it will be interesting to note what our New South Wales brothers have to say on the subject. A writer advocating the capabilities of the operator of to-day states that he takes exception to the old-timer who writes that "there are 'few, if any,' to compare with the operators of old; and also that 'I have seen and worked with men who for years stood the burden of this heavy work.' This all reads strangely to those who know the capabilities of present-day operators, and surely appears to smatter somewhat of egotism on the part of one who arrogates to himself the power in past days of having been one among those men—those lions of old before whose achievements the efforts of present-day men pale into insignificance, and who for years bore the burden of heavier work than we are capable of sustaining today. Your correspondent's pessimistic attitude at the manifest decadence of the department's efficiency recalls Dante's 'No greater grief than to remember days of joy when misery is at hand!'"

The Viaduct Manufacturing Company.

The old reliable Viaduct Manufacturing Company, of Baltimore, Md., a well-known telephone and other electrical apparatus manufacturing concern, of which A. G. Davis is the president, is materially enlarging its scope of production in the field of telegraph work. The fact that Mr. Davis, himself, is an old telegrapher, a forty-niner of the telegraph, in his day accounted an expert in telegraphy, especially fits him to take up work of the character referred to. Particularly is this shown to be true in the specialty of switchboard manufacture, for both commercial and railroad uses, large contracts for which are now being executed. In a page advertisement appearing elsewhere in this issue, the company takes occasion to refer especially to the Skirrow switchboard, in the making of which the Viaduct company is now engaged.

It is interesting to note that this company has been in continuous operation since 1871. Of late years its efforts have been more particularly directed to the manufacture of telephone outfits, the aim being to produce the best that men of long experience were capable of making. It is also the pioneer company in the manufacture of district messenger call boxes having been so engaged continuously since 1871, telephone manufacturing dating from 1879. If long experience counts for anything, this company ought to possess a pretty accurate knowledge of the line of work in which it is now so successfully engaged.

A Well-Known Shylock Goes Under.

Attachments aggregating $85,900 were filed October 24 in Jersey City, N. J., against John Mulholland, the noted Shylock, of New York, who amassed a fortune of more than $3,000,000 in "bying employes' time" in Kansas City, St. Louis, Chicago, Cincinnati, Pittsburg, Philadelphia, Newark, New Jersey, New York, Brooklyn, Boston and other cities. Mulholland numbered among his customers thousands of telegraph operators. Wall Street sharks induced Mulholland to speculate in stocks, which resulted in his ruin.

Owen T. Hughes, of Savannah.

A young telegrapher of promise is Owen T. Hughes, son of P. H. Hughes, the manager of the Postal Telegraph-Cable Company at Savannah, Ga. He was born in Baltimore, Md., on December 9, 1885, and consequently is not yet quite eighteen years of age. For so young a man he has had considerable experience in telegraphy, for which he has shown much aptitude. After

OWEN T. HUGHES.

his graduation from the public schools he took a business college course where he was taught stenography, subsequently entering the telegraph service at Savannah. Later he was placed in charge of a branch office of the Postal, in that city, afterwards being transferred to the main office where he remained until appointed to the position of operator and stenographer in the exporting house of C. A. Shearson & Co., of Savannah, where he now is.

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Indianapolis, Ind., at a date in 1904 yet to be named.

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

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

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

International Association of Municipal Electricians meets at a place and date in 1904 yet to be named.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Atlanta, Ga., at a date in 1904 yet to be named.

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

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

Train Despatchers' Association meets at St. Louis, Mo., third Tuesday in June, 1904.

Western Union Telegraph Company meets the second Wednesday in October, at New York.

"Small Accumulators" is the title of an illustrated volume of eighty-one pages, by Percival Marshall, M. E. The book covers the subject of storage batteries, as indicated by its name, as fully as is possible, and it will be found a practical and trustworthy guide of the matter treated, readily understood by non-technical readers. The price of the book is fifty cents, an amount which covers the prepayment of express charges. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

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

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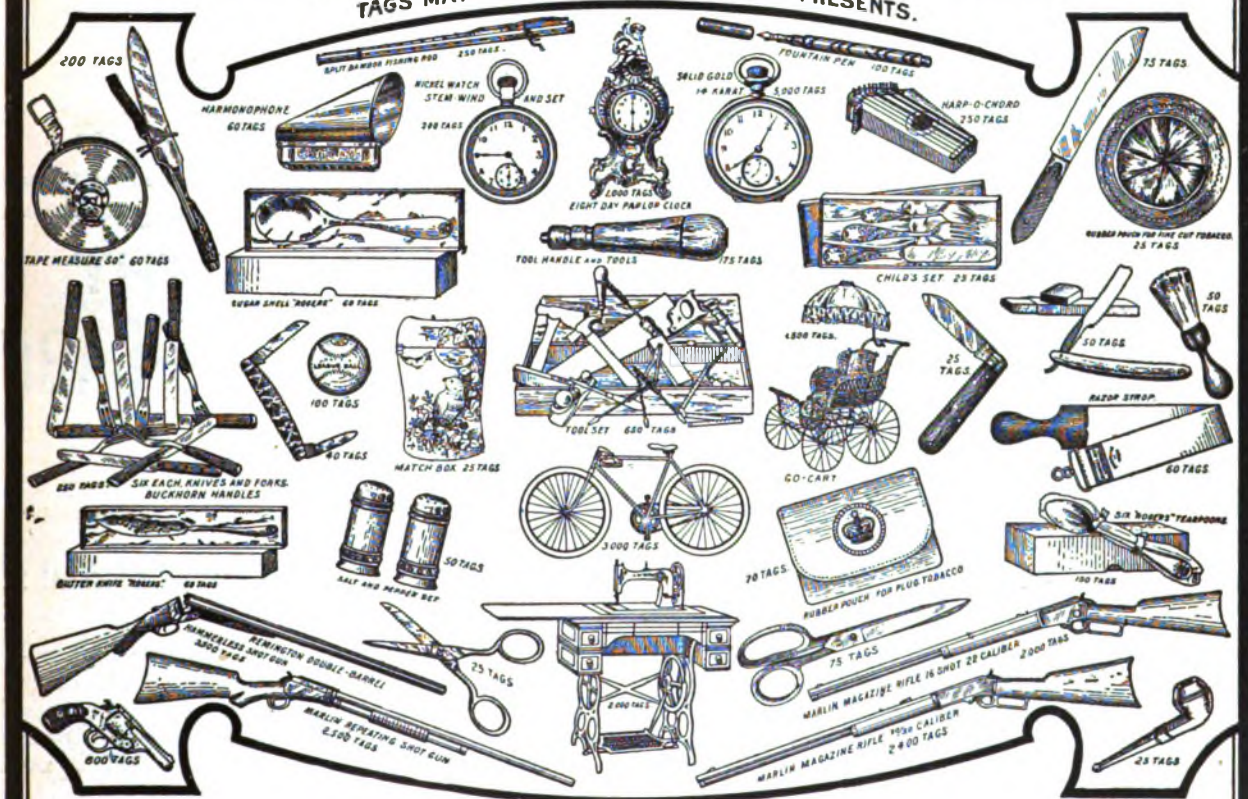

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CONTENTS.

SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

The Western Union Telegraph Company's Standard Wheatstone Bridge Portable Testing Set.

One of the inconveniences which those who are compelled to make electrical tests in different localities experience is that of carrying about with them electrical apparatus in detached packages, and which must first be arranged and connected together properly before beginning operations. The outfit consists, usually, of a galvanometer, rheostat, and a few cells of battery, each of which, in most cases, forms a separate parcel.

With a view of eliminating this objectionable feature of the electrician's present standard outfit, and at the same time secure several additional advantages, the Western Union Telegraph Company has recently adopted, as their standard, a combination outfit devised by Mr. Elmer Willyoung, of New York, called The "Decade" Wheatstone Bridge, a diagram of which, showing all connections and the exact situation of each component part, is herewith given.

The combination consists of a wheatstone bridge rheostat, of the Decade pattern, a D'Arsonval galvanometer, a "universal" shunt, and five cells of chloride of silver battery, in addition to the usual and special binding post and switch arrangements provided, all contained within one compact ebony topped box seven by fourteen inches, and five inches deep.

For the purpose of assisting the operator to a thorough knowledge of the arrangement, the actual wiring connections of each separate circuit in the combination is shown by means of white lines traced on the black ebony face in which the brass disks and binding posts are set. This new factor should obviously be of great help to novices in making connections, as in case of doubt they may quickly refresh their memories by an inspection of the lines before them.

The galvanometer, as previously stated, is of the D'Arsonval pattern, one of the simplest, most sensitive and accurate instruments in general use. Briefly described, it consists of a rectangular coil of wire situated between the polepieces of a permanent steel magnet, the latter furnishing the desirable intensity and uniformity of magnetic field while incidentally shielding the needle and coil from the earth's and other foreign influences.

The needle, or pointer, is strictly deadbeat and is attached to one face of the pivoted rectangular coil, and deflected to the right or left of the zero mark on the graduated dial by the turning of the rectangular coil on its axis when traversed by a current of electricity. The power which twists the coil is derived from the magnetic lines of force developed therein during the time the current is flowing.

In the normal position of the rectangular coil the copper wire lies parallel to the permanent lines of force developed by the horseshoe magnet, hence any magnetic lines induced by the current in the coil itself, would obviously flow at right angles to the first mentioned travellers. As the tendency of two such forces is to set themselves parallel to each other the weak will yield to the strong and try to get in line with its master; hence to utilize this phenomenon for practical purposes, the coil is purposely made movable and compelled to register by the twist it receives, all impulses the electric current imparts to it during the magnetic battle for the right of way.

The shunt used in connection with the galvanometer, which forms a part of the outfit, is known as the "Ayrton," or universal shunt, the superiority of which over the old standard arrangement lies in the fact that the shunt resistance is so arranged as to in no way affect the amount of current originally flowing in the main line upon

applying the various shunt values. As a result thereof the readings from the 1-10, 1-100, or 1-1000 shunt coils will give exactly 1-10, 1-100, or 1-1000 part, as the case may be, of the reading obtained without the shunt. This was not exactly the case with the old style shunt.

If the reader will carefully examine the construction of the two patterns of shunts shown in figures 2 and 3, he will readily see the distinction between the arrangement of coils, and understand why every shift in the divisions of the latter alters, slightly, the previous ohmic value of the circuit. It will be seen that when either division of the standard shunt is used the total resistance of the circuit, as a whole, is slightly diminished, owing to the law of joint resistance, whereas, the universal device compensates for any such alteration in ohmic values by shifting a portion of the shunt coil in such manner as to place it in series with the galvanometer.

The current value in a circuit, according to ohm's law is ascertained by the formula E÷R= C, hence any arrangement of shunt coils which necessitates an alternation in the value of R, without compensation, is obviously inaccurate.

One great practical advantage of the universal shunt arrangement consists in its applicability to any galvanometer, since the shunt resistance need have no particular relation to the resistance of the galvanometer, which is not the case with ordinary shunts.

The new set is provided with two extra binding posts (M and N, Fig. 1) to which any sensitive galvanometer may be connected and thereby utilized in the regular testing operations, with such advantages as may accrue from the use of the universal shunt. It is only in insulation tests, however, that the shunt is generally applied.

INSULATION TESTS.

For such tests a plug is inserted between B and Z, and another between E and G (Fig. 1). The line wire under test is connected to post C and a ground wire to the disc GR. If other than the regular galvanometer is to be used, the switch K must be turned to the "out" stud so as to establish a connection with the galvanometer post N.

CONSTANT OF GALVANOMETER.

To take the constant of the galvanometer, make the usual battery connections and insert a plug in hole 1 of the bridge arm on the B side of the B A Strip (Fig. 1). Plug up the three upper left hand holes marked O, as well as the hole marked 10 on the lower right hand side of the rheostat, whose resistance will then equal 10,000 ohms. Insert plug between F. and G, and then complete the circuit by connecting a wire between post C and disc GR. Adjust the shunt resistance so as to get a suitable deflection, which deflection must then be multiplied by the shunt value and by 10,000, the product thereof being known as the "constant," or number into which the galvanometer reading must be divided in order to ascertain the insulation resistance of the conductor under test.

The new outfit is particularly well adapted for making conductivity tests, loop measurements, etc., (with which the reader is assumed to be more or less familiar) and has indeed been specially designed for such work in connection with the location of underground troubles.

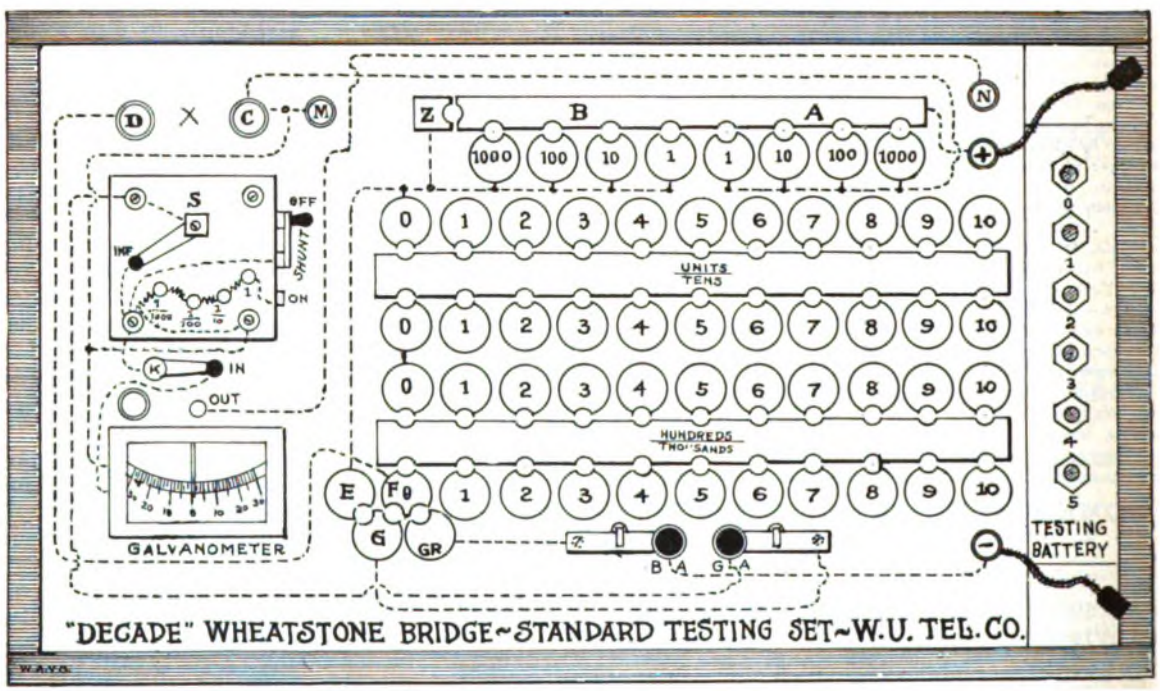


Fig. 1.

UNDERGROUND TESTS.

Let a wire in an underground cable be grounded at some point, the locality of which it is desired to know. The modus operandi of making

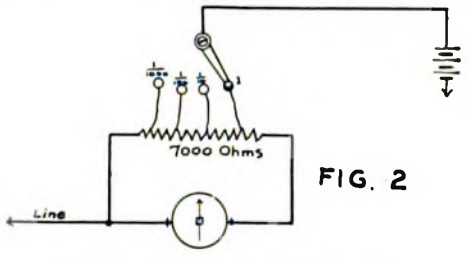
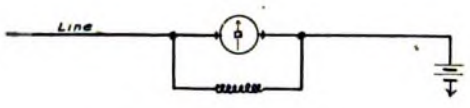


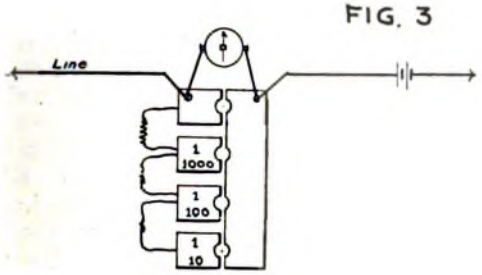
FIG. 2

PRINCIPLE OF AYRTON OR UNIVERSAL SHUNT



PRINCIPLE OF ORDINARY SHUNT

FIG. 3



ORDINARY SHUNT BOX

the test (generally the Varley loop test) would be as follows: First, secure, if possible, two good wires in the same cable and have them looped at some point beyond the fault. Then connect the free ends of the loop to the terminals C and D (Fig. 1). Adjust the bridge arms A and B so that the desired ratio is obtained by, say, plugging up the 10 hole in arm A, and the 1000 hole in arm B, which gives proportion of 1 to 100.

Insert plugs between the discs E and G, and F and GR, after which proceed to measure the resistance of the loop in the usual way, having first taken the precaution to open the shunt resistance (in order to increase the sensibility of the galvanometer) by throwing one switch over to the "infinity" stud, and the other switch to the "off" position on the right hand side of the shunt box.

Calling the good conductors No. 1 and 2, and the faulty conductor No. 3, make the series of loop tests indicated in Fig. 4, in which it will be observed that each conductor has been measured twice. These three tests are made with the view of finding the exact resistance of each conductor, which can now be obtained by dividing the sum of the various loop resistances by 2, and subtracting from the quotient, the resistance of the particular loop that does not include the wire whose resistance is to be determined.

The next test, which may be called the "R test," is made for the purpose of finding out the resistance, or ohmic distance between the test office and the fault f Fig. 5.

The faulty wire having been connected with the post D (Fig. 1) one pole of the testing battery is grounded by removing the plug from between F and GR, and attaching thereto a ground wire, the plug being then inserted in the GR hole. Proceed as before to establish a balance by inserting in the rheostat Rh (Fig. 5), the requisite amount of resistance R to make the two sections of the loop on opposite sides of the fault f of equal value.

Let R=3.364 ohms. Then the distance in ohms to the fault will be:

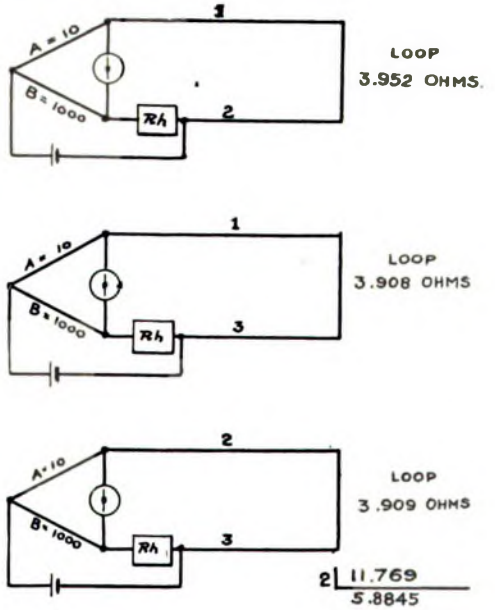
$$\frac{\text{Loop} - R}{1 + .01} = \frac{3.909 - 3.364}{1.01} = 0.5396 \text{ ohm.}$$

the denominator 1+.01 representing the bridge arm ratio.

The practical point to determine, however, is not the distance in ohms, but the distance in feet to the fault, and this is ascertained by first finding the number of feet there are per ohm in the faulty wire, thus:

$$\frac{\text{Total length of cable tested}}{\text{Resistance of faulty wire}} = \text{No. of feet per ohm.}$$

Let the length of cable between the test office and the point at which the wires are looped equal 965 feet. Then 965 feet ÷ 1.9325 ohms = 499.876 feet per ohm.



Resistance of No 1 = 5.8845 − 3.909 = 1.9755 Ohms
Resistance of No 2 = 5.8845 − 3.908 = 1.9765 Ohms
Resistance of No 3 = 5.8845 − 3.952 = 1.9325 Ohms.

FIG. 4

As the distance in ohms to the fault equals 0.5396 ohm, the distance in feet will be 499.876x 0.5396=269.7 feet.

Having thus determined the resistance and distance between the test station and the fault by way of the bad conductor (No. 3), a check test

may now be made to ascertain the resistance to the fault via the good conductor (No. 2), the result of which will show at once whether or not the tests have been accurately made, as in order to be so, the sum of the two resistances should equal the entire resistance of the loop. With this object in view the wires in C and D (Fig. 1) are transposed, and a balance secured by inserting the necessary resistance R′ in the rheostat Rh (Fig. 6). Let R′ equal 0.506 ohm. Then, according to preceding formula, the resistance to the fault via No. 2 conductor will be

$$\frac{\text{Loop} - R^1}{1 + .01} = \frac{3.909 - 0.506}{1.01} = 3.3693 \text{ ohms.}$$

Adding together the worked out results of the R and R′ tests we have

R = 3.364 = 0.5396 ohm to fault via No. 3 conductor.
R′ = 0.506 = 3.3693 ohms " " " No. 2 "
or 3.9089 ohms = loop resistance (nearly).

By subtracting the resistance of the good con-

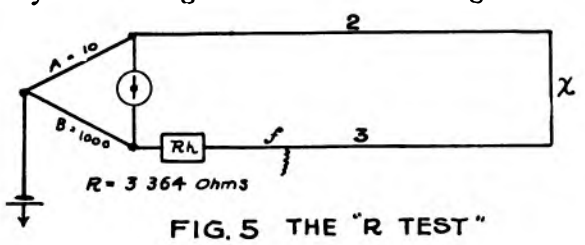


FIG. 5 THE "R TEST"

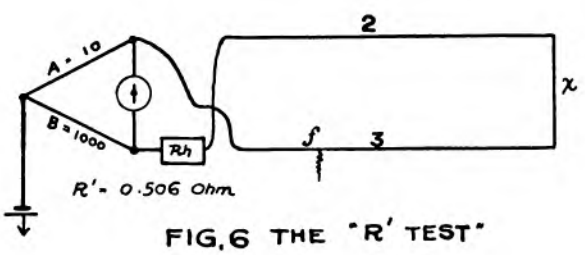


FIG. 6 THE "R′ TEST"

ductor (1.9765 ohms) from R′ (worked out) we get

Worked out value of R′ = 3.3693
Resistance No. 2 = 1.9765
1.3928 ohms

as the resistance from the distant point X where the wires were looped, back to the fault, and this resistance, multiplied by the number of feet per ohm in the faulty conductor, will, of course, represent the distance in feet between those points, or, 1.3928 ohm x 499.876=696.2 feet.

The sum of the lengths of both sections of the faulty conductor as determined by the foregoing tests, should, in order to be perfectly accurate, equal the total length of the cable tested. In the case under consideration it has been shown that

696.2 feet = length of one section
269.7 " = " " other "

so that 965.9 feet = Total length of cable according to tests,

a result so close to the actual length given (965 feet) as to be accurate enough for all practical purposes.

It is of more or less importance in connection with these tests that, at the outset, information as accurate as possible be secured with regard to the length and position of the conductors in the cable to be tested. In considering the question of length, allowance should be made for the slack in the various manholes which may vary from 3 to 10 feet in different cables. It should also be remembered that the inside conductors of a cable are comparatively straight, whereas the outer layers may have a spiral twist that will in long cables make a material difference in the length of the respective conductors.

When "leads" of appreciable resistance have to be employed in making these underground tests, the resistance of the leads should always be measured. For, under such conditions, the resistance of one of these leads would be included in the result of the tests to find the resistance of the faulty conductor, and must, therefore, be subtracted from such result in order that the true resistance of said conductor may be accurately determined. And for a similar reason, the value of such lead must also be deducted from the worked out result of the "R test," which would otherwise show a resistance to the fault that would be in excess of the actual resistance by an amount equal to the resistance of the lead.

In working out the values of the R or R′ tests, one or other of the following formula should be used according to the conditions specified, viz.:

When arms of the bridge are equal $\frac{L-R}{2}$
" " " " " " 1 to 10 $\frac{L-R}{1+.1}$
" " " " " " 1 to 100 $\frac{L-R}{1+.01}$

where L=loop resistance, and R (or R′) the resistance inserted in Rh (Figs. 5 and 6) to obtain the necessary balance.

Business Notices.

The Central Electric Company, Chicago, has issued their November price list and discount sheet, a copy of which TELEGRAPH AGE desires to acknowledge. It is an exceedingly attractive little book, designed to supplement their 1903 general catalogue. It has been revised to date and contains the very latest prices in force, hence cannot help but be of interest to every one in the electrical field. Certainly every holder of a catalogue who has not received this price list should write for one.

There is no doubt that the Hammond Typewriter is growing in popular favor among operators. The large and increasing sales among the fraternity amply proves this. The company made a highly creditable exhibit of their machines at the Philadelphia tournament, the favorable effects of which have already been noticeable in many ways. Following up the advantage gained the

Hammond people have placed a strongly worded advertisement in this issue, which recites in a very striking way some of the important points of their machine. It is an announcement that should be read.

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

The Cable.

The Halifax-Bermuda Cable Company, for the year ended June 30, made a net profit of $16,225 and carried forward $3,725 after providing for a dividend of 2½ per cent.

The policy likely to be recommended after the Newfoundland investigation is that of the fortifying of St. John's and the creation of a naval base there, with permanent stationing of at least a commodore's command there, of four ships, in readiness for an emergency.

The War Commission of the British Government, in a recent report, calls attention to the nation's unreadiness for actual warfare. The report which has been condensed by the Western Electrician, dwells at length on the unprotected condition of the Atlantic cable in case of hostilities. In view of this Major Bland, of the Royal Engineers, a leading British military expert on telegraph matters, has been sent to Newfoundland to study the question of how to prevent interference with the cables.

It is pointed out that England must protect her Atlantic cables at all hazards, because so much depends upon them. These cables connect with the imperial garrisons and fleets at Halifax and Esquimault, the Canadian Government and its 100,000 militia spread over the Dominion, and the Naval Reserve and fishery squadron in Newfoundland. Apart from this, a subsidiary cable stretches to Bermuda and Jamaica, the two southern bases for the North American fleet. The importance of this connection lies in the fact that during the winter this British fleet cruises in these southern waters, and the cutting of this single wire would isolate it from England for a fortnight, during which time it is possible for a nation's destiny to be made or marred, as war is conducted these days.

A British Pacific cable is laid between Vancouver and Australia, an American from San Francisco, via Honolulu, to Manila. The breaking of these would cut off these far-away dependencies from the parent countries and, perhaps, provoke complications of the most drastic character. Other cables stretch betwen India, Burmah, Singapore, and Hongkong, the effect of the severing of which in an important crisis might be disastrous. An equally ill-provided section is South Africa, in the matter of cables. One runs down the west and another the east coast of the Dark Continent, and the destruction of these would involve no laborious or risky ventures whatever. Cables to India and Australia, cables along the Mediterranean and through the Red Sea, cables to smaller colonies and strategic centers, could all be cut in the same way, and by a well-designed plan the British Empire could be isolated from all of its colonies, and from the world at large, in a day or two.

Wireless Telegraphy.

A patent, No. 741,767, for a coherer for wireless signaling, has been issued to Thomas E. Clark, Detroit, Mich.

A patent, No. 742,298, for a coherer for wireless telegraphic system, has been granted to Louis Dorman, Washington, D. C.,

Patents, Nos. 742,779 and 742,780, for signaling by electromagnetic waves, have been taken out by Reginald A. Fessenden, Fort Monroe, Va.

The Pacific Wireless Telegraph Company opened offices in Seattle, Wash., October 22, with T. W. Armstrong, the secretary of the company, in charge. General A. L. New, the general manager of the company, is in charge of the work of installing the stations around the Sound.

For the past two or three years, a considerable amount of correspondence respecting wireless telegraphy has been passing between the Imperial Government of Great Britain and Ireland and the Governments of the colonies of the Empire, and suggestions have been made by the home government to the effect that the colonies should legislate with a view to prevent the indiscriminate use of wireless telegraphy within their territories, at any rate for the present. The acts, which have been promulgated in several colonies as a result of this advice, cannot fail to be of interest to those connected, whether directly or remotely, with wireless telegraphy. This action has been brought about because of the numerous recorded interferences of wireless systems which have practically checked their usefulness.

A cable despatch from Stockholm, Sweden, announces that the Nobel prize, given to the person making the most important discovery or invention in the department of physical science during 1902, has been awarded by the Swedish Academy of Sciences to Marconi for his invention of space telegraphy. The Nobel prizes take their name from Alfred Nobel, who died six years ago, and by his will provided that five prizes of $40,000 each be given to those who, "in the course of the preceding year, shall have rendered the greatest services to humanity." On December 10, the anniversary of the death of the donor, the corporation in charge bestows upon each winner a check for the value of the prize, a diploma, and a gold medal. During the six months following, the person thus distinguished is obliged to give a public lecture in Stockholm.

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The Railroad.

A patent No. 741,955, for an electric railway signal, has been taken out by Howard Brooks, Wheaton, Ill.

A patent No. 741,952, for an electric signaling system for railroads, has been issued to James N. Baskett, Mexico, Mo.

A patent, No. 742,487, for an electric signalling device for railways, has been issued to Hubert Pfirmann, Frankfort-on-the-Main, Germany.

At the fall session of tne American Railway Association held at Richmond, Va., on October 28, the Association adopted the following rules governing the movement of trains with the current of traffic on double track bv means of block signals

1. On portions of the road so specified on the time-table, trains will run with the current of traffic by block signals whose indications will supersede time-table superiority.
2. The movement of trains will be supervised by the ——* who will issue instructions to signalmen when required.
3. A train having work to do which may detain it more than —— minutes, must obtain permission from the signalman at the last station at which there is a siding before entering the block in which work is to be done. The signalman must obtain authoritv to give this permission from the ———*
4. Except as affected by these rules, all block signal and train rules remain in force.

*Superintendent or train despatcher.

It was also decided, by the association, beginning January 1, 1904, to abandon the use of the telegraph in the operation of trains on all double-track railroads. The result will be the substitution of the block system, wherever possible, with the object of removing the danger of misinterpreted and lost orders and thereby lessen the number of accidents.

Personal Mention.

Mr. Andrew Carnegie and family returned to New York, October 28, on the White Star liner Cedric, in good health. He will spend the winter at his new Fifth Avenue home.

Mr. C. H. Bristol, general superintendent of construction of the Western Union Telegraph Company, New York, accompanied by his wife, has returned to the city after an extended western trip.

General Mention.

The annual meeting of the Telegraphers' Mutural Benefit Association will be held in Room 60, 195 Broadway, New York, on Wednesday, November 18, at 4 P. M.

Mr. S. P. Sain, chief operator at Wheeling, W. Va., of the Western Union Telegraph Company, has been confined to his bed for the past five weeks by typhoid fever, but is now slowly recovering.

Wire theives are again at work cutting copper wires from poles in the vicinity of Altoona, Pa. On such occasions both telegraph as well as telephone lines are cut down and the theives usually escape with their plunder.

Wire tappers succeeded in tapping the Great North Western Telegraph Company's race circuit near Ottawa, Ont., on November 2, and cleared over a thousand dollars by reporting the wrong winner of a race to the pool rooms in the capital city.

The Steltje's type-printing telegraph, a German invention, is described in detail in the Scientific American of November 7. It is a wheel system rotated in synchronism with the transmitter and very similar to the ordinary stock tickers in use in this country.

Mr. Sam R. Parke, an old time telegrapher and for many years associated with the Weare Grain Company, at Creston, Iowa, has resigned his position and will locate in La Salle, Ill., where he will be identified with the Gillett and Denniston Commission Company.

The Sioux City, Ia., Western Union Telegraph Company's office has been reconstructed at an expense of $6,000. The up-to-date equipment includes a motor generator plant of the latest pattern. Manager F. W. Mohr is justly proud of his facilities and makes the statement that he is prepared to handle a national convention rush.

Resignations and Appointments.

Mr. Edward Matson has been appointed manager of the Western Union Telegraph office at West Chester, Pa., vice M. B. Reynolds, deceased.

Mr. F. W. Flurshutz, for upwards of forty years manager of the Western Union Telegraph Company at Cumberland, Md., has resigned to take a long-needed rest.

Mr. V. J. Albert, until recently manager of the Postal Telegraph-Cable Company, at Utica, N. Y., has been transferred to the company's Syracuse office where he will act in the same capacity.

Mr. J. Frank Terrell, manager of the Western Union Telegraph Company at Bristol, Tenn., has resigned to accept the management of the same interests at Roanoke, Va. He is succeeded at Bristol by Mr. Joseph Eakin, of the same place.

Mr. Philip Frank, for the past ten years auditor of the Western Union Telegraph Company, at Jacksonville, Fla., has resigned to accept a position with the Postal Telegraph-Cable Company, in the general superintendent's office, at Atlanta, Ga.

Mr. Frank C. Hackett, up to a short time ago chief operator of the Western Union Telegraph Company, at Pittsburg, Pa., and for some years past chief operator of the Cleveland and Toledo, Ohio, offices, has been appointed manager of the same interests at Cleveland, Ohio, vice Isaac Morris, resigned. A sketch of Mr. Hackett appeared in our issue of March 1, 1903.

Mr. C. L. Pitcher, manager of the Postal Telegraph-Cable Company, at Syracuse, N. Y., has resigned, and is succeeded by Victor Alberts, of the Utica office. The position at Utica has been filled by the transfer of George F. Lawler from the managership of the Poughkeepsie office, the latter vacancy being filled by Mr. Martin Carey.

Recent New York Visitors.

Mr. C. K. Hunt, of Winsted, Conn.

Mr. C. K. Hage, division operator, Pennsylvania Railroad, Williamsport, Pa.

Mr. S. C. Mason, storekeeper of the Western Union Telegrapn Company, Chicago, Ill.

Mr. A. C. Thomas, superintendent of leased lines, The Associated Press, Chicago, Ill.

Mr. J. Levin, general superintendent of the Western Union Telegraph Company, Atlanta, Ga.

Mr. S. R. Crowder, of Richmond, Va., electrician of the southern division of the Western Union Telegraph Company.

Mr. T. P. Cook, general superintendent of the Western Union Telegraph Company, Chicago, Ill. He was accompanied by his secretary, M. T. Cook.

Death of Roderick H. Weiny.

Roderick H. Weiny, aged forty-five years, a well-known former telegrapher, who perhaps is best remembered as the inventor of the Weiny-Phillips repeater, so-called, as well as other useful telegraph devices, died suddenly in New York

THE LATE RODERICK H. WEINY.

on Saturday, October 31, from apoplexy. His funeral occurred at his late home, Glen Ridge, N. J., on Monday, November 2. The interment was at Newark, O.

Mr. Weiny was born in Keokuk, Iowa, on January 22, 1858, but removed at an early age to Columbus, O., where he acquired his education and learned telegraphy. In 1876 he received his final appointment as operator. For a number of years in Ohio, Colorado and Indiana he was identified with the railroad telegraph service, in which he achieved an honorable record. He closed his railroad career by a three-year term as chief operator with the Northern Pacific road. From position he entered the service of The United Press, and while there, in 1892, he devised and patented the repeater bearing his name.

For some years past Mr. Weiny had been in the service of the American Telephone and Telegraph Company, New York, as telegraphic expert and special agent to the general superintendent. He was of a lovable disposition and had hosts of friends who esteemed him highly for his genuine worth and rare abilities. He leaves a wife, who was Miss Mary Wilson, of Newark, O., and a son.

Among those who attended the funeral were: C. H. Wilson, E. A. Reed, Henry W. Pope, C. R. Truax, G. H. Bates, R. H. Starrett, F. M. Farwell, C. O. Rawell, G. W. Jamison, R. H. Randolph, C. C. Keysor, J. J. Ghegan, Walter P. Phillips and J. B. Taltavall.

Obituary Notes.

Edward L. Prince, an operator at Smithfield, W. Va., was burned to death on October 30.

Charles Barry, aged sixty-five years, an old time telegrapher, died at Elizabeth, N. J., on October 30.

John Young, aged forty-nine years, a well known old time Chicago, Ill., telegrapher, died in that city on October 31. For the past few years Mr. Young has been engaged in commercial business.

George W. Boss, aged forty-three years, a well known Cincinnati, O., telegrapher up to about twenty years ago when he embarked in the railroad service with which he has been identified with ever since, dropped dead at Minneapolis, Minn., on October 30.

M. B. Reynolds, aged fifty-three years, manager of the Westchester, Pa., office of the Western Union Telegraph Company, dropped dead in a restaurant at that place on October 25. He was well and favorably known in his section of the country.

Myritus W. Miller, a well known telegraph operator, for many years with The Associated Press in various parts of the country and recently appointed manager of the local office of Ernest E. Jones Company, brokers, of Chicago, died at Racine, Wis. on October 26, from a complication of diseases.

Reorganization of the Russian Posts and Telegraphs Department.

The Odessa correspondent of the "Standard," London, states that the administrative department of the Russian posts and telegraphs will very shortly be transformed into a regularly constituted ministry. The present condition of affairs in Russia is said to be that the telegraphic communication is not usually more expeditious than the ordinary post. This is ascribed to the fact that the chief of the department has hitherto invariably been a military general, with no knowledge of the intricate machinery of the postal and telegraph systems, and also to the starvation wages paid to the working staffs. Within the last ten years the postal, telegraph and telephone services have more than doubled their revenue, but very little has been done to cope with this increase of business. Under the new regime the staff will receive an all-round and substantial increase in salaries as well as a new classification.

Honor to Telegraphers.

So far as we are aware, the first monument doing honor to telegraphers is to be set up in Paris, always a centre of light and leading in such matters. The sculptor, Bartholdi, who designed the Liberty colossus in New York Harbor, is about to see unveiled in Paris a monument to the balloonists who kept up communication between Paris and the rest of the country during the siege of the city in 1870-1. On one side is a view of Bartholdi's monument, with an inscription; on the other is a bird's eye view of Paris taken from the fortifications. The words on this side are: "To the heroes of the post, the telegraph, the railways, 1870-1871." Where in this country, says the "Electrical World," is the kindred memorial to the gallant operators, whether Union or Confederate, who gave such glorious service during the Civil War?

Chicago Conduit Company Has Capital of $30,000,000

Capitalized at $30,000,000, the Illinois Tunnel Company, was incorporated at Springfield, Ill., October 29, being a reorganization of the Illinois Telephone and Telegraph Company.

It controls the underground telephone and freight conduits under the streets of Chicago and the right to construct tunnels for telephone wires and the carrying of freight parcels, mail and newspapers under every street and alley in the city.

Its capitalization is one of the largest, if not the largest, ever recorded in Illinois.

The Halifax, N. S., city council is being asked to approve of a new plan of assessment, says the Railway Shipping World, in which it is recommended that a special tax of $400 shall be levied upon telegraph companies, and $200 upon cable companies doing business in that city.

Improvement in Automatic Telegraphy.

Mr. Patrick B. Delany, of South Orange, N. J., has perfected a keyboard perforator for his system of rapid automatic telegraphy. The keys are arranged in typewriter order so that anyone at all familiar with the latter can at once perforate tapes at a high rate of speed. This improvement, combined with perforation by the ordinary Morse key, marks a most important step in simplification of automatic telegraphy. The new keyboard may also be used as a transmitter for regular Morse in place of the Morse key.

The triumph of wireless telegraphy may now be considered complete. Since the performance of the North German Lloyd's steamship Kronprinz Wilhelm on her latest voyage over from Europe, there is no reason left for doubt as to the thorough practicability of the new invention, certainly the most wonderful of the new century. Hitherto the great ocean steamers have been able to get news from shore for a limited distance, or from passing steamers, on occasion, but the Kronprinz reports that she had news every day, on some days communicating with from two to three steamships.

Has the discovery of wireless telegraphy been celebrated by any of the poets as yet?

CHEMNITZ.

By none that we know of—if we expect the anonymous minstrel who sings:

"A little bird sat on a telegraph wire
And exclaimed to his mates, I declare,
If this wireless telegraphy comes into vogue
We shall all have to sit on the ail."

Government telegraph schools have been opened in the Philippine Islands for the purpose of training native operators, and it is stated by Gen. H. T. Allen, in his annual report, that eighteen Filipinos have already been graduated as proficient in the art of telegraphy.

The Telegraph Age.

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E. H. BOWEN, MANAGER ADVERTISING DEPARTMENT

W. N. GATES, SPECIAL ADV. AGT., GARFIELD BLDG., CLEVELAND, O.

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

CHANGES OF ADDRESS.—The address of a subscriber will be changed as often as desired. In ordering a change of address the old as well as the new address must be given.
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, November 16, 1903.

The amount of information contained in each issue of TELEGRAPH AGE of the utmost practical value to the progressive operator who is ambitious to succeed, to acquire a more thorough knowledge of his profession, and not only to better qualify himself for the position he now occupies, and consequently for advancement, should prompt many to send in their subscriptions to this journal without delay. The first article in each issue, contributed by Willis H. Jones, under the standing heading of "Some Points on Electricity," contains more positive instruction concerning the telegraph, than can be found anywhere else, and worth more to the operator than many times the cost of the paper itself. Subscriptions should be sent direct to this office, or to any of our agents who may be found with both the Western Union and Postal companies in nearly every large centre in the United States.

We are prepared to furnish a limited number of bound volumes of TELEGRAPH AGE, which embraces 536 reading pages, besides the index, for the year 1902, at the uniform rate of $3 a volume. The binding is substantial and the lettering is done in gilt. The volume furnishes a complete record for the year named of the telegraph, the cable, wireless telegraphy and other allied interests, the whole constituting an interesting work of reference of the highest worth to all telegraphers, libraries, etc., to which the carefully prepared cross-index lends additional value. Single copies of the index for volume XIX, covering the year 1902, may be had at ten cents apiece. Our friends who require copies of the bound volume, or of the index alone, should send in their orders promptly so that they may be filled while the supply lasts.

Messenger Boys.

Telegraph messenger boys are much in evidence these days. They go on strikes, and in this regard emulate their elders who afford them examples a-plenty. In other respects they are much like the genus boy wherever found.

At Butte, Mont., a prolonged struggle has been maintained on their part against the telegraph company, and when results favorable to their cause did not ensue, the argument of decayed vegetables and ancient eggs were called into action, thus again demonstrating the readiness of youth in borrowing methods too often viciously employed by more adult members of society.

Boston is just now disturbed over a peculiar aspect of the messenger boy situation to which even the Board of Alderman and the Mayor of hat city, are lending a listening ear. Down in Macon, Ga., the question of color is asserting itself in the ranks of the boy messengers. Because the service rendered by the white boys was not satisfactory to the residents of that town, and colored lads were put in their places by the employing company, the black force has been peppered with rocks by the displaced youngsters, whenever the former have emerged upon the streets bearing the yellow envelopes.

It remains, however, for the Atlantic City messengers, whose imaginations had been fired by football chatter, to attempt a football rush across the office floor, not with malicious intent, but as a demonstration of their ability as adepts in that phase of the National game. Unfortunately, the office stove stood in the way of this eccentric movement, and that obstruction went down in the terrific onslaught, carrying with it several lengths of stove pipe, and coals, red and burning, were hurled in all directions. A heroic movement of sand sprinkling and water splashing checked the incipient fire that followed. The incident reveals the presence of mischievous boy nature, pure and simple, and of a character quite on a par with that frequently displayed by the average college student. Verily, the telegraph companies are beset with problems in administration that it would be idle to say do not try patience, although a smile may sometimes lurk behind an otherwise stearn visage.

The Magnetic Club Dinner.

The fall dinner of the Magnetic Club will take place at the St. Dennis Hotel, 8th street and Broadway, New York, on November 18. This being the date on which the annual meeting of the Telegraphers' Mutual Benefit Association takes place, the delegates thereto from out of town will as usual be the guests of the Club. Judging from present indications, it will be one of the largest dinners in its history.

The Telegraph Age.

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

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

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If you wish to know all about the instruments you work, invest $1.50 in a copy of Jones' Diagrams.

The Telegraph Tournament.

The tournament at Philadelphia of the American Telegraphers' Tournament Association, held on Friday and Saturday, October 30 and 31, was a pronounced success. The event will be remembered as the finest thing of the kind ever undertaken. After the Atlanta tournament of a year ago it was proposed to hold the affair of this year at some westeern city, but enthusiasm lagged at all points successively named, and it was not until Philadelphia was designated that any zeal whatever was manifested in the matter. The telegraphers, however, in the Quaker City, accepted the proposition, took hold in good earnest, and to them alone, with New York as a contributing second, is the credit due for the magnificent success that came as a reward to determined, large minded and intelligent effort. In all respects the tournament fully measured up the expectations that had been formed respecting it. Every detail

CLARENCE A. STIMPSON, OF PHILADELPHIA.
Chairman of the executive committee of the American Telegraphers' Tournament Association.

was carried out as scheduled, all promises were fulfilled and perfect good faith was maintained. There were no apologies made for shortcomings for there were no deficiencies to apologize for. It is a pleasure to record these facts. A standard has been set for all future telegraphic tournaments which those who may be intrusted in their conduct will find it necessary to uphold.

The outcome of the contests was to establish new records of speed and accuracy, and, as was natural, under the stimulous of competition, new names in the telegraphic world won prominence. A comparatively new device employed in transmission, that of the Yetman Transmitter, attracted profound attention, and the superior utilities of the instrument were recognized and freely acknowledged on all sides.

The tournament was held in the great Auditorium of the National Export Exposition Building and when the hour for opening arrived at two o'clock on Friday afternoon, October 30, an audience of several thousand persons was present to greet the contestants.

Secretary C. B. Wood made an address of welcome. After reading letters from Thomas A. Edison, Colonel Robert C. Clowery, Colonel A. B. Chandler, Clarence H. Mackay, W. H. Baker and others, regretting their inability to be present, he

C. B. WOOD, OF PHILADELPHIA.
Secretary of the American Telegraphers' Tournament Association.

said he wished all contestants might take home a prize, but those who failed to gain these substantial recognitions would be rewarded with at least a sense of well doing. Philadelphia, he said, had the reputation of being a slow town, but on this occasion she had accomplished something which no doubt surpassed all previous efforts.

A. S. WEIR, OF PHILADELPHIA.
Chairman of committee on prizes of the American Telegraphers' Tournament Association.

He then introduced Colonel W. B. Wilson who said in part that the occasion justified consideration of Professor Morse, the able American, who undaunted by disaster, unchecked by the frowns of patronage and power, nor overcome by the jealousies of science, perfected and put in successful operation

the system of telegraphic communication which not only challenges the world for its simplicity and power, but has been a potent force in the rapid advancement of the civilization which we are today enjoying. He was one of the greatest benefactors of the human race, and his great conception was the foundation upon which the school of the telegraph was created, gave to mankind a higher plane of enlightenment and annihilating space made all the world akin.

He then went on to recount the early conceptions and evolution of the telegraph, claiming that its coming was even foreshadowed by Job in holy writ, and concluded by advising the members of the profession to take a seat in the car they are entitled to—the one in the front.

At the conclusion of Col. Wilson's speech the American Telegraphers' Tournament Association took charge of affairs. The gentlemen who were most actively associated in this undertaking

D. A. MAHONEY, OF PHILADELPHIA.
Chairman of the finance committee of the American Telegraphers' Tournament Association.

were John Wintrup, vice-president, who also represented the president, W. A. Connor, who was absent; Clarence A. Stimpson, chairman of the executive committee, who had direct charge of the entire affair; C. B. Wood, the secretary, who proved to be an efficient worker for the success of the event; W. S. Sullivan, W. W. Donnelly, A. S. Weir, F. E. Maize, D. A. Mahoney, G. W. Dunn, R. C. Murray, Jr., E. C. Abrams, Miss C. G. Grimley, E. L. Irving, H. W. Hetzel, J. P. Altberger, L. Lemon, C. M. Schaeffer, C. M. Lewis, S. S. Garwood, C. E. Wilson, F. M. Griffin, J. C. Sager, Andrew Keiser and others, all of whom did their utmost to make the occasion a grand success. Mr. J. W. Benckert was the electrician and he did his work without a hitch.

The following were the general rules for government of contests:

Speed, formation of letters, spacing and adherence to copy will determine the winners in all sending contests.

In all receiving contests, the general appearance of messages, as if intended for public delivery, well be left to the choice of the contestants. This refers to the general form of the message, lines spacing, punctuation, etc., in the date, address and signature.

The month and year must appear on each copy, although not transmitted.

The ordinarily accepted abbreviation for the month will be permitted, but the year must be in full.

Each message to be timed as near as the actual time as possible, as if intended for immediate delivery.

The text of every message must be copied as sent. Each omission, or addition will be counted as an error.

FIRST EVENT—2 P. M., FRIDAY, OCTOBER 30.

Railroad Operators. Sending and Receiving Contest.

The winner of the sending contest to send for the receivers. Open only to operators who have been in actual railroad service for five years or more.

Class A—Sending. Sending twenty ordinary railroad messages. First prize, cash, $50; second prize, cash, $25.

The entries were: C. J. Cone, of the Union station, Pennsylvania Railroad, Pittsburg, Pa.; R. C. Bartley, Philadelphia, assistant chief operator, Pennsylvania Railroad office; George R. Lee, Washington, D. C., train despatcher, and Gilmore Miller, Altoona, Pa., operator.

The winners were: R. C. Bartley, first prize; C. J. Cone, second prize.

Class B—Receiving. Receiving twenty ordinary railroad messages on typewriter. First prize, cash, $50; second prize, cash, $25.

The entries were: C. J. Cone, Pittsburg, Pennsylvania Railroad; J. W. Harrison, Philadelphia, Pa., Pennsylvania Railroad; G. A. Hodgson, Philadelphia, Pennsylvania Railroad; F. M. Sperling, Philadelphia, Pennsylvania Railroad, and J. J. Ryan, Harrisburg, Pa., Pennsylvania Railroad.

The winners were: J. W. Harrison, first prize; G. A. Hodgson, second prize.

The judges were: Andrew Keiser, J. L. Osmond, S. W. Graham, C. M. Lewis and J. J. Mishler, Philadelphia.

SECOND EVENT—3 P. M.

Ladies' Contest.

Class A—Sending. Sending twenty commercial messages. First prize, cash, $50.

The entries were: Mrs. B. V. Gillespie, Philadelphia, Western Union, and Miss K. N. Stetson, Postal, New York.

The winner was: Miss K. N. Stetson, who sent her messages in 14 milnutes and 1 second.

The time of Mrs. B. V. Gillespie was 15 minutes and 5 seconds.

Class B—Receiving. Receiving twenty commercial messages on typewriter. First prize, cash,

$50; second prize, cash, $25. The winner in class A sending for receivers.

The entries were: Miss L. McKenna, New York, Western Union; Miss R. Feldman, New York, Postal, and Miss Laura Hofheimer, New York, Postal.

The winners were: Miss R. Feldman, first prize; Miss L. McKenna, second prize.

The judges were: M. A. Baker, J. A. McNichol and H. C. Robinson, Philadelphia; A. C. Thomas and F. E. Crawford, Chicago.

THIRD EVENT—4 P. M.

Old-Timers' Contest.

Open to all sixty years of age or over.

Class A—No entries.

Class B—Receiving ten messages and 300 words of press on typewriter. First prize, cash, $50.

The entries were: I. D. Maize, Philadelphia, Western Union, and E. Payson Porter, New York, Western Union.

The winner was I. D. Maize.

The judges were F. G. Lamb and J. W. Dyer, Philadelphia, and J. F. Ahearn, New York.

FOURTH EVENT—7 P. M.

For Best All-Around Operator.

Sending twenty-five messages and 500 words of press. Receiving twenty-five messages and 500 words of press on typewriter. All straight work. The contestant having the highest total average to be declared the winner. First prize, cash, $300 and the Carnegie medal; second prize, cash, $150.

The entries were: F. M. McClintic, of Dallas, Tex.; W. M. Gibson, of New York, broker office, days, Postal, nights; E. E. Bruckner, Chicago, Postal; Harvey Williams, Philadelphia, broker office; W. C. Murray, Atlanta, Ga., The Associated Press; G. W. Conkling, New Work, Yetman Transmitter; C. J. Chryst, New York, Western Union, and D. Roy Newcomb, Boston, The Associated Press.

The winners were: W. M. Gibson, first prize; time sending press 9 minutes and 52 seconds; time sending 25 messages, 13 minutes and 49 seconds; and E. E. Bruckner, second prize, time sending press 10 minutes and 39 seconds; time sending messages, 14 minutes and 20 seconds.

The judges were: J. V. Berger, L. Lemon, C. E. Bagley, A. Higgins, S. S. Garwood, F. G. Lamb, J. A. Moran, V. G. Hudgins, of Philadelphia; T. R. Taltavall and Frank Kitton, New York.

The 500 words of press matter transmitted was as follows:

The President said in part:

"To-day we meet together to do honor to the memory of one of the great men whom, in the hour of her agony, our nation brought forth for her preservation. The Civil War was not only in the importance of the issues at stake and of the outcome the greatest of modern times, but it was also, taking into account its duration, the severity of the fighting, and the size of the armies engaged, the greatest since the close of the Napoleonic struggles. Among the generals who rose to high positions as leaders of the various armies in the field are many who will be remembered in our history as long as this history itself is remembered. Sheridan, the incarnation of fiery energy and prowess; McClellan with his extraordinary gift for organization; Meade, victor in one of the decisive battles of all time; Hancock, type of the true fighting man among the regulars; Logan, type of the true fighting man among the volunteers—the names of these and of many others will endure so long as our people hold sacred the memory of the fight for union and for liberty. High among these chiefs rise the figures of Grant and of Grant's great lieutenant, Sherman, whose statue here in the national capital is to-day to be unveiled. It is not necessary here to go over the long roll of Sherman's mighty feats. They are written large throughout the history of the Civil War.

"There is a peculiar fitness in commemorating the great deeds of the soldiers who preserved this nation by suitable monuments at the national capital. Our homage to-day to the memory of Sherman comes from the very depth of our being. We would be unworthy citizens did we not feel profound gratitude toward him, and those like him and under him, who, when the country called in her dire need, sprang forward with such gallant eagerness to answer that call.

"It is a great and glorious thing for a nation to be stirred to present triumph by the splendid memories of triumphs in the past. But it is a shameful thing for a nation if those memories stir it only to empty boastings, to a pride that does not shrink from present abasement, to that self-satisfaction which accepts the high resolve and unbending effort of the father as an excuse for effortless ease or wrongly directed effort in the son. We of the present, if we are true to the past, must show by our lives that we have learned aright the lessons taught by the men who did the mighty deeds of the past.

"Their lives teach us in our own lives to strive after not the thing which is merely pleasant, but the thing which it is our duty to do. The life of duty, not the life of mere ease or mere pleasure—that is the kind of life which makes the great men as it makes the great nation."

The twenty-five messages sent were as follows:

5CX. SO. LN. 9— Paid.
Fort-Wayne Ind. Oct 30—
Chelsea Jute Mills,
33 Union Square,
Buffalo NY.
Have mill ship three bales nine ply black today.
A.Rutherford.

14WR. H. J. 7 Paid.
Utica NY. Oct 30—
C. S. Mersick and Co.,
NewHaven Conn.
Telegram received. Will ship order fourth tomorrow.
The American Pulley Co.

12KO. KO. 10— Paid.
Boston Mass Oct 30—
Edward Pennock,
52 Maiden Lane
NewYork.
Cancel order for burdock root can buy here wire answer.
C. B. Warner and Co.

46WG. JN. KE. 10— Paid.
Wilmington Del Oct 30—
Henshaw Addison and Co.,
Cleveland Ohio.
Could ship tomorrow fifty cents each shall we do so.
Diamond State Mfg Co.

20BZ. BN. GR. 6 Paid.
Baltimore Md Oct 30—
John E. Taylor and Co.,
Norfolk Vir.
Drummond will be loaded this afternoon.
H. A. Brown.

92CY.KI. RA. 10 Paid.
Dover Del.Oct 30—
Marks Jacobs,
123 Kent St.,
Detroit Mich.
Send immediately five thousand green muslin tubing like the last.
Stern and Co.

33CL. OD. 12 Paid.
Portland Mich Oct 30—
Mrs Frank Lewis,
1272 Third Ave.,
Toledo Ohio.
Funeral leaves here Saturday nine Am Pennsylvania road arrive Shenandoah twelve forty.
D.Whalen.

39W. SA. Xe. 9 paid.
Washington DC Oct 30—
Hotel Manhattan,
NewYork City.
Please reserve room for me this afternoon and oblige.
M.A.Knapp.

45AR. DA. CS. 13— Paid.
Lancaster Pa.Oct 30—
W.P.Devereux,& Co.,
Minneapolis Minn.
Shipment all rail tomorrow give magnetic car Washburn bran disgusting Sinking-Springs Pa tread.
H.S.King.

8X. DR. CY. 7— Paid.
Westerly R.I. Oct 30—
Continental Tobacco Co.,
111 Fifth Ave.,
NewYork.
Ship at once five thousand cubanola cigars.
Drake and Co.

34CY. BU. W. 9— Paid.
Boston Mass Oct 30—
The Garvin Machine Co.,
13 Spring St.,
NewYork.
Answer our letter twenty third printing press matter Cresson.
The Garvin Machine Co.

12WP. AF. MB. 10 paid.
Louisville KY Oct 30—
Mrs Ernest Taylor,
Middletown NJ.
Impossible to accept your invitation will write from steamer farewell.
Edward Bright.

56G. RY. RT. 6— Paid.
Albany NY Oct 30—
Wm M.Townsend and Bro.,
41 Wall St.,
NewYork.
Acorn long copper at sixty seven.
W.A.King.

30C. KO. 9— Paid.
Nashville Tenn. Oct 30—
Cutter Mfg Co.,
Milwaukee Wis.
Will deliver your order thirteen sixty four April sixth.
Cutter Mfg Co.

25 MU. CH. CB. 8— Paid.
Hartford Conn Oct 30—
Oliver Ames,
Manhattan Hotel,
NewYork.
Will reach Manhattan Hotel about six thirty today.
G.H.Wendell.

74CY. WA. 10 Collect.
Wheeling W.Vir Oct 30—
Robert Brewer,
121 Franklin St.,
NewYork.
Express two pieces one twenty shade one today sure.
J.B.Ellison and Sons.

9CH. KX. 9— Paid.
Brooklyn NY Oct 30—
Theo Friedman and Son,
3r Wooster St.,
Chicago Ills.
Must have backed satin strips at once express direct.
Jos Lipper and Co.

19CF. G. KC. 10—Paid.
Delanco NJ Oct 30—
Morse and Rogers,
34 Duane St.,
NewYork.
I will call at your place at two oclock today.
A.C.Rogers.

4RG. AS. RI. 10— Paid.
Long Branch NJ. Oct 30—
The H.B.Claflin Co.,
NewYork.
Arrived here last night hotel Raleigh expect see you monday.
A.P.Chase.

29NX. O. SM. 4— Paid.
Chicago Ills Oct 30—
Earle Bros.,
33 Broad St.,
NewYork.
Accept for immediate delivery.
Lawrence Johnson and Co.

1N. MS. HO. 10— Paid.
Richmond Vir Oct 30—
H.M.Rogers,& Co.,
NewYork.
Twenty roes,fifteen bucks,fifty halibut, one gallon crab meat.
J.F.Ross.

3D. RA. RI. 9 paid.
Atlantic City NJ Oct 30—
Anderson and Co.,
Omaha Neb.
Ship five loins three ribs two lambs twelve racks.
R.S.Dunlap.

6BS. K. MC. 8 Collect.
Dallas Tex Oct 30—
W.H.Caldwell,
15 Broadway,
NewYork.
Maryland arriving what will standard have?Answer.
H.F.Young.

14CY. WA. 10— Paid.
Trenton NJ. Oct 30—
W.S.Mead and Co.,
Canal St.,
Pittsburg Pa.
Ship balance of samples mens ribbed fall underwear at once.
J.Davis Co.

17WP. AF. MB. 10 Paid.
Overbrook Pa Oct 30—
Vulcanite Paving Co.,
135 Broadway,
NewYork.
When will you do cement work at Vanderbilts house? Answer.
A.B.French.

FIFTH EVENT—2 P. M., SATURDAY, OCTOBER 31.

Phillips Code.

Class A—Sending one thousand words. First prize, cash, $75.

The entries were: W. M. Gibson, of New York, broker office, days, Postal, nights; G. B. Pennock, New York, newspaper office; W. C. Murray, Atlanta, Ga., The Associated Press; F. M. McClintic, Dallas, Tex.; G. W. Conkling, New York, Yetman Transmitter, and D. Roy Newcomb, Boston, The Associated Press.

The winner was G. W. Conkling, time, 15 minutes and 55 seconds. Honorable mention was made of the work of W. C. Murray and F. M. McClintic.

The matter sent was as follows:

Intelligent service to God and to the State was the subject of an address by President Roosevelt to the seven thousand people who attended the public open air missionary service at Mount St. Albans this afternoon, on the close of the cathedral of Saints Peter and Paul. The President was introduced by Bishop Satterlee. The President carried with him a yellow sheepskin Bible from which he read his texts and spoke closely from notes which he had made of his address.

The President spoke as follows:

Bishop Satterlee; and to your representatives of the church both at home and abroad; and to all of you, my friends and fellow citizens:

I extend greeting, and in your name I especially welcome those who are in a sense the guests of the nation to-day. In what I am about to say to you I wish to dwell upon certain thoughts suggested by three different quotations: In the first place, "Thou shall serve the Lord with all thy heart, with all thy soul and with all thy mind;" the next, "Be ye, therefore, wise as serpents and harmless as doves," and, finally, in the collect which you, Bishop Doane, just read, that "we being ready both in body and soul may therefore accomplish these things which Thou commandest."

To an audience such as this I do not have to say anything as to serving the cause of decency with heart and with soul. I want to dwell, however, upon the fact that we have the right to claim from you not merely that you shall have heart in your work, not merely that you shall put your souls into it, but that you shall give the best that your minds have got to it also. In the eternal and unending warfare for righteousness and against evil, the friends of what is good need to remember that in addition to being decent they must be efficient; that good intentions, high purposes, cannot be effective and a substitute for power to make those purposes, these intentions, felt in action. We must have the purpose and the intention. If our powers are not guided aright it is better that we should not have them at all; but in addition to being guided aright we must have the power also; we must cultivate the power also.

In the second quotation remember that we are told not merely to be harmless as doves, but also to be wise as serpents. One of those characteristic humorists whom this country has developed, and who veiled under jocular phrases much deep wisdom—one of those men remarked that it was much easier to be a harmless dove than a wise serpent. Now, we are not to be excused if we do not show both qualities. It is not very much praise to give a man to say that he is harmless. We have a right to ask that in addition to the fact that he does no harm to any one he shall possess the wisdom and the strength to do good to his neighbor; that, together with innocence, together with purity of motive, shall be joined the wisdom and strength to make that purity effective, that motive translated into substantial result.

Finally, in the quotation from the collect, we ask that we may be made ready both in body and in soul, that we may cheerfully accomplish these things that we are commanded to do; ready both in body and in soul; that we shall fit ourselves physically and mentally, fit ourselves by the way in which we work with the weapons necessary for dealing with this life no less than with the higher, spiritual weapons; fit ourselves thus to do the work commanded, and moreover, do it cheerfully. Small is our use for the man who individually helps any of us and shows that he does it grudgingly. We had rather not be helped than be helped in that way. A favor extended in a manner which shows that the man is sorry that he has to grant it is robbed sometimes of all and sometimes of more than all its benefit.

So, in serving the Lord, if we serve him, if we serve the cause of decency, the cause of righteousness in a way that impresses others with the fact that we are sad in doing it, our service is robbed of an immense proportion of its efficacy. We have the right to ask a cheerful heart, a right to ask a buovant and cheerful spirit among those to whom is granted the inestimable privilege of doing the Lord's work in this world. The chance to do work, the duty to do work is not a penalty, it is a privilege. Life is so constituted that the man or the woman who has not got some responsibility is thereby deprived of the deepest happiness that can come to mankind, because each and every one of us, if he or she is fit to live in the world, must be conscious that such responsibility rests on him or her—the responsibility of duty toward those dependent upon us; toward our families, toward our friends, toward our fellow-citizens; the responsibility of duty to wife and child, to the State, to the church. Not only can no man shirk some or all of these responsibilities, but will welcome thrice over the fortune that puts them upon him to carry.

In closing I want to call your attention to something that is especially my business for the time being, and that is your business all the time, or else you are unfit to be citizens of this Republic. In the seventh hymn which we sung, in the last line, you all joined in singing, "God Save the State." Do you intend merely to sing that, or to try to do it? If you intend merely to sing it, your part in doing it will be but small. The State will be saved if the Lord

Class B—Receiving one thousand words, hand transmission, by George W. Conkling. First prize, $75; second prize, Derby roll top desk.

The entries were: A. A. Gilson, Louisville, Ky., The Associated Press; W. C. Murray, Atlanta, Ga., The Associated Press; H. R. Clark, New York, Yetman Transmitter; D. Roy Newcomb, Boston, The Associated Press, and F. M. McClintic, Dallas, Tex.

The winners were: F. M. McClintic, first prize; W. C. Murray, second prize.

The judges were: E. C. Boileau and J. J. Belzer, Philadelphia; G. R. Allen and A. E. Marr, New York.

SIXTH EVENT—3 P. M.

Broker Operators. Open to broker operators only.

Class A—Sending. Ten minutes' trial, winner to send for receivers. First prize, cash, $100.

The entries were: Frank L. Catlin, New York, broker office; W. T. Dawson, Philadelphia, broker office; E. F. Dougherty, New York, broker office; Harvey Williams, Philadelphia, broker office; W. M. Gibson, New York, broker office, days, Postal, nights, and R. C. Toft, Philadelphia, broker office.

(Continued on Page 573.)

THE YETMAN TRANSMITTER.

What it Is and What it is Doing for the Telegraph Profession.

The interest of the entire telegraph world was centred on the annual tournament held under the auspices of the Telegrapher's Tournament Association at Philadelphia, October 30 and 31. Operators from every part of the country were in attendance, representing the four great telegraph fields—the Press, Broker, Railroad and Commercial. The star feature of the event was the demonstration of the Yetman Transmitting Typewriter for sending and receiving Morse characters and the remarkable work accomplished by the machine on that occasion excited the wonder and admiration of the audience.

Silver Loving Cup presented to Mr. Geo. W. Conkling of the Yetman Transmitter by members of the Consolidated Stock Exchange of New York.

The interest in the individual contests was subordinated to the demand made upon the general attention by the Yetman Transmitter. The scoffer (and there are a few such in all professions) who came prepared to sneer at an impracticable novelty, left the tournament in a more serious frame of mind. He had been forced to realize that the Yetman Transmitter was a pressing necessity—not a passing novelty to the telegraph world.

There comes a time in the history of every commercial, scientific and artistic profession when, by the introduction of a new idea, the efficiency of that profession is increased. These innovations mark the advancement of progress and this advancement has been phenomenally rapid in every industrial branch within the past fifty years. There is one point, however, at which progress and improvement seemed to have come to a standstill and that is in the mechanism for sending and receiving Morse characters by hand. This crude device, known as the Morse Key, was invented in 1843, and has remained up to the present day unchanged in principle and form.

For more than two generations the burden of telegraphic work has been borne by the operator with his elastic wrist and nervous fingers, while by his side clicked the old Morse sounder. Some operators, by constant study and practice, have attained really remarkable speed, taking into consideration the crudeness of the mechanism with which they worked. These men were physically and mentally constituted for the work, and were what might be termed *born senders.*

The great majority of operators never exceeded a safe mediocrity in speed. To both classes, the strain was equally terrific, remorseless unceasing, unremitting. In other trades and professions the workman might attain proficiency in the handling of the implements of his craft without impairing his health. In fact the hammer and chisel of the carpenter, the trowel of the mason or the heavy sledge of the iron worker contributed not a little to the physical betterment of the workman. The daily wielding of these various tools served to develop the muscles, to stimulate into healthy activity the vital fluids, and to earn for the craftsman that nightly repose, unbroken by dreams, the surest recipe for longevity.

Of all the tools of any trade, the Morse hand key has wrought most harm to its users. To attain expertness in operating this crude mechanism, thousands of telegraphers have sacrificed their health. There is no doubt that many valuable lives have been forfeited to it. The reason is obvious. To use one set of muscles day after day in the delicate operation of hand-sending—which demands a constant mental calculation and an exquisite sensibility of touch—an organization of the finest tempered steel would be inadequate.

In plain, the telegraph operator who adheres to the old-fashioned hand key is under daily subjection to a series of shocks which are directed to one point in the muscular and nervous system. The length of time between his first handling of the instrument to the final moment of collapse depends upon the operator's power of physical resistance to these intermittent jars. Some last longer than others, but the end is inevitably the same—at most total paralysis, at least complete incapacitation for further work as a telegrapher.

As to the quality of the work done by the hand key, it varies according to the skill of the operator. A few experts have succeeded in combining great speed with fair accuracy. Some men send better "Morse" than others but there are no perfect senders. The very skillful sender is apt to sacri-

fice legibility to speed. As an example, how many expert operators can send the two letters "pp" at a high rate of speed and get them exact? The invariable tendency once a "p" is started is to run up any number of dots and let the receiver do the guessing. One expert sender's "pp" was actually measured on a Wheatstone tape and found to consist of 24 dots. And again, for the physical reasons stated above, the moment an operator begins to get tired under a heavy strain of work his sending becomes uneven, light and sticky and the man at the receiving end has all he can do to unravel the combinations, make sense out of the signals and keep up with the sender.

When the arm begins to tire at the work; when the fingers and wrist gradually lose their elasticity; when the memory commences to falter over some difficult code contraction, the end is near. No physicians' tonic—no mechanical device will avert the catastrophe. Nature proclaims its weakness, and in pitiful protest to the unreasonable demands which have been made upon her, gathers herself for one more effort—totters and falls.

We have thus sketched rapidly the process of telegraphing with the Morse hand key in order to demonstrate its inadequacy for the purpose of handling the most important railroad, broker, newspaper and commercial work. Aside from the physical ruin it engenders, we must consider the fatal consequences of inaccuracy.

At the top and bottom of these pages, we offer for comparison two styles of "Morse" both having been sent at the same rate of speed. The first line is an exact photographic reproduction of work done at the Philadelphia Tournament by one of the *hand-sending* First Prize winners. On the line beneath this may be found a perfect photographic copy of Yetman Transmitter "Morse" sent on the same occasion. The hand operator who sent the first sample may retain sufficient recollection of the text to be able to translate his record, but we defy any other living man to do so. On the other hand, the record of Transmitting Typewriter-made "Morse" may be read fluently by any student of telegraphy.

The audience which attended the Philadelphia Tournament was composed exclusively of men who were identified in one way or the other with telegraphy. Each branch of the profession from check boy to superintendent was represented. A. P. men, railroad men and broker men were all there and individually and collectively they had learned the above facts in the stern, hard school of experience. What wonder is it then that their interest in the little machine which is liberating them from the nerve-destroying slavery of hand-sending amounted to enthusiasm. The topic which monopolized the conversation going on in each cluster of visitors, was the Yetman Transmitter.

The newcomer just entering the hall was greeted with the question: "Have you seen the Yetman Transmitter?" On every hand could be heard such exclamations as: "Wonderful machine!" "Perfect Godsend to telegraphers!" "Most ingenious piece of mechanism I ever saw!" "Copperplate Morse!" One of the officials laughingly remarked that the event bore a stronger resemblance to a Yetman Transmitting Typewriter Exhibit than to a contest of hand experts. And he was right. The Yetman Transmitter held the crowd. The visitors simply sat down and disected the machine from the carriage platen to the Morse mechanism in its interior. All wondered at the simplicity of its construction. When they saw the theory of the mechanism put into practice by the demonstrator, their wonder changed to admiration. Their enthusiasm reached its highest point a little later when the Yetman Transmitter, in the hands of able operators, captured the prizes enumerated elsewhere in this article.

The three "Keyboard" machines—the commercial typewriter, the linotype for setting type and the Transmitting Typewriter for sending and receiving Morse characters rank equally in importance in the business world today. The writing machine, with its advantages of speed, accurancy and neatness has usurped the penman; the linotype has revolutionized the printing trade, and the Yetman Transmitter, embodying the same principle as both of the above machines, is working marvels for telegraph operators.

In contrast to the work of the hand key we will give briefly some of the leading points of the Yetman Transmitter. It reduces the effort to send fully fifty per cent. *even to the most perfect and easiest of hand senders.* It places the operator on a permanent sending basis and enables him to cope with the heaviest kind of work with the least effort, accomplishing with more skill and greater ease as much work as an expert hand sender. It positively prevents you from losing your "grip" or from having any trouble with your arm. It enables the man who has already lost his "grip" to become an expert sender again. The old timer may be brought to life with all his former vigor and capable of doing at an advanced age as much work and better work than in his youth. The Yetman Transmitter is the reverse of the hand-sanding key inasmuch as your skill increases as long as you use the machine while the effort diminishes. It will do for operators on the sending side as much and more than has already been done by the typewriter for the receiver.

The Yetman Transmitter lightens the work of the receiver for the reason that all combinations

are eliminated. At the end of a day's work you will feel much less fatigued than if sending by hand because you have been using both arms, both hands and all the fingers of each hand to do the work of two or three fingers in a cramped position. This equalizes the effort to both arms, both hands and all the fingers. To use the Yetman Transmitter properly is merely the acquirement of correct finger habits and this serves a double purpose in scientifically training the operator to become both a rapid sender and receiver.

As a typewriter the Yetman Transmitter excells all other machines in speed, durability, manifolding and ease of operation. It is the only writing machine ever designed, perfected and manufactured with special reference to telegraph work, and exclusively to benefit the individual operator. Its salient feature is absolute visibility. Every letter, word and line is in full view from the first stroke of the key to the final period. It has ball-bearing carriage and type bars; automatic line spacing and ribbon movement; perfect and permanent alignment. The rapid paper feed is an especially desirable feature to telegraphers as it enables them to handle telegraph blanks with great ease. The touch is light and uniform. No scale is necessary, the pointer showing where every letter should be inserted. No tabulator or word counter is needed.

The Yetman Transmitter ceased to be an experiment from the moment it was placed on the market for sale. Other writing machines have appeared before the public in serial form like a magazine novel. That is to say they have run through a series of shapes from "Model No. 1" to "Model No. 10," etc., the latter model, of course, being higher in grade and higher in price than the first. All this means that the operating public has paid the expense of the successive experiments.

The Yetman Transmitter had been passed conscientiously and carefully through all the proper stages of development and stood perfected and completed when first brought to the attention of the public. This statement is borne out by the rigid test the Yetman Transmitter underwent at the Tournament when, at the very outset of its care[illegible] [illegible] ontest with old-established m[illegible] [illegible]red them all.

[illegible] mitter was used in several [illegible] ournament programme [illegible] were won by it in the [illegible]

[illegible] divided into two clas[illegible] straight press matter, and [illegible] messages, 15 minute tri[illegible] ansmission to be made [illegible] itter. The prizes for [illegible] $50.00 and one Yetman

PRIZE CHECKS WON BY YETMAN TRANSMITTER.

Transmitter. Class A was won by C. P. West, of the Postal, New York on a Transmitting Typewriter. This contest was close and decision was made in Mr. West's favor on a speed basis. Class B was won by J. P. Gallagher, of the Postal, New York, on a Transmitting Typewritter for best copy and fastest work.

The Ninth Event proved to be one of the most interesting on the programme. It called for thirty minute trial receiving commercial messages on any typewriter, automatic transmission. In this contest nearly every style of typewriter was entered and the contestants were opposed to a formidable adversary in the person of Harry V. Emanuel, for two years message receiving champion of America, Mr. Emanuel operated a Fay-Sholes. The first prize in this important event, $200.00, was won by J. P. Gallagher, on a Yetman Transmitter.

The sending for this event was done on a Yetman Transmitter and the world's record for this class of work was broken, fifty-three messages being transmitted in thirty minutes time. It served therefore as an object lesson to the cynical old-timer who looked upon the Yetman Transmitter as an excellent thing for beginners but wholly unnecessary to the expert hand sender to see better "Morse," easier "Morse" and faster "Morse" sent on the keyboard of the Yetman Transmitter than was ever turned out by an expert on the hand key.

The criticism of the Yetman Transmitter work in this event was not confined to the audience present at the Philadelphia Tournament. The wires had been cut through to New York and Chicago and the signals were scattered all over the country. Night Manager Whalen of the Postal declared that every dot went through and that the whole work was the most beautiful he had ever seen.

When the first models of the modern writing machine appeared on the market, correspondents and clerical workers of every description realized the immediate necessity of becoming typewriter operators. In an incredibly short period, in the legal, banking and mercantile fields, large business houses were bidding the highest salaries for skillful keyboard operators, and not for years did the supply of expert typewriters suffice to meet the demand.

The introduction of the linotype into the printing trade had the same effect upon compositors. Even to the present day, the expert linotype operator is the best paid employee of the printing house.

The moral to all present day telegraph operators is obvious. The men who first acquire skill on the Yetman Transmitter are the ones who are capturing the high salaried positions that are always available to experts. Railway superintendents,, broker and press managers are showing preference for those men whose permanent skill is assured by the use of the Yetman Transmitter. The expert hand sender retains his skill until the moment his arm gives out. The expert keyboard sender is always expert. Operators take no chances with the Yetman Transmitter. Managers take no chances with Yetman Transmitter operators.

THE YETMAN TRANSMITTER.

Which carried off the honors as a sending and receiving instrument at the Telegraphers' Tournament, Philadelphia, October 30 and 31.

The Yetman Transmitter is in actual daily use on some of the largest and heaviest circuits, and the fastest special leased wire systems in the United States. The Associated Press have adopted it for use throughout their system. Their office at Salt Lake City has just been equipped and orders for their San Francisco office are now being filled. It is in operation on the Publishers' Press, Western Union Main office and branches at New York, Philadelphia, Baltimore, Washington, Pittsburg, Chicago and St. Louis, and the Postal at New York, Chicago and Washington. It has been officially adopted by the following railroads: New York Central; Pennsylvania; New York, New Haven and Hartford; Baltimore and Ohio; Delaware, Lackawanna and Western; Rock Island system and the Long Island road.

This should be conclusive evidence of the popularity and practicability of the Yetman Transmitter for sending and receiving "Morse."

For catalogue and full particulars of the Yetman Transmitting Typewriter write to Chas. E. Yetman, 220 Broadway, New York.

(Continued from Page 568.)

The winner was Harvey Williams, Philadelphia.

The judges were: A. W. Wallace, A. S. Weir and R. C. Mecredy, Philadelphia.

SEVENTH EVENT—4 P. M.

Yetman Transmitter Special.

Class A—Sending press, by Yetman Transmitter, 550 words. First prize, cash, $50, and one Yetman Transmitter.

The entries were: A. A. Gilson, Louisville, The Associated Press; J. B. Stillwell, New York, The Associated Press; Karl E. Wilcox, New York, news agency; C. P. West, New York, Postal; E. C. Watkins, New York, Western Union; C. J. Cone, Pittsburg, Pennsylvania Railroad; J. P. Gallagher, New York, Postal, and H. N. Babcock, Atlanta, Ga., Western Union.

The winner was C. P. West, New York.

Class B—Receiving thirty messages on any typewriter. Messages sent by George W. Conkling using Yetman Transmitter. First prize, cash, $50, and one Yetman Transmitter.

The entries were: W. M. Gibson, New York, broker office, days, Postal, nights; W. C. Murray, Atlanta, Ga., The Associated Press; H. N. Babcock, Atlanta, Ga., Western Union; E. E. Bruckner, Chicago, Postal; C. P. West, New York, Postal; F. M. McClintic, Dallas, Tex.; H. V. Emanuel, Philadelphia, Western Union; E. C. Watkins, New York, Western Union; J. P. Gallagher, New York, Postal.

The winner was J. P. Gallagher, New York.

The judges were: J. P. Williams, Robert Morton, J. T. Collins, A. E. Marr and Fred Catlin, New York.

EIGHTH EVENT—7.30 P. M.

Championship of America.

Sending five hundred words of straight matter. First prize, cash, $300; second prize, cash, $150.

The entries were: E. F. Dougherty, New York broker office; C. H. La Bonte, New York, Western Union; F. M. McClintic, Dallas, Tex.; W. M. Gibson, N. Y., broker office, days, Postal, nights; A. A. Sullivan, Pottsville, Pa., broker office; D. C. Lawrence, New York, newspaper office; Frank L. Catlin, New York, broker office; Geo. B. Pennock, New York, newspaper office; W. C. Murray, Atlanta, Ga., The Associated Press; J. H. Abdill, Philadelphia, Western Union; Robert C. Mecredy, Philadelphia, Postal; Harry C. Martin, Baltimore, Postal; George W. Conkling, New York, Yetman Transmitter; E. E. Bruckner, Chicago, Postal; J. D. Hinnant, New York, Anglo-American Telegraph Company; J. M. Becker, New York, Western Union; Frank E. English, New York, broker office; Harvey Williams, Philadelphia, broker office; H. P. Hemingway, Philadelphia, Western Union, and Earl L. Boner, Tamaqua, Pa., Philadelphia and Reading Railroad Company.

The winners were: Harvey Williams, first prize; time, 11 minutes and 30 seconds. Geo. W. Conkling, second prize, time, 12 minutes and 6 seconds.

The judges were: F. G. Lamb, J. W. Reed and A. H. Spracklin, Philadelphia; H. A. Yoell, W. H. Jackson, T. A. McCammon, George H. Usher, Charles P. Bruch, Sid H. Flagler and J. J. Ghegan, New York.

The matter sent was as follows:

An embarrassment which besets the latest phase of the war against tuberculosis received much attention from Professor Behring in an address recently delivered at Cassel, Germany. The speaker has been experimenting on cattle, as Dr. Trudeau did on rabbits and guinea pigs, to ascertain the feasibility of securing immunity; and in his more successful efforts he seems to have followed the precedent established by the American. At the Saranac Lake laboratory it was demonstrated that inoculation with living bacilli whose virulence had been reduced was more effectual than other methods which had been tried. The correct principle once having been ascertained, a number of questions relative to its safe application were immediately raised. Professor Behring says it is not difficult to obtain permission to experiment on hundreds of calves, because farmers would not seriously regret the loss of a few animals if the great bulk of their herds were made immune. When an investigator wants to inoculate an equal number of babies, though, it is practically impossible to secure parental consent. Each mother prefers to have the test made, if it is made at all, on some one else's child. She may belive, with Dr. Trudeau, that if a research of this sort results successfully, "the greatest problem before the medical profession would be solved;" but she does not want to run any risks.

Eventually, it is to be hoped, a legitimate and humane way of getting around this difficulty will be found. The first great step is to win the voluntary co-operation of those who are charged with the responsibility of caring for the very young. This might be afforded by an institution for foundlings, if its managers were familiar enough with the work already done with the lower animals to perceive what it promises. Were such experiments undertaken in the United States, there would be an obvious propriety in asking Dr. Trudeau to supervise them. The essential feature would be the culture of the bacteria, and this would naturally be conducted at his laboratory in the Adirondacks. Whether the operation of inoculation should also be performed by him is a point on which his judgment might be trusted. His personal attendance might not be necessary; but if it was, he might be able to spare the necessary time from his sanatorium to visit the asylum where the work was done. Just at present the opinion is entertained that experiments which look to prevention and not cure should be tried upon infants. Orphan asylums offer exceptional facilities, therefore, if not almost the only chance, for a satisfactory study of human immunity against tuberculosis.

Professor Behring suggests the possibility that protection, temporary or permanent, might be derived by children if they are fed on the milk of cows that have previously been rendered immune by inoculation. This would be a departure from the system which has afforded so much encouragement when tried on guinea pigs, rabbits and cattle, but it is open to less objection when applied to human subjects.

The above consists of 2,488 letters, 500 words, 25 commas, 22 periods, 2 quotations, 1 hyphen, 1 apostrophe and 2 semi-colons.

NINTH EVENT—9 P. M.

Receiving commercial messages on typewriter, 30 minutes' trial.

Transmission by George W. Conkling, using Yetman transmitter, 53 messages were sent in

30 minutes, breaking the world's tournament record. First prize, cash, $200 and a Fay-Sholes typewriter; second prize, cash, $100.

The entries were: E. E. Bruckner, Chicago, Postal; J. P. Gallagher, New York, Postal; W. C. Murray, Atlanta, Ga., The Associated Press; H. V. Emanuel, Philadelphia, Western Union; F. M. McClintic, Dallas, Tex.; C. P. West, New York, Postal; K. E. Wilcox, New York, news agency; W. M. Gibson, New York, broker office, days, Postal, nights; J. P. Lenahan, Philadelphia, Postal, and H. N. Babcock, Atlanta, Ga., Western Union.

The winners were: J. P. Gallagher, first prize; H. V. Emanuel, second prize.

The judges were: J. F. Skirrow and J. F. McGuire, New York; J. Dolphin, W. S. Sullivan, E. L. Irving, E. Brylawski, J. A. Moran, G. W. Wood and D. A. Mahoney, Philadelphia.

A SPECIAL CONTEST.

A special contest was arranged for the handsome silver loving cup, valued at $100, presented by members of the New York Consolidated Stock Exchange, to be awarded to the most perfect Morse sender; transmitting ten ordinary commercial messages.

The entries were: George W. Conkling, New York, Yetman transmitter; E. E. Bruckner, Chicago, Postal; W. C. Murray, Atlanta, Ga., The Associated Press; F. M. McClintic, Dallas, Tex., and Harvey Williams, Philadelphia.

The winner was George W. Conkling, New York.

The judges were: Charles E. Yetman and E. E. Brannin, New York; G. W. Dunn of Philadelphia.

The tournament was closed at 4.30 A. M., Sunday, November 1.

The receiving typewriter tables were equipped with the Skirrow and Anderson resonators, each containing a Bunnell alluminum lever giant sounder.

The Skirrow resonator is the invention of Mr. J. F. Skirrow, electrician of the Postal Telegraph-Cable Company, New York, and the Anderson resonator is the invention of Mr. O. T. Anderson, the well-known operator of Chicago, Ill.

The arrangement of the stage for the receiving contest certainly could not be improved upon. The wires came up through the floor under each table direct to the instruments in the resonators, and not a single mishap occurred to inconvenience the operators while at their work.

The keys on the two sending tables were furnished by J. H. Bunnell and Company, Foote, Pierson and Company and the Manhattan Electrical Supply Company, all of New York. On one of the tables was a key made by S. B. Lefley, an operator in the employ of the Standard Oil Company, at Columbia, Pa. A Twentieth Century key was also available and it was used by Miss Stetson, a winner of the ladies' class.

The exhibits were confined mainly to typewriter displays. Booths were occupied by the Philadelphia Typewriter Exchange, Philadelphia; Hammond Typewriter Company, Smith Premier Typewriter Company and the Yetman Transmitter, all of which made excellent displays of typewriters, typewriter supplies and distributed much printed literature. Mr. Yetman kept thirty men busy explaining the merits of his transmitter to the visiting telegraphers. He made a record of every contest that took place, having in circuit one of Foote-Pierson and Company's ink recorders.

In the judges' room a Foote, Pierson and Company's ink recorder was in circuit to record all matter transmitted and received in the various contests to be referred to in case of dispute. Fortunately, however, there was always a sufficiently wide margin in the degree of perfection between the work of the contestants to render unnecessary any reference to the tape records.

As there were about 1,000 members of the telegraph profession in attendance at the four sessions it was out of the question to make a record of the names of each individual. However, our Philadelphia Postal and Western Union, agents, record in their notes the presence in the Quaker City of many of the prominent officials of their respective companies and this will have to suffice.

Underground Telegraphs.

The British Post Office will complete the putting underground of the telegraph system between Warrington and Carlisle, and Manchester and Leeds. The cost of the work, together with a twenty-mile extension to Beattock Rise, is estimated at $675,000. The three new sections referred to cover about 120 miles, and the cost is considerably less than a few years ago, as the 113 miles from London to Birmingham cost $800,000. Practically all the exposed parts of England will be dealt with in this manner before the end of the year. The authorities are urging on the contractors to complete the new pipes along the northwest route to Glasgow and Edinburgh, and it is probable that the underground system will be extended in the direction of Portsmouth, Bristol and Land's End, as recent storms have shown the susceptibility of the wires in the south of England.

Wire Tappers Held for Trial.

O. M. Stone, J. O. Lewis, E. B. Meyers and H. C. Shane, who were arrested at Chicago October 27, on a charge of wire-tapping for the purpose of defrauding the Western Union Telegraph Company, were held to trial under $1,500 bonds. The officer, who made the arrests, said he believed the authorities had unearthed one of the most extensive plots made in years to defraud by wire tapping. The police have traced wires from the offices of the company to the Reynolds Hotel, 249 Clark street; to room 55, 182 State street, and to room 414 Rialto Building. Advance market quotations, therefore, could be given from the offices to at least fifty bucket shops in Chicago and vicinity.

J. P. GALLAGHER, OF NEW YORK.

Winner of the first prize in the Yetman Transmitter class, receiving; and the first prize in receiving commercial messages on a typewriter, 30 minutes' trial.

W. M. GIBSON, OF NEW YORK.

Winner of the first prize and Carnegie Medal in the class for the best all-around operator.

R. C. BARTLEY, OF PHILADELPHIA.

Winner of the first prize in the railroad class.

G. W. CONKLING, OF NEW YORK.

Winner of the first prize in the Phillips Code class; the first prize in the special contest for the silver loving cup and the second prize in the championship of America class.

HARVEY WILLIAMS, OF PHILADELPHIA.

Winner of the first prize in the broker operator class and also the first prize in the championship of America class.

MISS K. N. STETSON, OF NEW YORK.

Winner of the first prize in the ladies' class, sending.

I. D. MAIZE, OF PHILADELPHIA.

Winner of the first prize in the Old Timers' contest.

MISS ROSE FELDMAN, OF NEW YORK.

Winner of the first prize in the ladies' class, receiving.

PHILADELPHIA TELEGRAPH TOURNAMENT WINNERS.

The Aurora Borealis.

Telegraph communication in all parts of this country and Europe was seriously affected on October 31, by an electrical disturbance of unusual severity. The cable lines across the Atlantic Ocean and the Baltic Sea were worked with difficulty for six hours, and in Chicago the wires were charged by nature with 675 volts.

The trouble started early in the morning, when the aurora borealis, for the first time in eleven years, appeared in the heavens with sufficient intensity to interfere with telegraphic communication.

Scientists believe the electrical storm was caused by the recent disturbances in the sun. Students of the centre of our universe say that for the past few months storms have been sweeping across the face of the sun, with increasing fury, and with the result that the air at certain distances from the earth has become electrified. It was from these storms that the aurora borealis is supposed to have come.

The electrical storm seemed to have centered over Chicago, where all instruments were useless for about five hours. Telephones in that city were affected, and for a time the managers of the telegraph and telephone lines were unable to account for the puzzling situation.

Telegraphic communication between France and the rest of the Continent and America were almost suspended all day. In Paris it was said the conditions were the worst known since telegraphy came into general use, and there was much wonder as to the cause of the widespread disturbances. The weight of opinion favored the theory in connection with the storms in the sun and aurora borealis.

All over the British Isles the telegraph lines were crippled.

In the Weather Bureau in New York city none of the instruments were affected. It was said that there was little doubt the disturbance was caused by the storms in the sun.

A despatch from London states that scientists attribute the magnetic disturbance to sun spots. The worst effects of the phenomena appear to have been experienced in France. Berlin was not affected, and apparently neither Austria, Italy, nor Denmark suffered.

In Switzerland, however, there occurred a most strange phenomena. The telephone service ceased suddenly and remained suspended for half an hour, while the telegraphs were rendered unintelligible and useless. In Geneva all the electrical street cars were brought to a sudden standstill, and the unexpected cessation of the electric current caused consternation at the generating works, where all efforts to discover the cause were fruitless.

Sir Oliver Lodge and Sir Norman Lockyer attributed the cause to sun spots and an increase in solar activity.

Mr. Francis W. Jones, the electrical engineer of the Postal Telegraph-Cable Company, New York, said:

"The phenomanon of Aurora Borealis has been observed at times when no unusual changes were noticed on the sun's surface by astronomers, and auroral displays in northern latitudes do not manifest themselves always in Europe and America at the same time. During twenty-five years in New York they have been seen more frequently in March, April, July, August, September and October than in the other months, and in Europe in the fall and winter months. Careful notes by Prof. Loomis, of hundreds of sun spots and auroras yearly witnessed in Europe and America from 1750 to 1879, show a most remarkable coincidence in the time of their appearance."

"Telegraph wires have been almost yearly affected by auroras, more seriously in some years than in others, and of several of such disturbances there exists very interesting records which pretty fully show the vagaries of the fitful and changeable currents, and of several instances where messages have been transmitted over the wires for at least three hours at a time by the use of auroral currents alone."

"On September 1, 1859, several sun spots appeared, and two astronomers, at widely separated observatories, saw at the same instant a sudden flame of light far brighter than the normal sunlight, flash out among a group of spots on the sun, lasting five minutes, and at the same time a violent magnetic storm was raging all around the northern temperate zone, accompanied by brilliant auroras, paralyzing telegraphs and setting magnetic ueedles flying in rapid oscillation."

"Between 1869 and 1872 over and north of the eastern portion of Canada and over Newfoundland, I witnessed several intense auroral storms which always interferred with the operation of the wires, and I believe I was one of the first, if not the first, to arrange them so as to work free from auroral effects. This I accomplished on the wires (then worked single between Plaister Cove and New York with repeaters at St. John, N. B. and Boston, Mass., connecting with the Atlantic cable), by looping two wires at St. John (where I was stationed), with Plaister Cove, forming a metallic circuit with batteries clear of the earth, and connecting this looped circuit through repeater to New York."

"In view of this it is interesting to ascertain how telephone circuits could have become crippled on the 31st ult., as reported in the newspapers."

"On January 10, 1875, the Chicago Inter-Ocean gave several columns of an account of a severe electrical storm which paralyzed nearly all the telegraph circuits in the northwestern States including Illinois. The electric phenomena attended a great wind and snow storm in those States three days previously and lasted two days, and the Inter-Ocean regretted that no solution was at hand"

"Similar violent electric effects were felt on the Western Union Telegraph Company's wires on February 1, 1875, and February 2, 1876, and have recurred nearly every year. The cause was discovered by me in February, 1876, to be a discharge of electricity from myriads of snow parti-

cles as they were being blown across or along the wires during a heavy gale, as published in the Journal of the American Electrical Society, page 44, Vol. 2, 1878. The telegraph wires passing through Colorado, New Mexico, Arizona and the Mojave desert, are frequently rendered inoperative during March and April by receiving the electric charges from the particles of sand which are fiercely blown in enormous clouds for hours along the wires; the moment the sand storm stops, then the wires become normal."

"I recently mentioned my discovery of 1876 to a prominent English telegraph engineer who had been engaged in one of the Soudan wars in keeping up telegraph communication between the English army divisions and the officers, and he at once said that he now could understand why his wires would not work when stretched over the dry sand of the desert.

"While sun spots may in some mysterious way have to do with electric disturbances on this earth, I am of the opinion that auroral displays are made through the medium of mists, or clouds, of very fine light snow particles, high in the air in the more northerly and southerly or polar regions of our globe, and that these become the conductors for very high potential electricity which seeks an earth connection through the open seas at the north or south, and the moist clouds of the temperate zones. Nansen and others, in the far north have always seen the auroras south and southwest through considerable cloud and haze. These snow or ice particles become luminous and prismatic under the flashes of intense light between them, caused by the electric charges and discharges. Probably those clouds are swirling and gyrating under air currents similar to those attending our terrestrial cyclones, tornadoes, waterspouts, blizzards, etc. There are always clouds and haze attending the display so far as I am able to ascertain, and if the atmosphere of our own sky was below freezing point doubtless our lightning storms would be transformed into auroras and would so appear to people living south of us."

"During the attempt to extend the wires overland to Europe via Alaska and Behring's Strait, several years ago, Frank L. Pope, while exploring a route through Alaska, encountered deep snow so extremely light that it was impossible for the men and dogs to make any progress through it, notwithstanding the men had employed snow shoes."

"A pronounced difference seems to exist in the manner in which wires are affected by auroral current, and the discharges received by wires in snow and sand storms. In the former the currents seem to flow over the wire from earth to earth in one direction. In the latter the charge from the snow or sand cloud is carried off to earth at both ends, if they are attached thereto; if only one end is earthed all current flows toward it. If both ends are insulated the charge jumps with a spark across the nearest point to earth in a lightning arrester or switchboard."

"It is likely that the movement of the auroral currents in the sky act by induction upon the earth, causing, so to speak, shifting mountains of positive potential at some points of its surface, and valleys of negative potential at other points, and the wires between such points become merely the channels of flow of current from the higher to the lower point."

The night chief operator of the Postal Telegraph-Cable Company, at Chicago, reports as follows:

Chicago, October 31, 1903.

Auroral disturbance of wires commenced 12.15 A. M.

1.30 A. M.—All North American wires in trouble except The Associated Press and St. Paul wires.

1.50 A. M.—All Kansas City route in trouble more or less since 1 A. M. between Des Moines and Kansas City. They continually stop working and come O. K. again.

1.50 A. M.—Montreal reports all his circuits rendered useless by Aurora Borealis.
Its effects being noticeably felt in Chicago all the way east to New York and west to Kansas City.

5.40 A. M.—Due to Borealis and earth current on all circuits Denver did not clear business to Chicago until now.

The following report is from T. W. Carroll, electrician of the Postal Telegraph-Cable Company, Chicago.

"I attach a report left by night chief at Chicago on the morning of October 31. It shows the condition existing on that morning. When I arrived at the office I found a great many circuits that we were unable to work, and I grounded the first New York circuit at Chicago and Meadville and got a reading as high as 475 volts positive, but it lasted only a minute or two, then gradually changed to 100 negative. It varied between 100 negative and 250 positive, with an occasional rise to 300 or 400 positive. On one of our Minneapolis circuits I got as high as 475 volts negative and 100 positive, the variations on this line being about the same as those on the Meadville wires. About 9.30 A. M. the trouble began to gradually decrease and by 10 o'clock we had all circuits in operation."

Mr. J. Hargrave, electrician, Postal Telegraph-Cable Company, Atlanta, Ga., reports that aurora disturbance was noticeable on wires north of Memphis; not serious. Between Richmond, Va., and Augusta, Ga., prevented working quadruplex. Wires both north and south of Louisville, Ky., were considerably affected, requiring frequent readjustment of the instruments.

Mr. J. E. Pettit, chief operator, Postal Telegraph-Cable Company, Chicago, reports that at 9.15 A. M. October 31, at that point, with big copper wire grounded at Meadville, the earth current varied from 450 volts positive, to 225 volts negative, adding: "I believe this to be the fiercest electrical storm on record."

Mr. W. C. Swain, electrician of the Postal Telegraph-Cable Company, San Francisco, reports that the aurora on the 31st did not disturb the wires in the Pacific Division, which includes territory from Vancouver, B. C. north, to Los Angeles, Cal. south, and east via the Needles, Cal., through Arizona to Alburguergue, New Mexico.

Mr. J. C. Barclay, the assistant general manager of the Western Union Telegraph Company, referring to the effects of the aurora on his company's system, said:

"Circuits extending in an easterly and westerly direction were, as usual, the greatest sufferers from the effects of the magnetic storm of the 31st ulto. which at times developed currents of natural electricity of such intensity in the wires, as to completely neutralize the effects of the regular working currents.

"The occurrence was not altogether unlooked for at this time, as we are now approaching the maximum sun spot period, which has always been associated more or less with disturbances of this character, and we may, therefore, confidently anticipate many recurrences of similar phenomena for some time to come.

"The subject is interesting," Mr. Barclay continued, "as affording another instance of that singular coincidence in the simultaneousness of sun spots and electric storms, which naturally suggest some direct relationship between the two phenomena. The inter-relations of earth currents, auroras, terrestrial magnetism, etc., are so complex, however, that scientists are but slowly arriving at a solution of the problem as to which is the cause and which is the effect. By some it is regarded as not unlikely that all these phenomena are the several consequences of the rapid translation of the rotating earth through the field of electric force that emanates from the sun. The electrical pressures that have been developed at such times in long telegraph circuits, are such as might be produced by the passage of our globe with its system of superficial telegraph conductors through a region of space electrostatically charged; by rapidly cutting across the electrostatic lines of induction, the earth, which is a good conductor, would be subjected to differences of electrical pressure, which would give rise to natural currents in the earth, in much the same way that currents of artificial electricity are developed in the armature of a dynamo machine, whenever the rotating conductors move across the field of magnetic force developed in the machine."

Reporting by Electrophone.

Mr. Joseph Chamberlain's speech at Birmingham, Eng., on November 5, was taken by reporters of the Daily Mail at London by means of the electrophone, which allowed them, sitting in the London office, 113 miles distant, to hear every every word spoken. The speech was printed verbatim, and the paper was selling on the street twenty-seven minutes after the speech was concluded. The electrophone beat the telegraph 1 hour 27 minutes. The Mail says that it has inaugurated a revolution in reporting.

[The electrophone is a highly sensitive telephone.—Ed.]

William Taylor, Western Union Manager at Helena, Mont.

William Taylor, for more than a decade chief operator of the Western Union Telegraph Company, at Helena, Mont., began his duties as manager of that office on November 1, succeeding James Swan, promoted to be a superintendent, with headquarters at Minneapolis.

Mr. Taylor was born at St. Louis, Mo., in 1855, and at an early age went to England to live. He entered the telegraph service at Birmingham, in that country, in 1868, as a messenger for the British and Irish Magnetic Telegraph Company. After a few months he was made night clerk, a position he continued to hold until 1870, when the British Government acquired control of the telegraphs. Having learned telegraphy he was given a place as an operator under the new direc-

WILLIAM TAYLOR
Who has Lately Been Promoted to the Managership of the Western Union Telegraph Company, at Helena, Mont.

tion. Believing, however, that better opportunities awaited him in America, he retruned to this country in 1873, and found employment in New York, first in branch offices and afterwards in the main office of the Western Union Telegraph Company. From 1874 to 1882, he worked during the summer seasons as chief operator for the same interests at Long Branch, N. J. In the fall of 1883 he went to Helena, Mont., there entering the employ of the Northern Pacific Railroad. In the following spring, however, he returned to his Western Union allegiance at that point, becoming night chief operator, a place he held until 1886, when he resigned to accept the appointment of Deputy County Clerk and Recorder. At the expiration of a three-year term, he once more entered the Western Union employ, as an operator. Two years later he was made chief operator, a position he continued to hold until recently promoted to the managership, a fitting recognition of ability and of long service well performed.

LETTERS FROM OUR AGENTS.

[Advertising will be accepted to appear in this department at the rate of five cents a word, estimating eight 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.]

MINNEAPOLIS, MINN., NORTH AMERICAN TELEGRAPH.

The Minneapolis Local Union, No. 8, of C. T. U. A., held their first annual ball in the Masonic Temple, October 22, and it proved to be a very pleasant and successful event. One hundred and fourteen couples were present and inspired by the music of a fine orchestra which was screened behind a bank of palms and ferns, the artists of the key and sounder demonstrated that they were also proficient in the terpsicorean art. Socially and financially the first annual ball was a success in every way. Light refreshments were served, and "30" sent at 1 a. m.

Arrivals in the main office not previously reported are J. M. Scanlan and J. S. MacKearly on Chicago local, and F. A. Dooley on Soo Line, west. Stanley Futcher takes care of the Duluth and St. Paul local.

The Saturday afternoon football games give some of the boys a chance to increase their extra, and enjoy the game at the same time. With four or five wires to the "Northrop Field," good service is given this business.

One of the surprising things in the telegraph business is the fact that so few of the operators take a journal devoted to their interests. It is a difficult matter to interest them in a paper that would teach them more of their profession, but they will spend many times that amount on something that will not benefit them a particle. TELEGRAPH AGE is in the front rank of such journals.

MONTREAL, QUE., CANADIAN PACIFIC.

The new Yetman sending machine has arrived here and is being manipulated by Messrs. Spence, Gainfort, Jarvis and others.

Messrs. R. Dow and J. Lawler are the latest arrivals from New York.

Mr. J. Norsfleet has resigned and gone South.

Messrs. Thomas Longmore and J. O'Neil have been transferred from the Windsor street station to this office and have been assigned to night duty.

Mr. J. W. Dunn has been assigned to the all-night duty, 12 to 8 A. M.

Mr. F. T. Jennings and Mr. F. N. Caisse have returned from a two weeks' vacation.

Mr. J. Mitchell has gone on his vacation and accompanied by his wife left for Kingston and Brockville.

Mr. "Al." Jarvis has gone on his annual hunting trip up the lakes.

Mr. W. G. Medley is at present relieving Mr. Jordan at Sudbury, Ont., the latter being confined to his bed with heart trouble.

Mr. J. C. Jennings is assistant night chief, a position he is filling to the satisfaction of all.

The company has now the largest staff since its existence.

A fourth duplex to Winnipeg has been started since the latter part of September.

BIRMINGHAM, ALA., POSTAL.

Mrs. R. L. Tolar died suddenly Sunday, October 4, after an illness of only a few hours duration.

Mr. E. R. McRae, who was called to his home in Florida, October 16, by the illness of his father, had barely time to reach the bed side of his parent before his death.

On account of rapidly increasing business a polar duplex has been added between Birmingham and Montgomery, Ala. This office was recently moved into larger quarters and now is one of the best equipped offices in the South. Dynamos replace the old gravity battery and in every way the office is fully up-to-date.

On account of health, Mr. George L. Wilson, for the past three years manager at Anniston, Ala., has been transferred to Evansville, Ala., there succeeding Mr. S. K. Evans. Evansville is one of the most important junction points of the Postal in the South. Mr. Wilson is succeeded at Anniston by Mr. John R. Scott a well known telegrapher.

Mr. Chas. H. Pope and Mr. James H. McCulla are the proud fathers of boys, while Mr. B. B. Price is happy in the fact that his is a girl.

Mr. J. C. Bishop has resigned and accepted a position with a private wire firm in this city.

COLUMBUS, O., WESTERN UNION.

Mr. J. C. Powelson has been on the sick list.

W. M. DeWolfe has resigned from the service.

Miss Stella Bickel is again at her post after a short illness.

"Booth" Cummings still has bonus ambitions; we hope he will soon be given a chance to "speed" himself.

W. J. Farahy, after several weeks as acting manager of the Newark, Ohio, office, is again with us.

L. J. Solt has resigned and accepted a position on the "Pony" report, at Portsmouth, Ohio.

We congratulate Mr. D. S. Field, of the Penn-

sylvania office, on his good luck in winning the $2,500 automobile in the recent Pittsburg drawing.

PHILADELPHIA, PA.

WESTERN UNION.

Miss Alice Deasy, manager for this company at Lewistown, Pa., was held up recently by footpads who attempted to steal the receipts for the day which Miss. Deasy was taking home. She defended herself bravely till help came when the robbers ran away.

A very quiet but pretty home wedding took place on November 11, when Miss Gertrude C. Webb, the only daughter of night manager F. R. Webb, was married to Mr. Wm. P. Carnell of this city. After a reception the couple took their departure for New York and Niagara Falls.

A. G. Saylor, assistant to Mr. B. Brooks, general superintendent at New York, was a recent visitor. He was warmly welcomed.

A. W. Baldwin after several week's of illness, has again returned to duty.

Miss C. Grimley is taking a vacation and visiting points of interest throughout the State.

Among the prominent Western Union people present in the city to take part, or witness, the recent telegraph tournament were: Frank Jaynes, general superintendent of the Western Union Telegraph Company, and I. N. Miller, Jr., superintendent of the American District Telegraph Company, San Francisco; E. M. Mulford, superintendent, M. W. Hamblin, manager, Frank Kitton, assistant electrical engineer, and chief operators T. A. McCammon, W. H. Jackson, J. F. McGuire, E. F. Howell, Robert Morton, E. E. Brannin, Fred Catlin and about fifty other members of the profession, all of New York; D. F. Brown, of Washington and several hundred other representatives from various sections of the country, a record of whom it was impossible to make.

POSTAL.

We feel proud, the local fraternity in general and the Postal Telegraph contingent in particular. Guided by the fertile mind of our chief operator, C. A. Stimpson, as head of an untiring and indefatigable executive committee, whose labors cannot be too highly extolled, the greatest tournament ever held by the telegraphers of America was brought to a successful issue. From Superintendent Lemon, down to the messengers, this company maintained an intense interest, which continued unabated throughout.

The event was the primary cause for the presence in this office of Assistane General Manager C. P. Bruch, Geo. H. Usher, Charles Shirley, Daniel Mallen, Frank McKiernan, J. F. Skirrow, T. F. Fleming, Albert Price and a number of other prominent New York Postal representatives; also Manager B. H. Moore, of Baltimore, Md., with a delegation; Superintendent Kimmey, of Pittsburg, Pa.; Manager C. E. Diehl, of Harrisburg, Pa.; Manager G. W. Ribble and Chief Operator J. D. Prosser, of Washington, D. C.; Mr. and Mrs. Charles Spindler, of Parkerville, Pa.; Messrs. Robert Robinson and J. C. Leaman, of Lancaster, Pa.; Manager G. E. Sornberger, of Altoona, Pa.; Miss Stetson, Miss Rose Feldman, and Max Greene, of New York, and W. H. Collins, of Scranton, Pa. Previous to the contests, Mr. F. M. McClintic, of Dallas, Tex., was also a frequent visitor to our office.

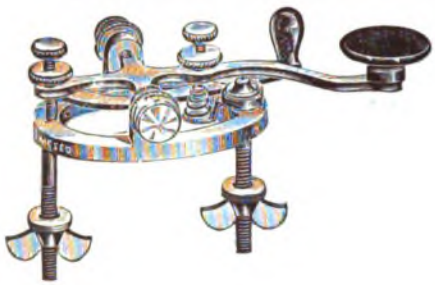
In Mr. Harvey Williams, of this city, greatest honors for victories are claimed, although vanquished by Mr. W. M. Gibson in the all-around championship, he defeated that gentleman in every subsequent class in which they were entered, not only winning the championship in straight sending, but also the first prize in the broker's class, carrying off $400. He was also the recipient of an immense bouquet of roses from his broker admirers and received much prominence in the daily papers.

Assistant Traffic Chief Harry Thompson has lost several days, due to the return of an old trouble.

Others absent, due to sickness and other causes, are: C. F. Happersett, H. Ray Dalby, Robert Sterling, Samuel F. Higo and Mel. Fisher.

Trouble in one of our underground cables was quickly overcome by Mr. Joseph Eder, whose ability was manifested by the masterful manner in

FROM MANUFACTURER DIRECT TO YOU



STEEL LEVER KEYS

All the parts are finely finished. They have Nickel-plated levers, Gutta Percha knobs, and Brasswork highly polished. They are the Standard of Postal and Western Union Telegraph Companies.

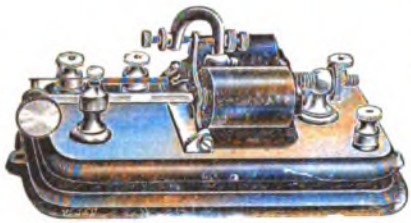
All Keys are fitted with our improved adjustment spring holder.

List No. 103 Steel Lever Key with Legs.....Net Price $0.70
" 108 " " " Legless..... " " .78

STANDARD PONY RELAY

Mounted on Polished Mahogany Base, with Metallic Surbase

List No. 115 20 ohms.....Net Price $1.37
" 116 50 " ..... " " 1.43



MANHATTAN STANDARD RELAY

This instrument has all improvements.

Polished Rubber Covered Coils, Mahogany Base, Ornamental Surbase and Extension Adjustment.

Thousands of these relays are in use on W. U. and Postal Telegraph lines.

List No. 125 150 Ohms.....Net Price $2.75

IMPROVED GIANT SOUNDER

Either Aluminum or Brass Lever Furnished

Proportions scientifically correct. One cell of Crow-foot Battery will operate it, producing a sound louder and clearer than any other sounder with two cells of battery.

Thousands of these Sounders are in use by the Postal and Western Union Telegraph Companies.

List No.		Price. Net
111	Wound 5 ohms	$1.35
113	Wound 20 ohms	1.45

EUREKA TELEGRAPH INSTRUMENT

The Eureka is a first-class, full size telegraph set. All of the working parts are finely finished composition metal, such as used in al high-grade instruments. The base is mahogany and highly polished. The key is of the steel lever pattern.

A book of instructions for amateurs is furnished gratis with each instrument.

List No. 178 Wound to 5 Ohms.....Net Price $1.00
" 179 " 20 " ..... " " 1.15

IMPROVED GIANT COMBINATION SET

Our standard first-class Improved Giant Sounder, finely finished with rubber-covered coils, mounted on polished mahogany base, with our regular Steel Lever Key, making the neatest and most perfect Set of Short Line Instruments ever produced.

A book of instructions for amateurs furnished with each instrument.

List No. 185 Wound to 5 Ohms.....Price $2.10
" 186 " 20 " ..... " 2.30

ELECTRIC ALARM ATTACHMENT

The operation of this electric attachment is very simple. Wind up the alarm key to clock three or four half turns. Place the spring clamp on the key. When the mechanical alarm goes off, the two chain electrodes will twist and close the electric circuit. The bell rings until the clamp is removed. Can be attached to any ordinary mechanical alarm clock. Weight about three pounds.

List No. 1759 Without Clock.....Net Price $0.75

MESCO DRY BATTERY

The most satisfactory Dry Battery manufactured for Call Bells, Annunciators, Burglar Alarms, Telephones, Medical Apparatus, the Laboratory, and all Open Circuit use.

Over 2,000,000 sold in last year.

List No. 2385 Size 2½ x 6¾ Inches. Net Price, each, $0.12.

BATTERY CALL TELEPHONE

For lines from 100 to 2000 feet long.

Finely finished Oak Case. Solid back transmitter (same as used on long distance phones). Pony Receiver. Vibrating battery bell with gong only exposed.

This is a practical working telephone and can be used for outdoor or indoor lines. We specially recommend it for connecting office or store with the house; house with stable, manager's office, with any part of factory or grounds, etc. Every instrument tested before shipment and guaranteed to work satisfactory.

List No. 1561 As Illustrated, (without battery) Net Price $2.50

IRON AND WOOD BOX BELLS

These are reliable, easy ringing bells, working on one cell of battery and, having a double adjustment, can be operated on two, three or five cells as desired.

List No.				Price.
1835	Iron Box	2½	inches	$0.18
1836	" "	3	"	.19
1837	" "	4	"	.25
1841	Wood "	2½	"	.26
1842	" "	3	"	.27
1843	" "	4	"	.34

If you are interested in electrical supplies we can help you. We manufacture everything illustrated on this page and about 1000 other specialties which are fully illustrated and described in No. 16 Catalogue which will be mailed free on application.

MANHATTAN ELECTRICAL SUPPLY CO.

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32 Cortlandt St.
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42, 44, 46 Essex St,
Factories, 41, 43, 45 47 Morris St.

CHICAGO
186-188 Fifth Ave.

which temporary connections were made, pending permanent repairs.

Mr. W. J. Murphy has been added to the regular night force.

The services of Messrs. Alb. Weiss and Geo. F. McIntyre are in demand reporting football games. Their most recent call was at Princeton, N. J.

By a reduction of force in the telegraph department of a large broker firm, Mr. James Keegan has been obliged to seek reemployment in the main office.

In order to more effectually "cover" the main, and other offices, Mr. Earl W. Miller will work in conjunction with Leo Miller in representing TELEGRAPH AGE among the Postal employees and broker offices.

MONTREAL, QUE., GREAT NORTH WESTERN.

David Barclay has resumed his duties after an illness of several days.

Donald Morrison is the latest addition to the staff.

C. M. Hodge has resigned to accept a similar position at a branch office.

Cornelius Scriver has resigned to go on the railroad.

Night Chief Charles Noble is absent on his vacation. Deputy Traffic Chief W. D. Scott is performing his duties.

NEW YORK CITY.

WESTERN UNION.

Mr. Frank Kitton, the assistant electrical engineer of the company, who took part in the Philadelphia tournament as a judge, was on the ill-fated Philadelphia and Reading train that was pretty thoroughly smashed up between New York and Philadelphia, on October 31. Fortunately, Mr. Kitton was in the only car of the train that did not leave the track and thus escaped without anything more than a good shaking up. Mr. Kitton went in place of Mr. J. C. Barclay, the assistant general manager, who found it impossible at the last moment to attend the tournament.

A few days since Mr. T. P. Cook, the general superintendent of the company, Chicago, Ill., accompanied by Mr. B. Brooks, general superintendent of the eastern division, boarded an uptown car on their way to dinner at the residence of the latter. They were smoking and stood on the rear platform. Carrie Nation, who was a passenger on the same car, observed the smokers and after reading them a lecture on smoking demanded that they put out their cigars. Both of the general superintendents did not wait to argue the matter with Carrie but gracefully complied with her request.

Mr. R. L. Atkinson, of the operating force, and the inventor of the Atkinson repeater, has resigned, to become identified with the Tonic Lithia Water Company, of Kansas City, Mo.

Mr. John Brant, secretary of the Old Time Telegraphers' and Historical Association, is still absent on account of sickness. He is, however, reported to be improving.

Mr. F. M. McClintic, the well-known operator of Dallas, Tex., and the winner of the Carnegie medal at the Atlanta tournament, last year, as well as other medals at the New York, Philadelphia and other tournaments, has accepted a position in this office and will work one of the bonus wires. Mr. McClintic is a valuable addition to the force.

Mr. B. F. Parks, for nine years a member of the operating force, has resigned to enter the typewriting business.

A number of the operators have been assigned to the split trick, 12 noon to 9 p. m.

There are now eight to ten Yetman transmitting typewriters used in this office and the machine is coming into favor very rapidly, particularly among those working bonus circuits.

The four general superintendents, including Frank Jaynes of San Francisco, T. P. Cook of Chicago, J. Levin of Atlanta, Ga., and B. Brooks of this city, have been in New York for the past week holding business conferences with other officials of the company for the benefit of the service.

Miss L. McKenna, of this department, is one of the most expert lady operators ever employed in this office. It is common for her numbers to show 85 messages per hour. Miss McKenna would have no doubt carried off a prize at the Philadelphia tournament but for her nervousness. Her daily work is the best evidence of her great ability as an expert telegraph operator.

Miss A. Joyce, of the 255 Church street branch office, has left the telegraph service and is at present at her home in Poughkeepsie, N. Y.

Miss Bessie M. Melott has been appointed manager of the Yonkers, N. Y., office, vice Miss E. B. Travers who has returned to Middletown, Conn., as manager.

POSTAL.

Mr. J. P. Gallagher, of this office, one of the prize winners at the Philadelphia tournament, was almost blind when he took his turn at receiving messages in the typewriter contest. Although he carried off first prize he stated that he could hardly see anything during the latter half of the contest. The eye specialist in whose charge Mr. Gallagher was at the time had ordered him not to take part in the tournament as it would be im-

possible to do so in justice to his health. He was suffering from severe inflammation of the eyes.

The offices of the general manager are being rearranged, and the change, when effected, will give Mr. Charles P. Bruch, the assistant general manager, a private office, a convenience he has long needed. The old office occupied by Mr. Bruch will in future contain the desks of Mr. T. E. Fleming, the special agent, and Mr. Geo. F. Fagan, chief clerk to the general manager.

Daniel J. Donohue, son of D. C. Donohue, an old Western Union man, and for about ten years in the electrical bureau of the New York Fire Department, is a very promising young operator in this office.

The force is greatly elated over the victories won by some of its members at the late tournament in Philadelphia. Miss K. N. Stetson and Miss Laura Hoffheimer received a royal welcome from their associates upon their return on Monday following the tournament. Their respective tables were profusely decorated with beautiful flowers. Miss Rosa Feldman, of the Bowling Green Building office, was also kindly remembered, and Manager Harmon's force are very proud of her success. Messrs. Gallagher, Gibson and West all came in for congratulations on their well-earned victories.

Resigned: J. D. Smith, J. E. Ingoldsby, W. T. Hartt, E. B. Stockwell and J. M. Sullivan.

T. W. Wiemert has been transferred to a branch office.

Traffic Chief S. A. Coleman is absent on his vacation; Eastern Traffic Chief J. T. Ewing has returned from his outing.

New Books.

The new, revised and enlarged edition of American Telegraphy and Encyclopedia of the Telegraph, by William Maver, Jr., is a telegraphic library by itself. It is one of the comparatively few books appertaining to the telegraph that the intelligent and progressive operator should possess. In fact it is one that he cannot afford to be without. It covers so wide a range of information, dealing so minutely and clearly with the topic in all particulars, that little else is left for the reader to acquire in the wide scope of telegraphic information. The volume will be sent on receipt of price, $5, to any part of the world, postage or express charges prepaid. Address J. B. Taltavall, 253 Broadway, New York.

The Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students, a larger and revised edition of which is now in press, long since established for itself a "right of way," so to speak, in telegraphic literature, which remains undisputed. Mr. Willis H. Jones, the author, as editorially announced in the issue of November 1, has gone over his work very thoroughly, the added pages and diagrams bringing the entire subject of the telegraph in all of its phases, strictly up-to-date. The work has a peculiar value, acknowledged from all parts of the world, because of its broad, practical treatment of its theme. It is an aid, absolute and positive, to the telegrapher, whether at the key or in whatever grade in the upward reach to the executive departments. No telegrapher can afford to be without a copy of the work because it is an every day guide to him in his employment. Hundreds of orders are awaiting the re-appearance of the book which we expect will be ready early in December. The price is $1.50 per volume. This includes the cost of expressage. All orders should be addressed to J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

The Twentieth Century Manual of Railway and Commercial Telegraphy makes an excellent reference book for railway and commercial operators for every day use. It embraces technical messages, service messages, cipher messages, extra word and combination messages, which are constantly bothering railroad operators as well as operators in small branch offices. The facsimilie messages, reports, C. N. D.'s, race special, etc., enables any one to meet the new requirements by making thorough preparation instead of simply "catching on" and thus crowd out those who have no technical training. The first part of the book contains six excellent lessons on elementary electricity, especially prepared for home-study for railroad operators and commercial branch operators. It is made up of practical suggestions and quizzes on electricity, conductors and insulation, electro-magnetism, instruments employed, circuits, faults and interruptions, wire testing and switchboards. Sixteen page prospectus of contents, sample pages, etc., free. The price of the book is one dollar, which covers the prepayment of express charges. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Bound Volumes of Telegraph Age.

A gentleman who has lately ordered a bound volume of TELEGRAPH AGE for the year 1902, writes to us to the effect that if we will supply him with such a volume with the index bound therein, he will, in addition to his regular subscription, be very glad to place a permanent order with us for the same to be delivered to him each year, at a cost of $3 per volume. This would relieve him, he explains, of the necessity of saving each number as it is received, from which he often clips items and so spoils his file, thus making it undesirable for binding purposes.

Very likely there are others who value TELEGRAPH AGE much as our correspondent does, who mutilate their regular subscription issues and yet who wish to preserve bound volumes intact from year to year. All who require to be supplied are requested to notify us at an early date so that there may be no difficulty experienced in maintaining full files for the purpose.

We have on hand a few handsomely bound volumes for 1902, including the index, which may be had at $3 apiece.

The Earth as a Condenser and its Role in Wireless Telegraphy.

(Concluded from Page 546, Nov. 1, issue.)

We may assume that we use wires of 1 mm. (0.04 in.) diameter. Dr. Koepsel proposes to make the small self-induction, L, equal to 0.0000001 henry. This is approximately the case if we use an earthing wire of 10 cm. (4 in.) length. The value of the product, L C, is thus fixed and we find that if there shall be resonance, the wave length of transmission must be 10,000 m. (6.2 miles, or 10,900 yards). This would require a vertical wire of 2,500 m. (2.700 yards). Under these conditions the earth would be in resonance. The long vertical wire acts like a tuning fork, and the earth acts like a resonance box. We may now determine the exact value of the oscillations of the potential of the earth under these conditions.

The capacity of the vertical wire is 0.009 microfarad; that of the earth is 708 microfarads; hence the ratio of the two capacities is 0.000013. The potentials relate to each other inversely as the capacities. Hence if we assume the potential of the vertical wire as 100,000—which value can be obtained in practice—the potential variation of the earth would be $100{,}000 \times 0.000013 = 1.3$ volt. The electric quantity required for this purpose is 0.0009 coulomb. The maximum rush of current at minimum damping would not be over 15 amp.

If a plurality of vertical wires is used, this value of the variation of the potential may be increased at will. By increasing the number of wires the capacity increases in ratio different from that of the decrease of self-inductance. The resonance length is, therefore, decreased. If we design our vertical wires accordingly, the value of L C is not changed, and nothing is changed with reference to the resonance of the earth. But as the capacity of the vertical wire system has increased, its ratio to the capacity of the earth has also increased; and from the calculation given, it will be seen that the potential variations of the earth are then also increased. If, for instance, 400 wires are used at a distance of about 0.5 m. (20 in.) from one another, then if the corresponding shortening of length is taken into account, the capacity of the vertical wire system would become about one-ninth microfarad; hence its ratio to the capacity of the earth would be 0.00016. If we assume again a potential of the vertical wire of 100,000 volts, the variations of the potential of the earth would be about 16 volts.

While Marconi in his apparatus for ocean telegraphy may not have reached complete resonance, as his wave length is still too short, it is probable that he comes near this condition. While the figures of Dr. Koepsel's calculations cannot be considered as absolutely exact on account of certain approximative assumptions, he believes that they are correct as to the order of magnitude.

An interesting conclusion drawn by the author is that if his theory is correct it should be possible to receive signals without the use of a vertical wire at the receiving station, if the transmitting station be designed so as to set the earth into resonance. The author believes this to be possible even without a vertical wire at the transmitting station of the enormous height of 2,700 yards.—Electrical World.

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents meets at Indianapolis, Ind., at a date in 1904 yet to be named.

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

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

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

International Association of Municipal Electricians meets at a place and date in 1904 yet to be named.

Magnetic Club, business meeting, meets the second Thursday in January, at New York.

Old Time Telegraphers' and Historical Association meets at Atlanta, Ga., at a date in 1904 yet to be named.

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

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

Train Despatchers' Association meets at St. Louis, Mo., third Tuesday in June, 1904.

Western Union Telegraph Company meets the second Wednesday in October, at New York.

Tribute to Volta.

The secretary of the British Institution of Electrical Engineers reports: The bronze shield subscribed for by the students of the institution at the beginning of the present year has now been placed upon the tomb of Volta, at Cammago, Italy, near Como. The ceremony of fixing it in place was performed on Sunday, October 4, with many expressions of international good feeling, in the presence of Professor Count Alessandro Volta, Cav. Franchi, the Sindaco of Camnago, with several members of the Volta family and a number of other guests. The shield is mounted on a slab of green marble supported on granite in front of the tomb. The electrotype reproduction, which was officially deposited on the tomb on the occasion of the visit of the instituion in April last, has been transferred to the Civic Museum in Como, where it is placed in the collection of Volta relics.

Sues for $3,000,000.

It is announced at St. John's, Newfoundland, that R. C. Reid has filed a claim against that Colony for $3,000,000, for losses sustained by the contractor through the Government's action in taking from him in 1901 the control of the telegraph system of the Colony.

J. F. Richardson, Superintendent Eastern Division Canadian Pacific Railway Company's Telegraph.

Mr. J. F. Richardson was appointed superintendent of the Eastern Division of The Canadian Pacific Railway Company's telegraph, on November 1, with headquarters at Montreal.

Mr. Richardson commenced telegraph and railway work in 1876 with the Central Vermont Railway. In 1880 he accepted employment with the

J. F. RICHARDSON.

Who has Become the Superintendent of the Eastern Division, Canadian Pacific Railway Company's Telegraph.

Montreal Telegraph Company. On the consolidation of that and the Dominion telegraph companies, with the Great North Western Telegraph Company, he continued with the latter until 1883 when he entered the employ of the Canadian Pacific Railway Company, with which he has remained continuously. During the twenty years which have since elapsed he has filled the positions, respectively, of chief operator, assistant electrician, superintendent of construction and inspector.

The Dominion Government in 1897, secured his services temporarily for the purpose of exploring the several routes to the Yukon River and to make an estimate of the cost of building a telegraph line to the new gold fields located thereon. In 1899, the Government once again secured his services in order to superintend the construction of the telegraph line from Bennett, B. C., to Dawson City. This work he accomplished in a remarkably short time and opened the first telegraph office in that now famous northern city on September 28, 1899.

His present appointment is a well-earned and a popular one, especially among the employees with whom he has been associated for so many years and by whom he is highly esteemed. Mr. Richardson is an accomplished all around telegrapher, possesses fine executive ability and has an enviable record for force and action in every post he has been called upon to fill.

New Method for Preserving Wood.

A newly discovered process for the preservation of wood consists in forcing zinc sulphate in the wood at one end, driving the sap before it and out at the other end. One end is then sealed and the zinc sulphate solution forced throughout the whole mass towards the surface. Calcium chloride under pressure is then used to penetrate far into the wood. This reacts on the zinc sulphate forming the preservative zinc chloride, which is enveloped and penned in by the almost insoluble calcium sulphate. The double reaction, consisting of the formation of an insoluble guard to prevent loss of the preservative salt, constitutes the chief feature of the process. This is a distinct advance over the old method of steaming the wood to remove the sap.

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

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