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THE TELEGRAPH AGE

No. 5.

NEW YORK, MARCH 1, 1903.

Vol. XX.

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SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

How to Determine the Required Ohmic Value of Resistance Coils in the Field Key System for any Desired Proportion.

In the high potential duplex the arrangement described in the preceding issue of this journal, there is practically nothing to be considered in the arrangement of the coils except a means of dropping the initial pressure of the dynamo to the desired lower value, hence there is at no time any variation in the actual resistance of the line to disturb the balance of the apparatus at the distant station.

On quadruplex circuits, however, the two values of electromotive force necessary for its operation, would, if arranged by this method, throw more resistance in the line at one time than another, and consequently cause the strength of the current to fluctuate in value. To prevent this the coils are given such values that their joint resistance is exactly the same as that which the incoming current traverses when the full pressure of the dynamo feeds the line. In other words the figure is equal to the number of ohms of resistance that is inserted between the brushes of the dynamo and the polechanger as a safeguard to the machine. In the Western Union arrangement the figure is 600 ohms for

all quadruplex apparatus regardless of the potential employed. The object of making this value uniform is to prevent the necessity of rearranging the size of the various coils in case it is desired to transfer one set to another circuit requiring a greater or a lesser voltage. With the uniform resistance method all that is required to make such a change is to substitute the proper electrical pressure, if necessary, for the one removed.

FORMULAE AND EXAMPLES.

The formulæ for determining the resistance value of the various coils in the field key combination are as follows:

Let R = the ratio desired.

B = the internal, or battery resistance.

Then, $B(R-1)$ = added resistance, and

$$\frac{BR}{R-1} = \text{Leak.}$$

Example: With a battery or internal resistance of 600 ohms to start with, what values must the leak and added resistance coils be in order to provide a joint resistance route of 600 ohms for the incoming current? According to the formulæ, the added resistance coil should contain 1800 ohms when the proportion or ratio is to be 4 to 1, and 1200 ohms when 3 to 1 is desired. Thus: $600B(4-1) = 1,800$ ohms, while $600B(3-1) = 1,200$ ohms.

In like manner, $\frac{600B \times 4R}{4R - 1} = 800$ ohms leak,

when the ratio is 4 to 1, and $\frac{600B \times 3R}{3R - 1} = 900$ ohms leak for a 3 to 1 proportion.

When the transmitter of a quadruplex is open, with a 4 to 1 proportion, the shortest ohmic distance from the dynamo to the earth is the 600 ohms "internal," the 1800 ohms "added," and the 800 ohms leak coils, making a total of 3200 ohms in an artificial circuit contained within the home apparatus. If the tongue of the transmitter taps the battery current at a point where the latter has already traversed three-quarters of its journey to the nearest "ground," the electromotive force of the dynamo will likewise have dropped three-fourths of its full value, hence the "short end" pressure at that point will be in ratio of 4 to 1, because 600 internal + 1800 added resistance = 2400 ohms—three-fourths of the total 3200 ohms contained.

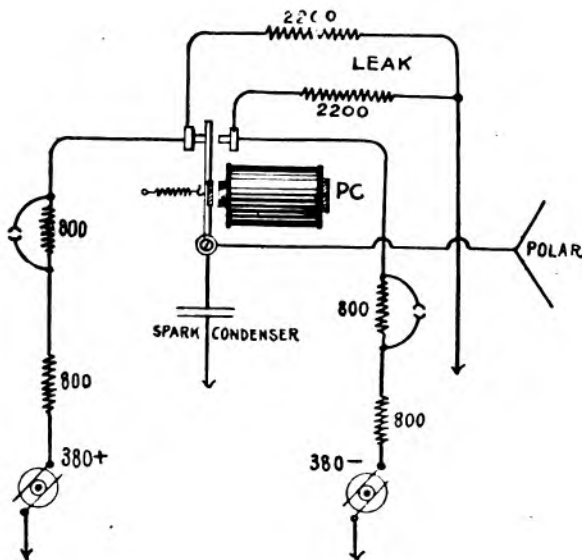
For a 3 to 1 proportion the above formulæ gives 900 ohms for the leak and 1200 ohms "added" resistance. The artificial circuit then contains $600 + 1200 + 900 = 2700$ ohms, one-third of which is in the leak and two-thirds between

the dynamo and the transmitter tongue, hence a corresponding two-thirds drop in the electromotive force at that point.

With either of these combinations of coils it will be seen that the joint resistance of the two routes for the incoming current is 600 ohms.

$$\text{Thus: } \frac{800 \times 2400}{800 + 2400} = 600, \quad \frac{900 \times 1800}{900 + 1800} = 600.$$

When our transmitter is closed the resistance of the circuit between the tongue of our transmitter is simply that of the 600 ohm battery resistance. When open the joint resistance as shown is just the same, 600 ohms. In order to derive the benefit of either a 3 to 1 or a 4 to 1 proportion, the leak is composed of two coils in series, one of 800 ohms and the other of 100 ohms, while the added resistance consists of a 1200 and a 600 ohm coil likewise connected in series as shown in the diagram. The arrange-



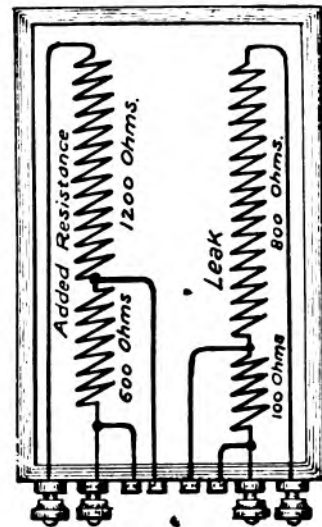
THEORETICAL FIELD KEY DYNAMO ARRANGEMENT.

ment is such that when a metallic plug is inserted in the hole connected with the leak coil only, the 100 ohm coil is shunted out making its value 800, while both the 1200 and the 600 coils remain in series in the added resistance route, hence a proportion of 4 to 1. If we remove the plug from the leak coil and insert it in the added resistance connection the leak becomes 900 ohms while the other is reduced to 1200 ohms by the shunting of the 600 ohm coil, hence the proportion will then be 3 to 1.

In case a dynamo of, say, 400 volts was required for very long circuits, the rule of inserting two ohms per volt between the brushes and the polechanger would demand 800 ohms internal resistance. Under these conditions a different value of coils would be required and 800 would be our starting factor while the ratio minus 1 would be the second.

By the formulae given it is possible to determine the combination of coils necessary to give any desired proportion of electrical pressure

or strength of current. Beginning with the battery resistance as a basis, the ratio may be 2 to 1, 3 to 1, 4 to 1, 5 to 1, or any other proportion desired. The joint resistance of the two routes thus obtained should and will always equal that of the battery resistance. Notwithstanding the apparent verification of the correctness of the formulae given as shown in the examples worked out, the rule requires qualification. The reader will note that no consideration was given to the resistance of the main and artificial lines. They certainly form part of the joint resistance in the circuit and if we take them into consideration in the calculation it will be found that the proportion will be about 4½ or possibly 5 to 1 at times, but as the two latter circuits mentioned contain thousands of ohms, while the field key coils possess but hundreds, they do not alter results materially under normal conditions, hence



Added Resistance and Leak Box.

the formulae is practically, although not theoretically, correct. It is only in very wet weather that the artificial line causes any trouble and that is because its resistance becomes so low that it brings an additional and formidable factor into the combination.

Recent Telegraph Patents.

A patent, No. 719,355, for an electric telegraph, has been granted to A. Muirhead, of Shortlands, England.

A patent, No. 718,758, for an electrically operated typewriting machine has been secured by J. S. Harrison, Savannah, Ga.

A patent, No. 719,005, for a tuning device for wireless telegraphy has been awarded to W. S. Hogg, United States Navy.

A patent, No. 719,556, for a telegraph instrument, has been granted to Edward Bing and Henry Nevill, Pernambuco, Brazil.

A patent, No. 719,095, for a line-tapping device for telegraph or telephone circuits has been obtained by C. Dietz, Munich, Germany.

A patent, No. 720,004, has been granted to P. B. Delany of South Orange, N. J., for improvement in his automatic telegraph system.

A patent, No. 719,458, for a combined telegraph and telephone system, has been awarded to Charles H. Gaunt, formerly of St. Paul, Minn., now at Topeka, Kan., assignor of one-half to Oscar C. Greene, of St. Paul. In the system, combined with a metallic-circuit telephone line, are an electromagnetic retardation coil bridged across the same and comprising two coil members, each wound with the same number of turns, and a branch telegraph circuit leading from the retardation coil at a point between the coil members thereof to the ground, the coil members being so wound and connected as to constitute an ohmic resistance merely in the telephone circuit, but a self-inductive resistance in the telegraph circuit.

Wireless Telegraphy.

A large amount of material for the Havana installation of the Marconi wireless telegraph plant was shipped from New York to Havana, February 7th, and a further shipment is now being prepared. Work will commence on this enterprise as soon as the necessary buildings at both ends are completed. One station will be at Havana and the other on the coast of Florida. Exactly where the latter is to be located is not yet determined.

THE FIRST OCEAN DAILY.

The passengers on the Atlantic Transport Company's steamship Minneapolis, which reached London recently, enjoyed the distinction of being the first transatlantic travellers to keep in touch with the rest of the world throughout their voyage from the New to the Old World. They were the first contributors to and readers of the Inter-Continental Wireless Daily, which was printed on the Minneapolis, and they enjoyed the unique privilege of keeping track of the stock market, the principal turf events, and the political and other news of the world. The Minneapolis left New York January 31, and for five days kept in touch with the Cape Cod station. After that her wireless plant began to respond to the messages from Cornwall.

A similar publication was issued on the Etruria during her trip ended at New York, February 21. The query is will the Atlantic liners of the future number among their complement of officers a first-class press operator with a typewriter—Phillips' code—Mergenthaler annex.

Workers in the field of wireless telegraphy have had for the object of their labors three well defined propositions, each of them infinitely difficult of solution and all immeasurably important in the whole scheme of commercial transmission of intelligence without wires.

These three factors are distance, syntonization and economy in operation. The question of sending cableless messages is far-reaching in its effects, not only in distance but in its ultimate modification of existing transoceanic intercommunication as well. Long-distance wireless telegraphy appeals more strongly to the majority of inventors than syntonization, where economy is not a consideration, since the laws governing the factors by which distance may be successfully overcome are quite clearly understood.

An automobile, equipped with the De Forest wireless telegraph apparatus, is stationed daily among the curb brokers on Broad street, New York, from which point the quotations are transmitted by this wireless system to one of the stock quotation companies for distribution.

Prof. Willis L. Moore, chief of the Weather Bureau, while on a recent visit to Yale, delivered a lecture on the work of the government weather reporting system. He says with regard to the use of wireless telegraphy to report the weather and to warn vessels of the approach of severe storms: "Wireless telegraphy has been used experimentally by the Weather Bureau. We found that no system yet devised works with accuracy under varying atmospheric conditions. But wireless telegraphy is in the experimental stage yet. If it ever reaches that stage of perfection so that you can send several messages at the same time within the same magnetic field it will become very valuable to the meteorological service, for then we could flash our storm warnings from our coast stations out to vessels a long distance at sea. I do not think wireless telegraphy will interfere with submarine cables, for where permanent and rapid communication is needed the cable will be the better means. Many government officials, I think, are in favor of government control of wireless telegraph interests. Such control would prevent erection of interfering stations for one thing."

The Railroad.

The Railway Signaling Club has issued its volume of Proceedings for 1902 under the supervision of Secretary B. B. Adams, 32 Park place, New York. H. C. Hope, superintendent of telegraph, St. Paul, Minn., is the president of the club.

The Association of Railway Telegraph Superintendents will meet in their twenty-second annual convention at the St. Charles Hotel, New Orleans, La., on Wednesday, Thursday and Friday, May 13, 14 and 15. President J. H. Jacoby has appointed as a committee of arrangements, George M. Dugan, superintendent of telegraph of the Illinois Central Railway, Chicago; E. E. Torrey, superintendent of telegraph of the Mobile and Ohio Railroad, Jackson, Tenn., and George L. Lang, superintendent of the Queen and Crescent Road, Chattanooga, Tenn.

The prospect of going to the extreme South, and to New Orleans at that, for the purpose of

holding the convention, something of an innovation in its way, is anticipated with pleasure by many, has aroused favorable comment, and it is believed that a very large number of delegates will be in attendance. These meetings grow in importance from year to year, the subjects discussed take on a wider range of thought, and the influence exerted in promoting higher efficiency in every department of railroad telegraphy has been most salutary.

The Cable.

Mr. S. W. Swan, manager of the Eastern Extension Company's Telegraph office at Peking, China, was in New York a few days since en route to London.

Mr. Charles Cuttriss, electrical engineer of the Commercial Cable Company, and Mrs. Cuttriss, announce the marriage of their daughter, Mary Edgeworth, and Mr. William L. Adams. The ceremony took place on Saturday, February 7.

Dr. A. E. Kennelly of Harvard University, lectured before the New York Electrical Society, 19 West Forty-fourth street, New York, on February 18. His subject was "The Mexican Gulf Cable," which Mr. Kennelly, who is an old-time cable operator, laid.

The steamship Stephan, launched on December 29, 1902, at the Vulcan yards in Stettin, Germany, for the North German Sea Cable Works at Nordenhamm, is the first vessel built at a German shipyard exclusively for the purpose of cable laying. Some time during 1903, she will lay out the new transatlantic cable now in construction at the cable works of Nordenhamm. The main dimensions of the ship are: Length over all 412 feet 9 inches; beam, 47 feet 11 inches; depth, 32 feet 8 inches; draft, 24 feet 7 inches; tonnage, 4,600 register tons. The whole capacity of the steamer will be 6,050 tons, and she will be able to take 5,000 tons of deep sea and coast cable in four water-tight cylindrical tanks, of which the largest is 43 feet 4 inches and the smallest 36 feet in diameter. Two cable engines are fixed on the ship, one for taking in or for repairing a cable already in use and the other for laying the cable.

COMMERCIAL CABLE DINNER.

At the second annual dinner of the New York staff of the Commercial Cable Company, which was given Saturday, February 21, in the Hotel Marlborough, New York, Mr. A. B. MacMillan was the chairman.

After the repast a musical programme was presented by talented members of the staff, and this, interspersed with toasts, kept the company around the festive board until the stroke of twelve, when "Auld Lang Syne" brought an enjoyable evening to a close.

A letter was read from Clarence H. Mackay, president, regretting his inability to be present. Among the diners were Mr. G. G. Ward, vice-president and general manager of the company; Mr. George Clapperton, traffic manager; Mr. Al-

bert Beck, secretary; Mr. C. E. Merritt, assistant treasurer; Mr. F. H. Dennis, superintendent of the Clearing House; Mr. J. Beattie, auditor; Mr. S. S. Dickenson, superintendent of Canso (N. S.) station; Mr. Charles Cuttriss, electrician; Mr. J. H. Smart, superintendent; Mr. S. F. Austin, assistant superintendent; Mr. W. G. Wenman and Mr. T. E. Hurdus, supervisors; Messrs. Hugh Lee, Thomas Dickenson, Charles Gill, Morgan Williams, H. Vickers and George Jones.

The Committee of Arrangements comprised Mr. F. A. Pirie, Mr. John Shea, Mr. Edwin Crickard, Mr. John Carrington and Mr. F. Fisher.

Resignations and Appointments.

Mr. W. G. Peebles of Jacksonville, Fla., has been appointed manager of the Western Union Telegraph Company at Macon, Ga., vice T. D. Jackson, resigned.

Mr. L. J. Malone, for the past few years manager of the Western Union Telegraph Company at White River Junction, Vt., has resigned to accept a better position in the Boston office of the American Telephone and Telegraph Company.

Mr. C. E. Page, superintendent of the Western Union Telegraph Company, Boston, Mass., who has resigned on account of ill health, and Mr. C. F. Ames, manager of the same interests at that place, has been appointed to fill the vacancy.

Mr. Edward F. Boening for some time past employed in the office of Mr. F. H. Tubbs, superintendent at Chicago, Ill., has been appointed chief clerk to Superintendent Ames of the Western Union Telegraph Company, Boston, Mass.

Mr. James F. Nathan, a native of Baltimore, Md., but for some years past assistant to Mr. E. M. Mulford, while that gentleman was manager of the Chicago office, has been appointed manager of the Western Union Telegraph Company at Boston, Mass., vice C. F. Ames, promoted to be superintendent.

Mr. A. H. Stewart, chief operator of the Western Union Telegraph Company, at Nashville, Tenn., has been appointed manager of the company's interests at that point, vice J. W. Fisher, transferred to the position of cashier. Mr. Stewart is regarded as one of the most enterprising telegraph men in the South.

New offices have been opened by the Postal Telegraph-Cable Company at the following points: Ottumwa, Ia., L. G. Finch, as manager; Oskaloosa, Ia., Miss G. E. Howe manager; La Salle, Ill., W. E. Stafford, manager; Marseilles, Ill., L. G. Gardner, manager; Jacksonville, Ill., W. S. Smith, manager; Virginia, Ill., L. B. Gains, manager; Maroa, Ill., R. O. Wismer, manager, and Akron, Ia., O. C. Mortrud, manager.

TELEGRAPH AGE should go regularly to every one interested in the telegraph. Write for a sample copy.

Personal Mention.

Mr. Lyman Dwight, superintendent of the Great North Western Telegraph Company at Winnipeg, Man., and Mrs. Dwight are at Augusta, Ga., and will probably remain there until spring.

Mr. W. D. Sargent, an old-time telegrapher, and for the past twenty years general manager of the New York and New Jersey Telephone Company, New York, was married at Somerset, Pa., on February 18.

Mr. R. J. Gross, of Dunkirk, N. Y., an old-time telegrapher, the second vice-president of the American Locomotive Company, has started on a trip around the world. He goes abroad with a view of promoting the interests of his company.

A clause in the Army Appropriation bill, introduced as an amendment, authorizes the promotion to Major of Capt. B. F. Montgomery, Signal Corps, U. S. A. Capt. Montgomery, who is an old telegrapher, has charge of the telegraph department at the White House.

Mr. Edwin Hawley, president of the Minneapolis and St. Louis Railway, was elected a member of the Board of Directors, of the Postal Telegraph-Cable Company, at the annual meeting of the latter company which was held in New York, on February 24, to fill the vacancy caused by the death of the late John W. Mackay.

Mr. S. S. Bogart, who was for many years previous to 1884, general wire chief of the Western Union Telegraph Company at New York, and since that time superintendent of telegraph of various railroads and of the Baltimore and Ohio Telegraph Company, and for many years past an expert electrical engineer, was a welcome visitor a few days since at the office of TELEGRAPH AGE.

General Mention.

Mr. A. E. Morelock, of the telegraph department of the Santa Fe Railroad, at Topeka, Kan., according to newspaper reports, is the inventor of a telegraph sending machine.

On February 19 a daughter was born to G. F. McMurchey, manager of the Western Union Telegraph Company, Lexington, Ky., an event which has gladdened the hearts of its parents.

Mr. C. W. Gulick, formerly manager of the Western Union Telegraph office at White River Junction, Vt., who has been in Montana for the past six months in the employ of the Postal Telegraph-Cable Company, has returned to his Vermont home, but will later go back to Montana there to locate.

We are in receipt of a beautiful group photograph of the many prominent telegraph and railroad officials who attended the funeral of the late John J. Dickey, superintendent of the Western Union Telegraph Company, at Omaha, Neb. The

assemblage of so many prominent figures in railroad and telegraph service is the best evidence of the esteem in which Mr. Dickey was held by his associates.

Mr. L. L. Potter, manager of the Western Union Telegraph Company, Cairo, Ill., writes: "Enclosed find check to cover subscription to TELEGRAPH AGE for another year. It is a paper that is indispensable to an up-to-date manager." This is another instance to show that a progressive manager must subscribe for his professional paper.

The Western Union Telegraph Company will soon boast of a new and up-to-date office at Boston, Mass. Let us see, was it not in the present Boston office, that Thomas A. Edison when working there as an operator in 1868, conducted experiments with a view of exterminating by electrocution the cockroaches and bugs, which then overran the place!

Manager Charles O. Stager, of the Allentown, Pa., Postal Telegraph-Cable office, lately tendered his employes a banquet at his home, in appreciation of the intelligent and prompt attention they are giving the patrons of his office. Those present were: Charles O. Stager, manager; James Leiby, operator; Miss Mamie Bittner, clerk; Charles Moyer, chief messenger; Harry Reise, Charles Knauss, George Moyer, George Woodring, messengers.

Recent New York Visitors.

Mr. J. B. Yeakle, superintendent of Fire Alarm Telegraph, Baltimore, Md.

Mr. C. F. Ames, superintendent of the Western Union Telegraph Company, Boston, Mass.

Mr. George L. Lang, superintendent of telegraph of the Queen and Crescent route, Chattanooga, Tenn.

Mr. Frank P. Foster, superintendent of fire alarm telegraph at Corning, N. Y., and secretary of the International Association of Municipal Electricians.

Mr. W. S. Logue, who is an old time telegrapher, and who represents the Edison interests as general Western manager at Chicago, Ill. Mr. Logue was accompanied by his wife.

Obituary.

Sylvester O'Connor, aged thirty-four, a telegraph operator of Chicago, Ill., died in that city on February 14.

James W. Plaisted, aged sixty-eight, for about forty-five years foreman of construction of the Western Union Telegraph Company, at Portland, Me., and who was retired on a pension by the company some six months ago, died at Portland, on February 14. He was a native of New Hampshire, and his father, Samuel P. Plaisted, was the builder of the first telegraph line in the State of Maine.

For Advertising Purposes.

The City Forge and Iron Works of Dayton, Ohio, whose advertisement appears elsewhere in this issue, is one of the leading concerns in the country manufacturing enameled signs for advertising purposes. Their work is of superior excellence and bears evidence of an artistic finish not often met with. Such indeed is the reputation of the concern in this respect that their business has rapidly expanded so that it now reaches to all parts of the country, and their de-



signs are used everywhere by leading companies for advertising. The Postal Telegraph-Cable Company, the Western Union Telegraph Company, and the telephone companies are extensive buyers from this house. A sample of their effective work is shown in the accompanying illustration, the sign space of which is 18x24 inches in size. The City Forge and Iron Works invite correspondence and offer to make up a sample rack of any desired size.

Business Notices.

The Swan Electric Company has changed the reading of its advertisement, which appears on the front cover of this journal. This company

is the manufacturer of the Electrotonic Battery, which is destined to popularize the daily use of electricity in homes. Our readers will be glad to learn that Mr. Thomas J. Dunn, formerly one of New York's most popular telegraphers, is general manager of this company.

Mr. D. A. Mahoney of the main office of the Western Union Telegraph Company, at Tenth and Chestnut Streets, Philadelphia, although a busy operator, finds time to sell typewriters among the craft to an extent that stamps him as an exceptionally successful dealer. Mr. Mahoney is a natural trader, he always has a bargain to offer and our friends in the Quaker City and elsewhere, can usually obtain what they want in the shape of a "mill" through his instrumentality. And, then, Mr. Mahoney always treats his customers right.

A Rubber-Asbestos Code.

The International Cable Directory Company, No. 17 State street, at the request of some of the leading manufacturers and dealers in rubber, asbestos, packing, belting, etc., has compiled and published a supplement to the Western Union Telegraphic Code, intended for the use of those engaged in the particular branches of industry referred to. Every known technical term used in the different lines is embodied in the book, with the result that users will be able to reduce their expenses for telegraphing and cabling very materially. The book, which comprises 200 pages and 25,000 terms and phrases, also contains a list of the leading rubber manufacturers and dealers, together with their registered cable addresses and code words to represent the titles of the companies and firms, so that, in this matter alone, a large saving can be made.

The publishers state that in compiling this code leading authorities were consulted, not only here but abroad, with a view of making the work as complete and practical as possible. This is the first time a telegraphic code has been made for general use by those engaged in the important lines of rubber, asbestos, packing and belting, although many other branches of trade have long been supplied with technical codes.

Important Telegraph Suit Decided.

Judge Amidon, of the Federal Court, St. Paul, Minn., on February 24, dismissed the suit brought by the United States against the Northwestern Telegraph Company, the Western Union Telegraph Company and the Northern Pacific Railway Company. The suit involved a question of the Northern Pacific violating that portion of its charter dealing with the commercial use of its telegraph lines.

The suit was begun in 1890. The Government sought to revoke the franchise of the Northern Pacific Railway Company, which, it alleged, violated the act of Congress of Aug. 7, 1888, by not carrying commercial messages over the company's wires.

The Pollak-Virag System.

The delight with which the Emperor of Germany watched a test of the Pollak-Virag system of telegraphy the other day will be understood by those who are familiar with that invention. In point of speed it appears to be much superior to all other equally well known plans for machine transmission. When it was tried between Chicago and New York in December, 1899, during a visit of the inventor to America, long messages were sent with ease, under unfavorable conditions, at the rate of seventy thousand or eighty thousand words an hour. A still better showing has been expected, and may some time be realized. In the recent demonstration in Germany a speed of only fifty thousand was attained. Yet think what that means! A President's message or other public document, twelve thousand words long, could be sent over a single press wire inside of fifteen minutes!

So far as their transmitting mechanism is concerned, Herren Pollak and Virag show little originality. They use a strip of paper previously punched with holes representing dots and dashes, just as several other inventors do. The most novel feature of their system is the method of receiving. The incoming electric impulses cause a thin strip of metal, resembling a telephone diaphragm, to vibrate and thus move a tiny mirror attached thereto. A slender beam of light from an incandescent light falls upon the mirror, and is reflected thence to a strip of photographically sensitive paper, which is steadily unrolled by clockwork when messages come. Chemicals for "development" being applied, the paper exhibits a continuous dark line, with upward projections for dashes and downward ones for dots. At first the inventors left the development to be conducted at the convenience of the receiving operator, but the process is now entirely automatic. So, too, is that other essential of photography, "fixing."

In view of the obvious merits of this system one may wonder why it has not been adopted by governments or corporations which carry on telegraphic service. A moment's consideration, though, reveals a serious drawback to it. After the comparatively trifling delay in making the record visible, the message must be written out by hand or machine. That strip of paper cannot be sent to newspapers or commercial patrons. It must be deciphered, and the translation must be conveyed to stationery. This kind of work would consume just as much time, in proportion to the number of words, as is now required by the older system. If typewritten "copy" could be turned out at the rate of fifty thousand words an hour, that would be a different matter.—New York Tribune.

[As a matter of fact the trials in this country referred to, in December, 1899, were a failure, and the American moneyed people who proposed to back this invention if it were shown to possess merit for commercial work, withdrew from the

enterprise and the inventors in consequence were obliged to return to Budapest without having effected a sale of their invention in the United States. The Tribune article, however, refers in a lucid and accurate way to the system.—Ed.]

A Marconi Scare.

Some of the life saving men at the Cahoons Hollow life saving station, about a mile or so from the Marconi station, thought the devil and all his imps had gone on a bender about the time the message to the British king was being sent.

One of the life patrols was at the time pacing along the edge of the high sand bluff near the station when he was startled by a furious fusillade and a series of brilliant coruscations from the wires at the tower tops. The explosions, he vows, were as loud as a small yacht cannon, and one of the sparks sent out in the air went like a blazing bird for more than a quarter of a mile and perched on the apex of a telephone pole.

"For ez much ez a minit," he said, when telling of what he saw to a group of citizens at the railway station this evening, "that blamed streak of fire sot on that pole and blazed, en you ken bet that it made me feel creepv. The air seemed ter be full of 'em, en they twisted en squirmed en shot this way en that, like things yer see at a display of fireworks."

The blazing sparks on the pole top, the air full of darting tongues of flame and the volley firing of the machinery were reported by the patrol to the captain of the life saving station. They were not much disturbed by the report of gun-like noises, but when they heard of a spark the size of a wood-cock flying about in the air, and of the big blazing visitant to one of the poles upon which is strung the Government telephone wire to the station, all hands gave the vicinity of the telephone instruments in the office plenty of sea room.

After breakfast this morning there was a knock at the door of the Marconi company cottage. The caller was one of the life savers from the Cahoons Hollow with a message from the captain of the station to Marconi asking if there were any danger likely to occur from working the Government telephone while the wireless telegraph machinery was in operation.

He told of the spark that took such a long flight and finally rested on the pole, and honestly confessed that it gave him considerable concern. Marconi was a bit amused by the commotion caused among the few who saw the electrical display, and explained to the messenger that there was nothing to fear, and he added, too, that though the telephone line runs within a few hundred yards of the station, the influence of the wireless currents would not interrupt business on the wire lines.—Boston Globe.

"Pocket Edition of Diagrams," etc., is \$1.50 per copy.

Substantial Line Construction.

The Western Union Telegraph Company which reconstructed its pole line connecting New York and Philadelphia via the Central Railroad of New Jersey to Bound Brook, New Jersey, and from that point to Philadelphia over the Philadelphia and Reading Railroad, using 40 to 45 poles to the mile, has just finished strengthening this magnificent piece of line construction by doubling the number of poles per mile. That is to say, an additional pole has lately been set midway between each two poles previously standing, so that the entire distance covered by this line is now made up of from 80 to 90 poles to the mile. This line carries about 100 wires mostly copper on ten pin crossarms. The reconstruction work was carried out under the supervision of General Superintendent of Construction, C. H. Bristol, and Superintendent of Construction, G. F. Swortfger. Many of the poles are stayed, guyed, and anchored, and all of the crossarms are braced. The poles are about 45 feet in height, and measure 9 inches at the top. They have been carefully selected with the view of making the line of the most substantial construction. It is asserted that nothing short of a cyclone can tear down this pole line. The recent unusually severe sleet and wind storms accompanied by zero coldness, caused only the breakage of a few of the wires at different points along this line.

The Messenger Boys.

A well known ex-superintendent of an American District Telegraph Company, has the following to say in defense of the District messenger boys whose calling has been unduly vilified in the recent report of Miss Helen Marot, chief investigator of the child labor committee, of New York. He says:

"In the years of my connection there is not a single case that would justify the suspicion that the district service is of a nature that will fail to develop as thoroughly as any employment a boy may engage in, all the manly qualities that he may bring to the company employing him.

"The messengers record is his best endorsement. He is represented in every department of active business life and does not often occupy a subordinate place. If the conditions were such that the false impressions occasionally coming to our notice were justified, it would be impossible to continue the business. The messenger would not only be incompetent for the duty assigned him, but the public confidence necessary for patronage impossible to secure.

"More than twenty years active connection with the district telegraph business has caused me to feel more than ordinary interest in the condition of a class of public servants who rarely receive their due share of commendation from those whose commissions are handled with such almost universal satisfaction to those employing them.

"No one who has had an opportunity to know

from personal contact with them, the characteristics and habits of the district messenger, will expect other than the strictest integrity as the foundation of their conduct. The occasions which give opportunity for suspicion that the service is demoralizing, if intelligently looked into, will vindicate themselves. The discipline of the office to which he may be assigned, alone, would prevent them from yielding to temptation that might be met in the employment that takes them to places of vice and crime.

"Then, is it not ridiculous to ignore the fact that their visits to these places are in the line of duty, and those to whom they are sent have many reasons why their communications should be confined strictly to the business in which they are engaged. Familiarity with the places referred to tends to weaken a desire to explore, and the messenger has that advantage over the youth whose mind is attracted in that direction by other means."

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents, will meet on May 13, 14 and 15, at New Orleans, La.

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

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

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

International Association of Municipal Electricians, meets at Atlantic City, N. J.; time not yet selected.

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

Old Time Telegraphers' and Historical Association, meets at Milwaukee, Wis.; time not yet agreed upon.

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 June 16, 17, 18, at Nashville, Tenn.

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

A bill has been prepared for presentation to the Missouri legislature directed against The Associated Press, the object of which is to compel that association to furnish its news service to whoever may apply for it, as a common carrier.

James Ribberneck, an operator at Shadyside, N. J., died of apoplexy while in the act of sending a message a few days since. The receiving operator stated that the stricken operator made an attempt to explain matters but death cut his incoherent remarks off suddenly.

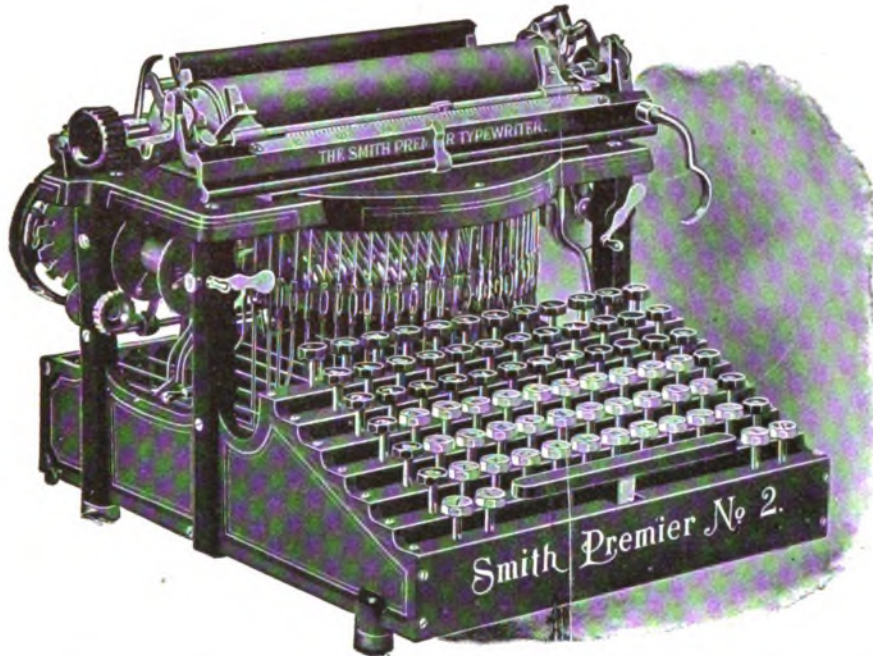
The advertisement is framed by an ornate border with a repeating geometric pattern. At the top left, a Remington typewriter is shown in a decorative oval frame. A large, diagonal banner across the center reads "TYPEWRITER EXCHANGES" in bold, white, serif capital letters. To the right of the banner, another typewriter is shown in a circular frame. Below the banner, a central circular frame contains a typewriter with a sheet of paper. The background features a checkered pattern. At the bottom, there are two more typewriter illustrations in decorative frames, one on the left and one on the right. The central text block contains the following information:

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Wm. E. Decrow,
178 Devonshire Street, Boston, Mass.
Eastern Electric Co.,
1000 Building, Baltimore, Md.
F. M. Cross,
111 1/2 4th St., Cincinnati, O.
Utica Fire Alarm Telegraph Co., Utica, N. Y.

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NEW YORK, March 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.

Heed the Advertisements.

We desire to call special attention to the advertising now and at all times, carried in TELEGRAPH AGE. It frequently happens that readers in answering these advertisements fail, probably through thoughtlessness, to give the paper its proper credit for furnishing the information upon which they are acting. If our friends would in all cases remember to do this, their interests, as well as our own, would be materially promoted thereby, for there is no other way to trace the relation between cause and effect so important to the advertiser in determining the value of his advertisements. The advertisements, too, often afford interesting reading and frequently contain offers which the average reader would do well to heed.

For instance, in our January 1 issue, in a full page advertisement, J. H. Bunnell & Co., of New York, offer to send the book entitled "Sketches New and Old," by Walter P. Phillips, and which we sell at one dollar per copy, free, on receipt of ten cents to cover the postage. The question is, how many of our readers took advantage of this offer?

As we write an advertisement of the famous Williams' Shaving Soap has been received for insertion in this issue of March 1. This, too, contains an offer of a free gift of a useful device which, no doubt, many will be glad to obtain.

If readers would closely scan our advertising pages and take advantage of the offers frequently made therein by advertisers, to send free samples of goods, it will be found that the various gifts actually awaiting acceptance would probably more than offset the subscription price to the paper itself.

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.

TELEGRAPH AGE will furnish operators with just the kind of practical information they need.

The Telegraphone.

There are two currents which run over every telegraph wire, and they are designated as the high secondary current and the low quantity current. The inventor of the telegraphone, Edwin L. Grauel, in devising the system, found that he could employ the high secondary current, which runs through telegraph wires and is not required for the operation of telegraph instruments, to perform the functions of a telephone wire, without disturbing the low quantity current.

Having this idea in mind, the next step was the production of an instrument which could differentiate between the two currents, could extract the useless secondary high current and could employ it to operate the mechanism of the telegraphone. The low quantity current thereby is permitted to remain untouched, while the secondary high current is called into requisition.

The mechanism which the extracted high current acts upon consists of ordinary telephone instruments, equipped with transmitters and receivers, they being simply connected with the telegraph wires.

The wires along the railroad track are reached by means of an extension pole, similar to a jointed fishing rod. At the end of the rod is a hook which is placed over the wire, with which connection is desired, and the wire is run from the hook to the instrument in the train. The instrument in the train is an ordinary telephone, and is provided with a reel, on which the wire that connects with the telegraph wires is wound and unwound as desired.

The 'phone in the train has two jacks, through which connection may be made in either direction. If connection is desired with a point in the rear the plug is placed in a jack on that side, if ahead, the plug is inserted in the jack at the other side of the instrument. By means of this device, it is possible to call in either direction without signalling in the opposite direction.

When the instrument in the car is connected with the wire, the crank of the 'phone is turned. This produces a combination of currents which cause a buzzing sound in the relay of the office connected with. The operator in the office then answers it with an ordinary telephone, and conversation may be carried on as long as desired.

The telegraphone is designed for convenience in handling trains, and for providing instant means of communication between the train crews and stations, in case accidents should occur in isolated places. By means of this system, if a wreck should cripple a train between stations, where no relief is at hand, the necessary communications could be made without delay.

But not only to such rare emergencies is its utility limited. It will provide a complete telegraphone system over a line of railroad without the need of erecting and maintaining separate telegraph wires.

All that is necessary to install this system is to give each station a telephone instrument with the proper connections. Each train, also, might be

provided with the paraphernalia needed to open communication. Another suggestion made is that way stations, consisting of mere sheds provided with instruments, might be placed at intervals along the line.

Communication may, by means of the telegraphone, be opened between any point on a road with any station or office provided with a receiving instrument. All the wires on the poles beside the tracks are numbered, and each train having a telegraphone is to be given a diagram of all the lines along the road over which it passes. This diagram shows the number of each wire, and the number indicates its stations and limits.

Recent successful experiments of the telegraphone were made on the Omaha line, between St. Paul, Minn., and Hudson, Wis.

Harry C. Hope and A. W. Trenholm acted as hosts for the railroad company, and Edwin L. Grauel, the inventor of the system, assisted by Manager Milligan, of the National Telegraphone Company, superintended the demonstrations.

A large number of telegraph and railroad officials witnessed the tests.

A New Telegraph Company Projected.

The Continental Telegraph News Company is the title of a new telegraph company now being organized at St. Louis, Mo., to connect that city with Chicago. Mr. Max Orthwein appears to be the moving spirit in the new enterprise. It is proposed to construct lines to Kansas City, Milwaukee, St. Paul, Minneapolis and other Western cities. It is stated that an option has also been secured on the Chicago and Milwaukee Board of Trade telegraph property, the Sempire Clock Company of St. Louis, and the Telegraph News Company, of Chicago. Those in authority state that when the cities named have been connected by wire the lines will be pushed from Chicago to the Atlantic seaboard. It appears that the promoters of the enterprise desire only to cater to the requirements of the business community. They propose to establish a low rate with the object of handling a large volume of business that can be delivered within a radius of a few blocks distant from the main offices which will be located in the heart of the business centres in the cities reached.

The officials of the existing telegraph companies do not consider this new company as likely to be a competitor of any importance, and the enterprise is simply regarded as an old scheme again foisted into prominence as it has been repeatedly during the past ten years.

Mrs. Jones: "Oh, dear me; please tell me how to word this telegram to my husband. I want to tell him that the baby is sick, the cook is ill, the water-pipe is leaking, and I want him to come home at once."

Operator: "Oh, if you want him to come home at once you had better say, 'Good news—come immediately.'"

Military Telegraphers.

The following is a complete list of the living United States Military Telegraphers so far as known:

Anderson, Joseph.	Furr, Robert.
Armstrong, S. T.	Gardiner, O. A. A.
Armstrong, E. L.	Geiger, J. M.
Ash, Wm. M.	Gentry, W. D.
Atwell, J. W.	Gilmore, Col. J. R.
Barth, Martin.	Glascott, W. H.
Barwick, Thos.	Golding, Geo. J.
Bates, D. H.	Gordon, Matt.
Baxter, Geo. W.	Greene, E. C.
Bender, R. W.	Griswold, M. E.
Benedict, C. H.	Gross, Col. W. L.
Biggert, W. L.	Gulick, C. W.
Bliss, A. H.	Guthridge, J. F.
Boyd, J. W.	Hallam, Isaac W.
Boyle, E. C.	Hammond, C. D.
Brenneman, A. T.	Hammond, C. W.
Bowerman, H.	Hancock, A. G.
Brooks, J. N.	Hansen, Jos.
Bruner, P.	Hatton, O. C.
Brush, Sam T.	Henderson, Geo.
Buell, Madison.	Homan, Chas. A.
Burch, C. B.	Hoover, R. B.
Burnett, Geo. A.	Hotchkiss, Z. P.
Chandler, Col. A. B.	Hull, H. P.
Chandler, C. E.	Hull, A. K. V.
Chateau, Louis M.	Huyck, Maynard.
Childs, A. F.	Ives, W. L.
Clark, J. B.	Jaques, C. W.
Clowry, Col. R. C.	Kanode, A. H.
Cochran, C. P.	Kerner, M. H.
Cole, Geo.	Knapp, A. C.
Connor, Paul D.	Knapp, S. B.
Crittenden, J. N.	Knittle, Jos.
Cruise, J. D.	Korty, L. H.
Culbertson, C.	Laird, T. A.
David, Capt. T. B. A.	Lewis, W. T.
Davis, Sam'l.	Logue, W. S.
Dealy, W. J.	Lonergan, Jno.
De Bree, N.	Long, F. C.
Dennis, L. B.	Ludwig, D. J.
Dewitt, Ira.	Macklind, Mrs. L. E.
Dixon, J. R.	Martin, H. S.
Dougherty, C.	Mason, J. O.
Dougherty, A. D.	Matlock, H. H.
Doyle, P. C.	Maynard, Geo. C.
Duncan, F. H.	McCleverty, J. D.
Dwyer, Con.	McClure, James P.
Eckert, Gen. T. T.	McKelvey, A. T.
Eitemiller, Geo. M.	McKenna, J. A.
Elliot, R. H.	McMichael, I.
Evans, Frank H.	McMurtry, B.
Fairchild, S. B.	McReynolds, C. W.
Farnham, G. M.	Meagher, J. R.
Ferris, D. V.	Mixer, Chas. H.
Fish, E. G.	Montayne, C. D.
Fitch, D. H.	Moore, C. W.
Flagg, J. A.	Moreland, T. E.
Flynn, J. D.	Morgan, J. B.
Fonda, T. H.	Morrison, Thomas.
Fuller, Col. W. G.	Murray, P. J.

Naile, G. W.	Sholes, C. G.
Newton, E. C.	Showerman, I. C.
Nichols, J. H.	Shuman, W. A.
Nichols, A. M.	Smith, De Wilmot.
Nohe, A. W.	Snow, H. N.
Norris, J. B.	Somers, L. A.
Nunan, P. H.	Sprague, H. C.
Nye, J. M.	Stillman, Geo.
O'Brien, Dr. J. E.	Strubbe, W. G.
O'Brien, Richard.	Stumm, F. A.
Orton, A. W.	Talbot, R. M.
Palmer, C. H.	Thomas, John.
Parsons, Jas. K.	Tinker, Chas. A.
Parsons, J. W.	Torrance, J. A.
Peel, E.	Townsend, N. S.
Perdue, L. Ford.	Trowbridge, H. R.
Pettit, J. E.	Vincent, H. C.
Phelps, Ransom.	Volts, J. D.
Plum, W. R.	Von Eye, E.
Plum, H. W.	Ward, Edward T.
Powers, Richard.	Warner, O. L.
Railton, G. W.	Waterhouse, T. Q.
Rawlins, T. E.	Webb, J. G.
Robinson, Merritt F.	Weir, Col. L. C.
Robinson, B. L.	Whelpley, C. L.
Robinson, J. H.	White, W. N.
Robinson, S. L.	Williams, D. A.
Rose, L. A.	Williams, J. S.
Rosewater, E.	Wilson, Col. Wm. B.
Ryan, Crosby J.	Wilson, Ellis J.
Sanburn, F. A. H.	Winder, A.
Safford, A. G.	Wintrop, J.
Schnell, Jos., Jr.	Wolff, C. C.
Schnell, Thad.	Woodward, B. F.
Sheldon, Capt. L. F.	Woodring, W. H.
Sheldon, W. A.	Woodward, W. R.
Shepherd, O. M.	Wood, William.

Forty-Niners of the Telegraph.

The following list embraces the names of the oldest living members of the telegraph profession, so far as known those who entered the service during the forties:

Adams, Frank.	Clum, Wm. B.
Allen, George E.	Cobb, Emory.
Allen, Wm. C.	Compton, J.
Balch, G. W.	Cornell, A. B.
Barr, M. W.	Cutler, Chas. S.
Barth, Martin.	Daugherty, A. D.
Benedict, G. G.	David, T. B. A.
Berry, Stephen.	Davis, A. G.
Bethune, N. W.	Dewey, Benj. H.
Booth, N. M.	Dodge, L. C.
Brenner, J. A.	Dunham, J.
Brigham, Geo. F.	Dwight, H. P.
Brigham, Henry H.	Easson, R. F.
Bright, Louis A.	Eckert, Gen. Thos. T.
Brown, John S.	Fairchild, Sidney B.
Brownson, W. G.	Farnsworth, Geo.
Buell, Madison.	Frev, Geo. H., Sr.
Carnegie, Andrew.	Fuller, Wm. G.
Chateau, Louis M.	Gentry, W. D., Dr.
Clark, Wm. H.	Guthridge, J. F.
Cleveland, Uriah.	Haskins, Chas. H.

Haskins, Clark C.	Stebbins, Chas. M.
Haviland, Jas. D.	Stone, John D.
Hepburn, H. C.	Sutherland, John A.
Homans, Benj.	Swan, G.
Hoyt, Samuel.	Talcott, A. B.
Hucker, Nathl.	Titcomb, H. B.
Hunt, Thomas.	Tomlinson, E. M.
Kauffman, S. H.	Townsend, John A.
Kissock, David.	Tree, J. B.
Larcombe, J. H.	Tubbs, F. H.
Louis, L. A.	Tyler, Artemus E.
Matthews, Chas. P.	Van Duzer, A. M.
Melbourne, W. A.	Ward, Henry H.
Merrihew, James.	Wellen, Alfred.
Newell, Robert.	Williams, George T.
Pitcairn, David.	Wood, Orrin S.
Porter, E. P.	Wood, Otis E.
Reed, Henry A.	Worl, Jas. N.
Ryan, Reuben H.	Worl, W. S.
Scott, M. A.	Wright, E. P.

Electric Wires and Animal Obstacles.

As electric lines are extended and multiplied, we hear more and more stories of trouble caused by animals and birds. The luckless beast that meddles with a live wire loses his life, of course; but even in death he often continues to be an obstacle until his corpse is discovered and removed. A number of these animal stories are collected by The Electrical Review in an article which it entitles "The Brute and the Circuit," and which runs partly as follows:

"The builders of the telephone and telegraph wires in Mexico first congratulated themselves that the absence of sleet would allow them to economize on the construction; but the ring-tailed monkeys and parrots soon availed themselves of the opportunity to congregate on these lines at night, and a heavier construction became necessary. In like manner, when lines were first built through forests the absence of municipal supervision did not allow the full range of anticipated economies, for the bears, mistaking the humming of the wires for concealed hives of bees, were active in their search for the hidden sweets, gnashing the poles until those of moderate size were severely weakened. And now came the birds to add to the trouble, for the power circuit at Anaheim, in Southern California, was short-circuited by an owl, causing trouble in the power-station, and the wires falling upon telegraph wires caused difficulties on these lines.

"If the eagles which alighted on wires of opposite polarity in the Fresno power circuits had remained in peace and harmony it would have been better for both birds and plant; but the first blow of a fight caused the simultaneous defeat of both eagles, and the arc short-circuiting the wires made the inevitable trouble at the central station.

"A heron recently alighted on the power circuit of the Trenton Falls line, a few miles north of Utica, N. Y., and stepping across from one wire to the other made a burnt-offering of himself and trouble again at the central station.

"Along the Atlantic coast in eastern New Jersey, the fish-hawks establish their nests on the telegraph and telephone poles, and defend their homes with such pugnacity that the linemen are obliged to carry their sheath-knives in their belts for defence.

"The prevention of these occurrences appears to be outside of the functions of circuit-closers and fuses; and may it not be possible that in the near future the owners of electric lines will emulate the farmer and decorate the poles with scarecrow devices; or, perhaps, it may be accomplished by ceasing to make efforts against the youth's throwing the pair of horsechestnuts joined together by a string, like the bolas of the Gauchos in South America? The sentiment of the linemen on this subject may experience a change that will render these festoons a welcome addition.

"There are numerous instances of rats causing crosses at switches in electric-lighting lines, and some of the fires in the underwriters' bulletins have been ascribed to this cause. It is but a short step from rats to cats, and a cat at Lockport, retreating up the pole of a power line to escape a dog—from the danger she knew to the perils she wot not of—at the cross-arm made a cross from one circuit to the other in such a manner that the arc melted the wire for a long distance, and also caused some difficulty at the power-house at Niagara Falls.

"The use of the expression 'bugs' for specific trouble is not entirely of ethical significance, because the insects are an omnipresent difficulty by outside lines. The larvae of small insects, secreting formic acid, have opened circuits by corroding away the fuses. Hornets congregate on the poles and indicate their umbrage at the disturbance when the lineman opens the door, in a most vigorous manner."

Preserve Your Papers.

By taking a little trouble, when TELEGRAPH AGE first comes to hand, it may be preserved to form a permanent and valuable addition to the reading matter with which all individuals should be supplied. We furnish a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1.00. It has good, strong covers, on which the name TELEGRAPH AGE is stamped in gold, and means by which each issue may be securely held as in a bound book. One binder may thus be made serviceable for several years, and when the successive volumes, as they are completed, are bound in permanent form, the subscriber ultimately finds himself, for a moderate cost, in possession of a most valuable addition to any library, embracing a wide variety of telegraph, electrical and general information, and timely and original illustrations. Save your papers.

Who partakes in another's joys is a more humane character than he who partakes in his griefs.—Lavater.

Sleet Storms Cost Money.

When a big storm invades the realms of the telegraph companies those gigantic bodies rush men, money and material to the seat of the disturbance much after the same fashion a ruler would hurry defense to combat an invasion of his domain.

The great telegraph companies are the servants of the public and business demands that the wires that bind the great cities together so closely shall be efficacious all the time if possible, and any disturbance of the even flow of the enormous telegraph business between the large centres is the cause of big expenditures of money, and means hard work for large numbers of men.

The sleet storm early in February, which wrought havoc to poles and lines of all telegraph and telephone companies within a radius of 100 miles of Chicago, cost the companies thousands of dollars and caused a vast amount of delay and trouble in the business world.

Gangs of men were hurried from all parts of the country to different points in Illinois, Indiana and Michigan, where the storm raged the worst, and they worked for weeks trying to untangle the network of wires. Temporary expedients were put in place and were working the day after the storm.

The worst damage was done at Peoria and Joliet, Ill., Hammond, Ind., and between Kalamazoo and Michigan City, in Michigan. Lines to the north were working fairly well, but south, east and west from Chicago things were pretty well tied up for seventy-two hours. By dint of strenuous work gangs of men were able to lay cables around the breaks in the most important lines and business was soon proceeding in its usual channels.

The damage was caused by the heavy weight of sleet. In some places the wires were coated so that they looked like crystal ropes and were over two inches in diameter. Where poles carried forty and fifty wires the weight was enormous and the poles were snapped off like clay pipe stems. In the devastated districts the poles were broken in all conceivable styles. Some of them were wrenched off near the ground as though cut with a monster scythe. In other places they were broken in the middle and in still others they would break near the top.

As soon as the poles began to break the wires were tangled in an inextricable mass and piled on the ground, where they were covered over with six inches of sleet and securely held so that they could not be extricated by the men at work. New wires were stretched and the broken poles were stood on end where it was possible in order to form temporary lines for business.

The Postal Telegraph-Cable Company had its first intimation of trouble about noon from near Peoria, Ill. Soon after this the lines began to go down and reports came in from time to time of big breaks. Along toward night the damage was serious and the service was badly crippled.

The next day reports came in showing that

twenty-eight wires had gone down along the Santa Fe route. At one point on this system twenty-five poles were broken and at two other places fourteen poles were broken off. Near Streator there were sixty poles down. From Dyer, Ind., to Blue Island there were many bad breaks and for fifteen miles along that line not a wire was left intact. The poles were new and did not break, but there were fully 12,000 breaks in the wires along the line.

Along the line from Kalamazoo to Michigan City fully 150 poles were broken. The Postal company immediately sent out 250 men in small gangs to repair the damages. They stretched cables around the breaks and put in new wires.

For a short time the Postal company had but two wires to New York, and they were circuitous. One of these went from Chicago to Des Moines, from Des Moines to Omaha, thence to Kansas City, from there to St. Louis, then to Pittsburg and then by the way of Philadelphia to New York.

The other route was a still longer one. This was by the way of Omaha and Kansas City to San Francisco, then to Portland, back to Winnipeg, thence to Montreal and finally to New York. The second day after the storm, the company's facilities for New York business were in operation as usual, although the big damages had not been permanently repaired.

The damage to Western Union lines was confined mostly to a radius of about fifty miles around Chicago. The chief damage was done near Joliet, where junction poles carrying sixty wires were broken off and the wires tangled in networks that could never be disentangled.

At Hammond, Ind., the havoc wrought was great. Three big branch lines were down at that point and the mixture of poles and wires was a notable one. The Western Union had no trouble in reaching northern points such as Milwaukee, St. Paul or western points, such as Omaha. This company immediately sent out twenty gangs of men, each gang containing sixteen workmen, and they began stretching cables and making temporary repairs to the breaks as fast as possible.

There was very little damage done to lines in Chicago, the sleet not being heavy there. The major portion of the damage was done to lines running to that city, the greatest havoc being apparent in some of the small towns in Illinois. The wires and poles were coated with heavy weights of ice and the copper wires parted like yarn, while the poles were broken off like dead weeds.

T. M. B. Association.—Assessment No. 404 has been levied by the Telegraphers' Mutual Benefit Association, to meet the claims arising from the deaths of Carrie A. Stagg, at San Diego, Cal.; Wm. B. Hibbard, at Colorado Springs, Colo.; Caroline O. Gregory, at New York; John Savoy, at Chicago, Ill.; Frank J. Anthony, at Oakland, Cal.

You can't afford to be without TELEGRAPH AGE.

Appointed Superintendent to Succeed C. E. Page at Boston.

The resignation of C. E. Page, as superintendent of the Western Union Telegraph Company at Boston, Mass., who retires after a brief incumbency of the office, because of ill health, has caused the promotion to the vacancy of Charles



CHARLES F. AMES,

Who Has Been Appointed Superintendent of the Western Union Telegraph Company, at Boston, Mass.

F. Ames, the manager of the Boston office. Like Mr. Page, Mr. Ames was brought from the West, although a native of New York State. The West seems to have exerted potent influences in the development of many a good man who latterly has found reward through opportunities offered in the East. Mr. Ames' appointment as manager at Boston only dates from May last, a position he owed to the ability he displayed in the conduct of the Des Moines, Ia., office, over which he presided for seven years. Mr. Ames is still a young man, not yet thirty-eight years of age, and the career that is opening up before him is an especially attractive one.

The Cooper Hewitt Interrupter.

Each advance of wireless telegraphy has emphasized the inefficiency of the spark-gap interrupter, says the "Electrical World and Engineer," and this element has threatened to be the weak factor in the commercial development of aerial transmission. In the Marconi trans-atlantic experiments the power required at the disruptive gap was enormous in comparison with the presumable quantity of energy radiated from the antennæ, and a serious incident of the great local disturbance thereby set up has been the adverse effect on telephonic service over a wide range, which forecast trouble for the exploiters of commercial wireless telegraphy. It is, therefore, a

matter of unusual interest to learn that an interrupter for an oscillating circuit has recently been devised which not only very greatly reduces the draft on the source of electrical energy but possesses most valuable properties with respect to exact control, and at the same time is extremely simple in form and application.

In wireless telegraphy the spark-gap oscillating circuit has heretofore been employed, either in connection with the simple induction coil or the disruptive gap. In his studies on the mercury vapor tube, it occurred to Mr. Peter Cooper Hewitt that the "electric valve" property of the vapor tube, which property he has employed in his static converter, could be applied to the oscillating circuit. This application he has succeeded in carrying out in a most successful manner.

Briefly stated, the spark-gap of the oscillating circuit is replaced by a mercury vapor tube in parallel with a condenser. Assuming that the immediate source of electrical energy is a transformer, in the transformer secondary in series are a condenser and the primary of the antennæ-ground circuit, the condenser being shunted by a vapor tube. The tube does not differ in principle from the usual Cooper Hewitt vapor tube, though naturally of a somewhat different form, owing to its different application, and the nature of the work to be performed. The transformer secondary voltage may range between 10,000 and 20,000 volts.

The fundamental advantage of this interrupter is the enormous speed of interruption that may be attained, and the absolute control of this speed. Moreover, by proper design and adjustment, any given rate of interruption can be secured. With the disruptive spark there is a limit to the efficient rate of interruption fixed by the time required for the condenser to clear itself, and this rate, as well as the total effect, is variable, owing to the mobility of the arc, the condition of the knobs with respect to polish, etc. This latter consideration does not apply to the mercury electrode surface, and the vacuum discharge is not subject to similar fluctuations. It follows that with this new type of interrupter it is possible to create and maintain continuously oscillations of an absolutely definite character, the great importance of which consideration with respect to wireless telegraphy is obvious.

The practical advantages of the interrupter are no less evident. The efficiency is very high, the loss being about proportional to the drop of about 14 volts in the tube, and in a circuit of 10,000 volts this amounts to but a small fraction of one per cent. The device, consisting merely of a glass tube or bulb with sealed-in electrodes, is inexpensive, and in case of breakage can be immediately replaced by another in the same manner as an incandescent lamp.

"Pocket Edition of Diagrams," etc., 260 pages and 126 illustrations, published by TELEGRAPH AGE, contains just the information that every telegrapher requires, irrespective of his position.

George Sallaway Succeeds Frank Kitton, at Buffalo.

Mr George Sallaway, lately appointed chief operator of the Western Union Telegraph Company at Buffalo, N. Y., where he succeeds Mr.



GEORGE SALLAWAY,

The New Chief Operator of the Western Union Telegraph Company, at Buffalo, New York.

Frank Kitton, now assistant electrical engineer of the company at New York, has had an excellent record marked throughout by frequent promotion. He is a Canadian, having been born at Hamilton, Ont., on October 26, 1862. His entry into the telegraph service was as a messenger boy with the Montreal Telegraph Company in his native place, in the summer of 1876. His appointment as an operator dates from 1880. In 1886 he went to New York, entering the service of the Baltimore and Ohio Telegraph Company, a position he retained until that company was absorbed by the Western Union Telegraph Company. He was given employment by the latter at its Buffalo, N. Y., office in the spring of 1888. Since that time Mr. Sallaway has been continuously identified with this company at that point where he has filled the various grades of operator, assistant repeater chief, assistant traffic chief, assistant wire chief, assistant to chief operator, and now stepping into the place of chief operator itself. In all of these posts, which he has filled with ability, he has always shown himself to be a studious and progressive man of ideas.

The following telegram, from which name, etc., are omitted, was recently received by one of the superintendents at Toronto, Ont., Union station from a station agent:

"When train No. — was about to leave here, brakeman found man lying on main line with head cut off. Dr. — was called, and after examination pronounced the man dead."

Frank C. Hackett Goes to Pittsburg.

Frank C. Hackett, chief operator of the Western Union Telegraph Company at Cleveland, Ohio, was on February 16 appointed chief operator of the same interests at Pittsburg, Pa., vice F. L. Bender, resigned. Prior to his departure for his new field of employment, Mr. Hackett was presented by the operators of the Cleveland office, by whom he is held in high esteem, a solid gold chain and a Masonic charm. The position to which he has been transferred is one of increased responsibility, demanding the services of a man of excellent abilities and should therefore be regarded in the light of a promotion. By this move Mr. Hackett returns to his native State, Union City, Pa., being the place of his birth. His long telegraphic career embraces experience both in the commercial and railroad service, and he has had an all around training which has stood him in good stead. Previous to going to Cleveland he was in the Western Union employ at



FRANK C. HACKETT.

The New Chief Operator of the Western Union Telegraph Company, at Pittsburg, Pennsylvania.

Toledo, O., where he filled the positions respectively of operator, wire chief, assistant chief operator and chief operator. His appointment of chief operator at Cleveland dated from July 10, 1901, making his term of office at that point a little over a year and a half.

"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.

The Associated Press Operators Want More Pay.

The petition of The Associated Press operators asking for an increase of pay, is as follows:

"For the past ten years there has been a steady increase in the demands of our work upon our nervous energies, for which there has been no recompense offered. It has reached a point where the limit of physical endurance is demanded of us 365 nights in the year, or in the case of day workers, 312 days, with a sufficient number of hours added to compensate for the Sunday holiday.

"Our maximum earning capacity having now been reached, we are powerless to meet the increased prices of rent, fuel and the necessities and comforts of life unless our employers grant us a sufficiently increased wage to offset these increased expenses.

"Aside, however, from the question of keeping pace with the fluctuating factors of prosperity or business depression, we submit that your telegraphers are underpaid, and that the standard of ability, judgment and endurance which we as a body represent, is worthy a higher place in the economic scale than is possible under existing conditions.

"When an operator enters the service of The Associated Press he is subject to the call of the chief operator for duty in case of emergency, night or day. In many cases operators are called upon to work eight to ten hours continuously without the usual 15 to 30 minutes lunch. Vital statistics show that the profession of telegraphy is not a healthy one. The mental and physical strain to which leased wire operators are subjected has no parallel among human occupations. From the moment they sit down to the wire they are required to work at their highest possible speed, using Phillips' code, sitting in one position from eight to ten hours, usually in a poorly ventilated room. Few have anything like sanitary quarters. In the smaller cities it is impossible to get substitutes. We are prohibited from using the services of any but competent operators in this capacity and owing to the inability of a great majority of telegraphers to acquire the necessary expertness to work at the high rate of speed we are called upon to do, the regular men have no opportunity to secure necessary rest and recreation. There have been innumerable instances where men have had to work when they should have been in bed under a physician's care, owing to there being no substitute available. Sick or well, the leased wire operator is in his chair, a fixture, permanent, immovable, except for the steady manipulation of his typewriter, from the time he reports for duty until "30" is sent. He may be sick; he may have a sick wife or child at home, still he must remain at his post of duty, for there is no available substitute to be had."

Don't borrow your neighbor's paper; subscribe yourself for TELEGRAPH AGE. You can't afford to be without it.

Old Timers Indulge in Fancy Skating.

The recent cold snap brought up the subject of expert skating among the telegraph fraternity, says the Denver, Colo., News, and a skating carnival was quietly arranged which took place on Cherry Creek in the neighborhood of Broadway bridge, that city. Invitations were sent to all telegraphers in the city and between thirty and forty met at the appointed time. An arrangement was entered into that no one who had had his skates on in the past twenty years could contest for the more valuable prizes. The following were the prizes, names and ages of winners, as given by an impartial judge: Fancy skating, half dozen fresh cooked doughnuts, won by old Farmer Lawton, aged 50. The old farmer did not succeed in cutting his name on the ice, but in the fall he took on the first turn he left a cross that nothing but the spring thaws will erase. One hundred-yard dash, a whole mince pie, won by William Pitts, aged 35 and one of The Rocky Mountain News star operators. The boys declared that Bill cut across lots on the sandy shore, but the judge decided that everything except steamboats went on Cherry Creek, and Billie ate mince pie while the rest smacked their lips in disappointment. Backward skating, a real good Wheeling stogie, won by B. F. Bush, aged 62 and since 1869 a Western Union telegrapher in the Denver office. Mr. Bush was very backward about putting the skates on and as no one else was inclined to try it backwards the judge favored Mr. Bush with the smoker.

High jump, a 15-cent meal ticket at a Larimer street restaurant, won by Bill Wooten, aged 40 and an Associated Press operator of much ability. Mr. Wooten was not quite sure whether he had ever had the mumps of a pair of skates on, but he tackled the skates with a vim and went up all right and came down all right, but lit in a heap, after which he looked fatigued and hungry and was awarded the meal ticket.

Free-for-all, 100-yard dash, turn a stake and return, a pair of second-hand skates of ancient make, was never won, but proved to be the most exciting race of the day. About a dozen got off inside of five minutes of each other and all succeeded in reaching the stake about the same time, but in making the turn a general mixup occurred and by the time the most of them got untangled and on their feet again the judge and most of the spectators were well on their way back to town.

After this fifty or sixty small school children who had been lined up on the banks, in the hopes of learning new antics on the ice from the old boys, put on their skates and gave a very pretty exhibition of up-to-date skating.

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 Electronic Theory.

A recent and valuable paper, presented by Sir Oliver Lodge to the British Institution of Electrical Engineers, discusses matters at the base of matter itself. It starts with the supposition that since the inertia of electrified matter is capable of being explained electro-magnetically the simplest way to explain the phenomenon of inertia is to assume that all matter is electricity. Up to the present time, the electronic theory of J. J. Thomson and his school has postulated the existence of material corpuscles, or chips of atoms. Each chip that can be detached from an atom is negatively electrified, or constitutes a negative electron. The chip has been regarded as a piece of matter, although an exceedingly small piece, and as carrying an electric charge. In the paper under consideration, however, the electronic charge carried by the corpuscle is regarded as the corpuscle itself. That is to say, instead of assuming a nucleus or core of matter to carry the electronic charge, the charge, as a sort of magnified point-charge, is regarded as the corpuscle. All matter is assumed to be built up of these electronic charges or electrons, which are both negative and positive. A hydrogen atom is supposed to contain about 700 of these electrons. A mercury atom is reckoned to have 200 x 700 or 140,000 electrons all stowed away inside. The atom itself is taken as a sphere of one-tenth of a micron in diameter, or 10^{-10} metre, so if there are 140,000 electrons stowed away into this little space, one might suppose that they are tightly packed. But, on the contrary, since the diameter of the electron, to account for its inertia, has to be 10^{-15} metre, or the millionth of a micron, there is so much elbow-room for the 140,000 supposed inhabitants of the mercury atom, that they are roughly as distant from each other, relatively to their size, as are the planets in our solar system.—Electrical World and Engineer.

The Coming Telegraph Tournament.

The tournament committee which pulled off the telegraph tournament at Atlanta, Ga., in March, 1902, and shortly afterward agreed to accept Cincinnati, O., as the next place where telegraphers could find an opportunity to display their ability as Morse operators, are again thinking of making another change and are considering Philadelphia as the most suitable point for the next contest. The Eastern telegraphers think it would be unwise as well as unjust to select another Eastern city as the point where the contest should take place. Chicago, St. Louis, Cincinnati, or even Pittsburg, are more centrally located and one of these points ought to have the preference over any Atlantic seaboard city. If one of these cities is finally agreed upon as the next place of meeting, there will be no excuse for lack of attendance as any one of them is convenient of access to contestants from all parts of the United States and Canada. It is confidently expected that the contestants will

number at least one hundred, almost that number of promises having already been given. The date of meeting has not been announced.

"With Apologies to Mr. Dunne."

"Oi say Hinmissy, phat does yez think iv me new toitle anny how? Shure O'im no longer a common lineman th like O yez. Yeshterday Oi was laid up wid th prevalin ipidemic an this marnin whin Oi rayported at th affice Oi overheard th owld man tell the noight chafe that th pole changer was'nt working yeshterday. Shure it's a hoigh filutin toitle we've got now, bedad. Arrah, and if we howld our whisht till th Wistern Union an th American Hist an Dirrick Coompany effict a mirger, they'll be puttin a illevator at ivery tillygraft post an doin away wid the owld reliable climers. It's mesilf that'll shid many a tear whin they take thim climers away from me. But it's mesilf that's thinking th days forminst us whin we wont know th metallic circuit from th circuit coort, an whin we will agin hear the primaval axe iv th pionair resoundin throughout th land choppin down th poles that hiv hild up th cobwebs iv commerce for the pasht nointeen hoondred year. Yis, Hinmissy, it's yerself an me that's got to take to studyin th coherer an th rumkorf coil ir we ixipct to continue our conniction wid th tillygraf profission. Shure th other marnin whin Oi was stanin round waitin fir orders, I heard th whole chaze till th noight chafe that th ilictric wave hurts, an that some iv th waves that was captured alive before they wus gobbled up by th raisenater wus found to be a thousand yeards in lenth; yis an they say thim same waves is subjic to extraction and conflic-tion."

Hinmissy: "An phat'll become iv yez an me in thim days?"

Dooley: "Shure we'll be sittin in automobubbles out on th prary howldin kites."

"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.

No operator should fail to read TELEGRAPH AGE regularly. It will pay him to do so.

LETTERS FROM OUR AGENTS.

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

MEMPHIS, TENN., WESTERN UNION.

Mr. Phil G. Kern, who assumed charge of this office as manager on December 1st, relieving Mr. Emmett Howard, resigned, has made an excellent impression with the business public and office force here. He has proved himself to be a wideawake and hustling manager, well adapted to the growing business center Memphis has developed into. Our office is being generally overhauled, enlarged and improved in all departments. Contracts have been let for handsome new business office fixtures, which, when completed, will be second to none in the South. Large and attractive signs are being placed upon the building and in the operating room the improvements are even more pronounced. Many new circuits have been added since Memphis' importance as a distributing point has become known, notably a duplex to Washington and two quadruplexes to Dallas. All of the old out-of-date machinery has been removed and the latest apparatus installed.

Mr. Edward E. Cord, who was appointed chief operator last September, has made an enviable record in reorganizing and building up the operating department. His ability as an electrician and a practical executive is well-known and needs no comment here. Others of the force are:

J. P. Lee, assistant manager; Chas. H. Johnson, night chief; Ralph Vestal, Jr., wire chief; Victor Crooker, traffic chief; Geo. A. Bishoff, quadruplex chief; Wm. G. Lea, all night chief; Phil M. Byrne, night traffic. Operators: G. N. Arnold, E. K. Andrews, W. L. Andrews, W. D. Crenshaw, Miss Effie Coker, John Connors, Herman Fisher, August E. Fox, A. B. Fountain, R. E. Griffey, G. W. Gustafson, H. H. Honnoll, C. L. Herr, C. L. Koch, W. C. Lee, R. I. Lane, J. A. Latture, E. M. Matthews, F. W. McCarty, J. G. Phipps, E. A. Roper, W. E. Richmond,

Miss Daisy D. Russell, Ralph M. Silvertooth, S. E. Sheets, J. A. Stinson, C. L. Taylor, W. M. White, G. H. Waggener, B. B. Westcott, R. E. Oliphant, H. A. Culver and some ten or fifteen more who are too modest and self-effacing to have their names appear in print.

F. J. Cord, until recently quadruplex chief here, has been appointed chief operator at Hot Springs, Ark.

S. T. Butler, of this office, was appointed manager at Water Valley, Miss., on February 1.

Branch Offices: Board of Trade, W. D. Crenshaw, manager; Cotton Exchange, E. A. Roper, manager, R. E. Griffey and G. W. Gustafson, operators. Wholesale district: Sidney A. Guy, manager; C. H. Waggener, operator. Commercial Appeal loops, Christopher Reilly; Morning News, W. M. White.

CLEVELAND, O., POSTAL.

On the evening of January 27, the "Cleveland Telegraphers," an organization composed of Postal, Western Union and railroad operators, held their first grand ball at Trostler's Hall. The ball was promptly opened at 9 o'clock with a grand march, in which seventy-five couples participated. Owing to the inclement weather it is estimated that fully fifty couples were unable to attend.

George M. Rouchert has been appointed cashier, vice A. R. McGrath, resigned.

Miss Anna Ross has resigned to accept a position with this company at Canton, this State. BUFFALO, N. Y., POSTAL.

F. J. Slocum of Niagara Falls, N. Y., has been appointed night operator at the Wadsworth street office, to succeed G. C. Sears, who has been transferred to the main office.

On account of the increase in business at the Board of Trade, Miss Libby McMillan has been assigned to that office.

Messrs. Higgins and St. John still continue to do polished work on the New York bonus wire.

A. H. Lockwood is on the sick list with a severe cold.

Still living in Buffalo are four of the pioneer telegraph operators of the world, and two of these four are yet active in the business.

The four men are Nathaniel Hucker, traffic chief of this office; Madison Buell, with the Western Union Company; David Kissock, retired, and Charles N. Haskins, also retired.

These men have seen the evolution of telegraphy through all of its marvelous improvements and expansion, growing from its inception in Buffalo in 1846, when a single wire ran from here to Lockport, 26 miles distant, until the earth has been encircled by electric nerves for the transmission of thought.

CHARLOTTE, N. C., POSTAL.

Clifford Spence, a messenger employed in this office, performed a feat in this line of duty, recently, that has won for him much commendation. He was instructed by a local druggist to deliver a bottle of serum at Davidson, this State.

a point twenty-two miles distant. The circumstance was urgent, for the medicine was required to relieve desperate cases of sickness. Without delay, even not reporting at the office, he mounted his wheel and in a pouring rain rode the first nine miles of his journey. The remaining thirteen, owing to the bad condition of the road, he walked, save for a short "lift," dragging his wheel. The boy was provided with a sum of money and a ticket and was enabled to return to Charlotte by rail. The promptness of the boys' action resulted in the saving of one of two cases of blood poisoning.

BOSTON, MASS.

The International Telephone and Telegraph Company has organized under the laws of Maine with a capital of \$1,000,000. Among the promoters are Hon. Willard Howland, Chelsea; Thomas Roche and C. J. Groves, of Boston. Mr. J. W. Larish is the electrician of the company.

Western Union Changes—Repeater Chief James F. Burke has been transferred to the southern switch board, vice Richard Brewer to traffic chief vice J. A. Dougher.

PHILADELPHIA, PA.

My motto.—Honorable Dealing. D. A. Mahoney, Special Representative Western Union Telegraph Company, Philadelphia. Specialties: Remington No. 2 and Smith No. 1, typewriters, fitted with reversible rolls and guaranteed, \$40 to \$50. Send for booklet, and easy monthly terms in Telegraphers' Club now forming for purchase of Fay-Sholes and Fox typewriters. All makes rented three dollars monthly. Operators DO NOT THINK of applying for work in Philadelphia unless you use the "Mill." Easy terms for right people.

POSTAL.

The crowded appearance of our main office is a natural outcome of an increasing business, and any further progress in the same proportion as during the last five years will necessitate an encroachment on space now occupied by others.

Absence due to the illness of night manager C. F. Meyers and day-operator Hattie Hoppell at the Broad street station office, has made it necessary for the Messrs. Carl Jansen and Leo Miller to work practically double time.

Through the courtesy of one of the hotel managers of Atlantic City, Mr. Geo. W. Phillips, our manager at that place, was invited to make up a member of a New Orleans, La., party. It is needless to say that the invitation was accepted.

MONTREAL, QUE., CANADIAN PACIFIC...

A very pleasant evening was recently spent at the home of Miss St. Pierre, of the Windsor st. station. A number of the Knights of the Key were among the invited guests. During the evening a musical selection on the clarinet, violin and cornet with piano accompaniment was well rendered by Messrs. Egli, St. Pierre and Lee, Miss

Clare Wheeler of the Great North Western Telegraph presiding at the piano. Miss Wheeler's solos were also well rendered, and she excelled as an accompanist.

Mr. Fred Wesley Lee has resigned to accept a position with the Great North Western, Toronto, Ont. His departure will be much regretted. Several entertainments were given in his honor during the week preceding his departure.

Mr. S. S. Dickenson, superintendent of the Commercial Cable Company, Hazel Hill, N. S., who recently arrived from Honolulu, was among the late visitors.

DETROIT, MICH., WESTERN UNION.

About forty of the operators gathered at the Oriental Hotel on the evening of February 15, to pay a tribute to a well-loved man, our ex-manager, Chas. A. Elster. The affair was termed a Dutch lunch, and though elaborate, was informal. The heartiness and spontaneity of the tributes were evident of the esteem in which Mr. Elster is held by his many friends. Toasts were responded to by many of the operators. Pretty menu cards, embellished with the half-tone picture of Mr. Elster, and the names of those present, were carried away as souvenirs of the occasion.

A feature of the evening was the silent toast drunk to Mr. Elster's predecessor, M. S. Corbett, of whom Mr. Elster spoke in a feeling manner.

ST. LOUIS, MO., WESTERN UNION.

Fred Jacobson spent a week recently at his home in Kansas City.

George Goehringer made a brief trip to St. Louis from Jefferson City.

Miss Nellie Morrissey is now working at the main office having left her outside position.

Miss Leeper, manager at Alton, Ills., has resigned and is now working in this office.

Miss Rosa Burt who has worked for the Long Distance Telephone Company for the past two years is back at the main office.

Miss Mae Michaels has returned from an extended visit through the South.

Joseph Barry recently had charge of the office at Murphysboro for a period of two weeks.

Geo. Baron and Frank Plain, two expert ping pong players, operators on 'Change, will play an exhibition game for the benefit of the tack society.

The mother of Mrs. Harts died on February 4.

The personnel of this office is made up as follows: L. N. Boone, chief operator; C. W. Groos, assistant chief operator; C. H. Shell, traffic chief; A. E. Van Tyne, wire chief; E. L. Parmelee, force chief; J. J. Lane, assistant wire chief, and loop chief; C. W. Frey, chief Eastern (first) division; C. A. Riber, Chief Chicago (second) division; C. W. Crary, chief Southern (third) division; Frank Spencer, way chief, M. A. Hawley, Wheatstone chief, and L. Schofield, chief check.

Emergency assistants: J. L. White, C. A. Clark and Andrew Steinbach.

The night force embraces the following: M. D. Crain, chief operator; H. V. Crain, traffic chief; S. B. Fairchild, wire chief; J. H. Gallagher, loop chief; E. H. Johnson, chief first division; H. G. Gosting, chief Southern division; M. M. O'Neill, chief way and city departments, and L. P. Custer, all night chief.

The brother of R. H. Bohle, manager at this office, died on February 17th after a brief illness. Mr. Bohle was an old resident of St. Louis and was serving as U. S. Marshall, an appointee of President McKinley.

CHICAGO, ILL., WESTERN UNION.

Storm upon storms! It seems as though old Chicago was the besieging point, and the way this old town has been pelted is a caution. But she has had her armour plate on and all sails set to meet the terrific onslaught. Her good old wires were prostrated right and left, but never daunted she picked them up one after another many times. Her gallant crews and captains worked unceasingly night and day and the fierce battle was fought and conquered and she is now sailing in calm, smooth water with her strong cables of intelligence reaching every port. So much for the application of known methods of scientific manoeuvre.

During the recent storm and consequent prostration of wires, Chicago was telegraphically cut off from the outside world. But it was of short duration, for two vantage points were chosen in which a working through process was started, namely, Hammond, Ind., and Joliet and Bloomington, Ill.

Edward Wells was appointed chief operator and given an efficient force from this office to take up the wires at Hammond and work through East as the trouble was between Chicago and Hammond; and J. O'Connell as chief operator, with another force for Joliet and Bloomington, Ill. The boys who went to Hammond were: Messrs. Dowe, Coyle, Grauvogel, Powers, Atherton, Deiley, Johnson, Guthrie, Selland and Chief Wells; those to Joliet and Bloomington were: Messrs. Coyle, Davies, Fox, Henry, Springer, Riffin and J. O'Connell, chief.

S. D. Ritchie of this office has the sympathy of all in the death of his brother which occurred in California where he went for his health.

Assistant Loop Chief Frank Likes, has resigned to accept a position in the office of W. W. Kuder, superintendent of telegraph of the Chicago, Burlington & Quincy Road.

Samuel Schulkins, wire chief at the West Board is very ill with appendicitis, although reported as somewhat better at this writing.

Mr. M. Culp, formerly of the St. Louis local, has resigned to go with the Chicago & Eastern Illinois Road.

Mrs. Helen Cummins, for the second time this season, is quite sick with grip.

Miss Kernan of the St. Paul division has returned from a vacation passed at Beloit, Wis.

Division Chief Frank Crittenden, recently sustained a painful injury, in a fractured rib by falling down stairs.

Mr. George Downey was assigned temporarily at Bloomington, Ill., to take night report for the "Pantagraph." He left much to the displeasure of that esteemed journal, which was entirely captivated by the extreme courtesy shown them by Mr. Downey in helping them out during the recent wire prostration, and by the excellence of his work.

Wire Chief Jerry Mereness has returned from Des Moines, Iowa, where he has been for a week or so straightening out some wires and instruments.

NEW YORK CITY.

"My Old Virginia Home Upon the Farm," "Utopian Waltzes," and all popular music, 18c. each. Pianos sold \$1 per week. B. L. Brannan, 195 B'way, N. Y.

NEW YORK.

Colonel R. C. Clowry, president and general manager; B. Brooks, general superintendent; C. H. Bristol, general superintendent of construction, and F. J. Scherrer private secretary to President Clowry, are absent on a business trip South.

Mr. J. C. Barclay electrical engineer of the company, has moved his office from the sixth to the fourth floor, where he will have ample space to meet the requirements of his rapidly growing department.

Mr. Edward C. Cockey, superintendent of supplies and general purchasing agent, is still absent on account of sickness.

Mr. A. G. Williams, one of the syphon recorder operators in the central cable office has resigned, and Mr. J. C. E. Chevallies from South America, has been appointed to fill the vacancy.

Mr. F. O. Nourse, formerly general traffic chief of this department was a recent visitor while en route from his home in New Hampshire to Florida.

A splendid opportunity for a member of the telegraph profession to purchase a well established business is advertised on page 132, by Mr. G. E. Lawton, who was for many years a member of the profession in Superintendent Humstone's office. Mr. Lawton left the service about six years ago to establish the business he now offers for sale. He has recently formed a partnership with his brother who is a successful contractor, and his new duties will occupy all of his time which is the reason for his desiring to dispose of the business at Boonton, N. J.

F. J. Sheridan, and Miss Nina Voorhees have secured the names of nearly one hundred persons in this department for the purpose of forming a dramatic and social club. They are quite enthusiastic on the subject and predict an organization which will add much to the pleasure and profit of its members and the craft in general.

Miss Louis Cowan, and Miss Aggie Sullivan were recently added to the list of operators.

Considerable discussion over the question of whether the operators of twenty-five years ago, or those of the present time are the better is going on, and it is the consensus of opinion, especially of the older men, from the fact that there were less facilities for getting off business in the long ago that a superior grade of men then prevailed. Twenty-five years ago every man in the main office was a star, and now with so many junior operators such is far from the case.

Edgar M. Tomlinson, who was thrown from a trolley car at Woodhaven, L. I., about a month ago and had his collar bone dislocated, is slowly improving.

Jessie, the only child of Theodore B. Fullon of this office, died recently of pneumonia. Mr. Fullon has had many afflictions of late and the sympathy of all is strongly felt for him.

Allen M. Pennock, aged 45 years, of the quadruplex department, died of pneumonia on February 26 after an illness of but a few days. His death is a great shock to his numerous friends in the office where he was held in high esteem.

The quadruplex department has been transferred from the seventh to the eighth floor, and rapid progress has been made toward getting the seventh floor annex ready for the city line department.

John K. Calvert who has been ill with an abscess in his head for some weeks has returned to duty.

POSTAL.

Frank E. Ferguson, aged twenty-five years, employed in the main office operating department since last June (previously at the 94 Leonard Street branch) died February 21 at St. Joseph's Hospital of tuberculosis after an illness of one month. He had been ailing for nearly a year previous. Mr. Ferguson was well liked by all and was a careful, conscientious worker at his profession. His remains were interred Tuesday, February 24, in the old Washington Cemetery, Peekskill, N. Y.

There are quite a number of absentees at present occasioned of various kinds of illness, principally grip.

Assistant Manager F. F. Norton is still confined to his home but is improving rapidly, and expects to be at his desk by the first of March.

Mr. E. J. Liston has returned to duty after a serious illness of nearly four weeks.

Mr. L. M. Harding of the second Philadelphia bonus wire is back from a 30 day vacation spent in the West.

Resigned: J. Plummer and F. M. Smith.

The International Municipal Electricians.

The executive committee of the International Association of Municipal Electricians held its annual meeting at Atlantic City on Washington's

birthday, February 22, where much important business was transacted.

Those present were: W. H. Thompson, president of the association; Walter M. Petty, of Rutherford, N. J.; J. B. Yeakle, of Baltimore, Md.; F. C. Mason, of Brooklyn, N. Y.; Frank P. Foster, of Corning, N. Y., secretary of the association; A. C. Farrand, of Atlantic City, N. J. and F. Pearce, of New York.

Telegraph Line to St. Michaels.

Early in April General Greely, chief signal officer, United States Army, expects to be able to announce the completion of the Alaskan telegraph line to St. Michaels. Through a winter unparalleled in the annals of army occupation in Alaska, the Signal Corps has been working to complete this important line from Fort Egbert, on the Canadian frontier, to St. Michaels. One man lost his life in the heavy weather, and the working parties have endured every sort of privation in their work. The news of the discovery of gold in the Tanana Valley also caused a stampede of the men engaged in the work. Despite all these difficulties, however, the work has gone on, and by April over 1,700 miles of wire will be completed. This includes the main line from Fort Egbert, the Skagway line and the short Juneau strip. The cable from St. Michaels to Nome will also have to be relaid, or some part of it, at least, as soon as the ice breaks up. The unusual winter has caused a vast quantity of ice, and the cable has been ground up and severed by the action of the floes. The completion of the work, which has occupied the signal corps for several years, will be a notable triumph for that branch of the service.

United States Military Telegraph Corps.

Mr. F. A. Stumm, of 195 Broadway, New York, is receiving many letters of encouragement in his efforts to obtain proper recognition from the Government for the members of the United States Military Telegraph Corps, which rendered such invaluable service to the Government during the Civil War. Mr. Stumm is in receipt of the following from Congressman Fordury, of Michigan, who is chairman of the Committee:

"I find your favor of the 9th inst., on my return from a business trip west and note fully what you say. I shall endeavor to have the Committee grant you a hearing if possible, although I learn that they have discontinued their meetings owing to the many reports of theirs which can not be acted on now for lack of time. If I am successful at this time will let you know."

Organization.

President McDonald, of Chicago, and Vice-President J. Reidy, of Boston, have been chosen to be the arbitrators for the international union of commercial telegraphers at the conference at Washington, March 15, with the representatives of the order of commercial telegraphers. The conference is for amalgamation.

1903 ANNOUNCEMENT.

FOR TWENTY YEARS *Telegraph Age* has represented the great telegraphic interests of this country. During this long period, so eventful in the history and development of telegraphy, this paper has endeavored faithfully to advance the welfare of every individual connected with the telegraph. How well this has been appreciated is attested by the fact that thousands of names are still on its books of those who, having drifted into other callings, never have forgotten their former telegraphic experience, or ceased to cherish the friendships and associations then formed. For telegraphers are clannish, loyal to each other, and, we are pleased to say, eminently so to their single representative paper, and which, let it be said, has ever sought to be loyal to them.

THE DEPARTMENT OF CORRESPONDENCE, so long finding expression in the familiar and chatty pages by which members of the fraternity in all parts of the country are kept constantly and pleasantly informed of all changes and transfers, business and social events, marriages and deaths, occurring within their ranks, has proved to be of abiding interest to thousands everywhere.

THE TECHNICAL ARTICLES, highly instructive in character and conveying practical and much-needed information on every phase of modern telegraphy, have won high commendation because of their intelligence and the broad scope of the subjects brought under discussion. **They have been invaluable to the active operator as a practical aid in his daily employment.** The series of articles now being contributed by Willis H. Jones, to which attention is especially requested, are alone worth more than the subscription price of the paper. Mr. Jones is a prominent New York wire chief operator. His articles explain, in simple and easily understood language, the duplex, quadruplex (how to install and balance them), batteries, dynamo machinery, the condenser, galvanometer and electrical testing, switchboard testing, repeaters of all kinds, etc. All sorts of possible combinations that the telegrapher is asked to solve are given painstaking and careful attention.

THE GENERAL SUBJECT OF TELEGRAPHY in its many aspects, its progress and development, in this and other countries, has been so treated as to present a vast fund of information. The bound volumes of *Telegraph Age* have come to be regarded as works of reference. They will increase in value as time goes by.

THE PROGRESSIVE CHARACTER of the paper itself is generally recognized, and its influence and high standing in all telegraphic and allied electrical circles is freely acknowledged.

CONDUCTED BY EXPERT TELEGRAPHERS, graduates themselves from the key, their training and sympathies put them in close touch with the conditions and needs of the craft still engaged in receiving and sending dots and dashes.

THE SUBSTANTIAL ENCOURAGEMENT received in the past has already given *Telegraph Age* a wide circulation. And this has steadily grown. Yet the field is constantly expanding. Considering the variety, extent and character of the important matter the paper is now offering in all of its departments, so thoroughly meeting the requirements of up-to-date telegraphic information, technical and general, this journal should be an indispensable factor, not only in every telegraph office in the United States, Canada and Mexico, including those of the railroad, the police-telegraph and fire-alarm systems, but to every individual telegrapher as well. To the upbuilding of this large circulation, the accomplishment of which means as much to the subscribers as to the publisher, because affording the guarantee of a still further improved paper, we ask the active co-operation of our friends everywhere.

TELEGRAPH AGE has always sought to exert a helpful influence to the fraternity collectively, and to the telegrapher as an individual. Now in turn, when it has mapped out for its future a larger, fuller and a more broadly comprehensive course, still ever keeping in view the advancement of the telegraphers' best interests, it appeals to its friends, to the members of the craft everywhere, to render the aid which they alone can give to make this subscription effort supremely successful.

THE PERSONAL CONSIDERATION OF TELEGRAPHERS is earnestly called to this statement, and their subscription and those of their office associates are solicited. Will the reader kindly call attention to this matter? A sample copy will be sent free to any address on application.

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Our Book Table.

Manuel No. 3, treating on the Electrical Instruments and Equipments of the United States Signal Corps, prepared under the direction of Gen. A. W. Greely, by Capt. Edgar Russel of the Signal Corps, has made its appearance. This volume will be of especial interest to telegraphers inasmuch as it deals much on the practical features of the telegraph, putting before the individual those essentials of instruction so necessary for a common understanding of the subject. The author in his introduction gives courteous acknowledgement to TELEGRAPH AGE for valuable information gleaned from its pages, notably from the articles contributed by Mr. Willis H. Jones, some of which are republished, and whose "Pocket Edition of Diagrams, etc.," has been freely drawn upon.

The minutes of the Twenty-Second Annual Convention of the Old Time Telegraphers' and Historical Association, compiled by the secretary, John Brant, of New York, has made its appearance. The book gives evidence of careful work in its many details, and those who attended the convention of the association at Salt Lake City last September, will view with especial gratification the numerous illustrations depicting points of interest in Salt Lake City, Ogden and vicinity, all of which are associated with pleasant memories. The volume also contains the names and addresses of all the members of the association, one thousand or more in all. Full credit is given to Mr. G. H. Corse, of Ogden, president of the association for 1902, and to the

members of the various committees of entertainment associated with him in their very successful efforts in entertaining the large delegation in attendance at the convention.

The next convention will be held at Milwaukee, Wis., in September next at a date yet to be named. Mr. U. J. Fry, of Milwaukee, superintendent of telegraph of the Chicago, Milwaukee and St. Paul Railway, is the president for the current year.

A Poolroom Telegrapher Sentenced.

William Shannon, whose trial has excited some interest in telegraph circles, and who was sentenced to one year and one month in jail for having acted as a telegraph operator in a poolroom, at Yonkers, N. Y., was released ten days later on bail on a certificate of reasonable doubt. The poolroom proprietor was not arrested nor was any other person connected with the place prosecuted. Shannon's attorney, asserted that he did not know who the principals were, but he said that it seemed wrong to him that a man should be punished for working for a salary as long as he was merely an employe of the place and not its actual owner.

Shannon was sent to Sing Sing prison on February 18. Application had been made to the Judge who sentenced him for a stay of sentence, but this application was denied.

It was said that at the termination of Shannon's trial in White Plains there were several poolroom keepers in court, and that they were ready to put up any amount of money to pay Shannon's fine, provided the Judge had decided to fine him, but to their amazement he was sentenced to a term in prison instead.

Shannon, it is said, received \$5 a day for his services as an operator in the poolroom. He refused to disclose the identity of the owners of the poolroom during the course of his trial.

"This is a tough deal on me," Shannon is alleged to have said as he was taken to prison. "Those who should be where I am have not even been brought to trial. I was merely acting as a telegraph operator in the place and all I got out of it was \$5 a day salary. When the place was raided I was singled out and they might just as well have arrested the man who was standing beside me at the time. He was the man who ran the poolroom."

District Attorney Jerome said: "It is a felony under the statutes to aid and abet in running a poolroom. If this man was found guilty of aiding and abetting in running a poolroom he is certainly liable to punishment."

District Attorney Young, who prosecuted Shannon, said that Shannon was guilty of pool selling. "We had conclusive evidence that he was working behind a partition on three different days. He was convicted. That he was employed by the operators of the poolroom and not by a telegraph company both Judge Platt and myself are fully convinced."

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Funny Telegraph "Bulls."

"You are a lid," said the sender. "Well don't let this lid close down on you," retorted the receiver.

A recent message was addressed "John Jacobson, New York Navy Yard." It reached its destination as "John Jacobson, New York Nasty Yard."

"I never make a 'bull' said a 'star', but when receiving this message, "Take care of two cars of cables, they are hungry," for "Take care of two cars of calves, they are hungry," he had no more to say.

A special reached a newspaper office as follows:

Two men walked into the bank, pointed a six shooter in the cashier's face and politely asked for all available cash under peril of his life. The request was promptly complied with, the robbers secured about twenty-five thousand dollars, and mounting their horses rode rapidly away. A posse was immediately formed and gave chase, when suddenly without warning the bandits

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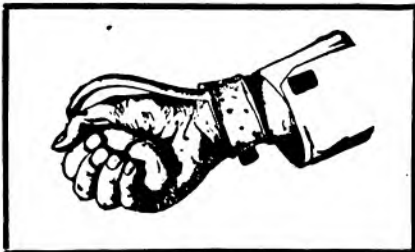
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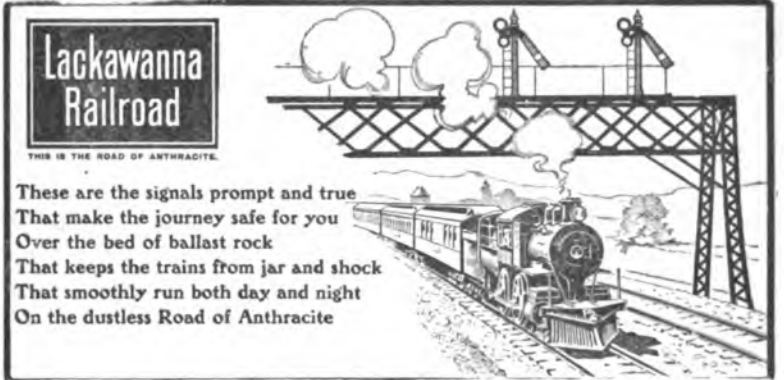
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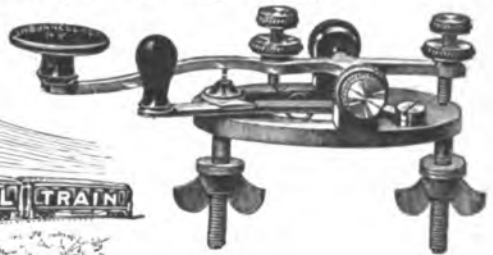
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BY WILLIS H. JONES.

A New Double-Loop Repeater.

The accompanying diagram illustrates the method and connections for the sending side of a comparatively new pattern of a double-loop repeater now owned and used by the Western Union Telegraph Company. It is the invention of Mr. Wm. Wood of Kansas City, where it has been used and tested thoroughly. Its chief value lies in its simplicity. The only instruments necessary are a 300 ohm relay and a 4 ohm repeating sounder, while two resistance lamps of the required value, and an extra battery of 45 volts (in this case) completes the list of accessories. The 300 ohm relay is in series with the 4 ohm sounder or sounders in the branch offices on the loop inserted in No. 2 springjack at the loopswitch, but owing to the high resistance (1,000 ohms), in the relay circuit and weak current flowing, the branch office sounders remain "open" when the lever of the repeating sounder is in an open position and "closed" when the latter is closed.

The operation is as follows:

When the lever is closed it provides a shorter route from the 45 volts to the No. 2 loop and consequently having a greater pressure at the point where the two batteries meet than that of its competitor via the relay circuit, creates a differ-

ence of potential there sufficient to furnish the required current for No. 2 loop. When a branch office on the loop inserted in No. 1 springjack wishes to send he controls the loop in No. 2 springjack by the operation of the lever of the repeating sounder, which he controls, the latter cutting off and on the battery via the 80 ohm lamp route. When the operator at the duplex desk sends, he also controls the repeating sounder via the contact points of the 300 ohm relay, which are held closed by the weak current flowing through the coils of that instrument.

As the opening and closing of the loop in No. 2 springjack demagnetizes the 300 ohm relay, it follows that the polechanger of the duplex apparatus in the main office is operated by the action of the relay lever and contact points. The figures and values given in this illustration are suitable for loops artificially built up to a uniform resistance of 80 or 90 ohms, and fed by 25 volts from the duplex local battery.

The 80 ohms resistance in the extra battery tap is for the purpose of forcing current through that route. Omit it and no current will reach the second loop. Hence the strength of the current feeding No. 2 loop may be altered by substituting a lamp of a different resistance value. While a separate battery of 45 volts for the No. 2 loop may give this repeater a wider working margin, the writer has found it possible to employ but one value of electromotive force all around. In fact the repeater is giving satisfaction in the Western Union office at New York with 25 volts all around, a 300 ohm relay in series with a 300 ohm lamp, and a 10 ohm coil in the extra tap route. The receiving side connections are the same as those made in the standard three transmitter pattern, namely, the first loop in series with a 4 ohm repeating sounder and the second loop through the contact points.

FORMULAE FOR DETERMINING THE REQUIRED NUMBER OF CELLS OF GRAVITY BATTERY FOR ANY GIVEN CIRCUIT.

The problem of how to ascertain the number of gravity cells of battery required to furnish a given value of current in an external telegraph circuit, still seems to perplex, not only our young students, but many who are further advanced in electrical matters.

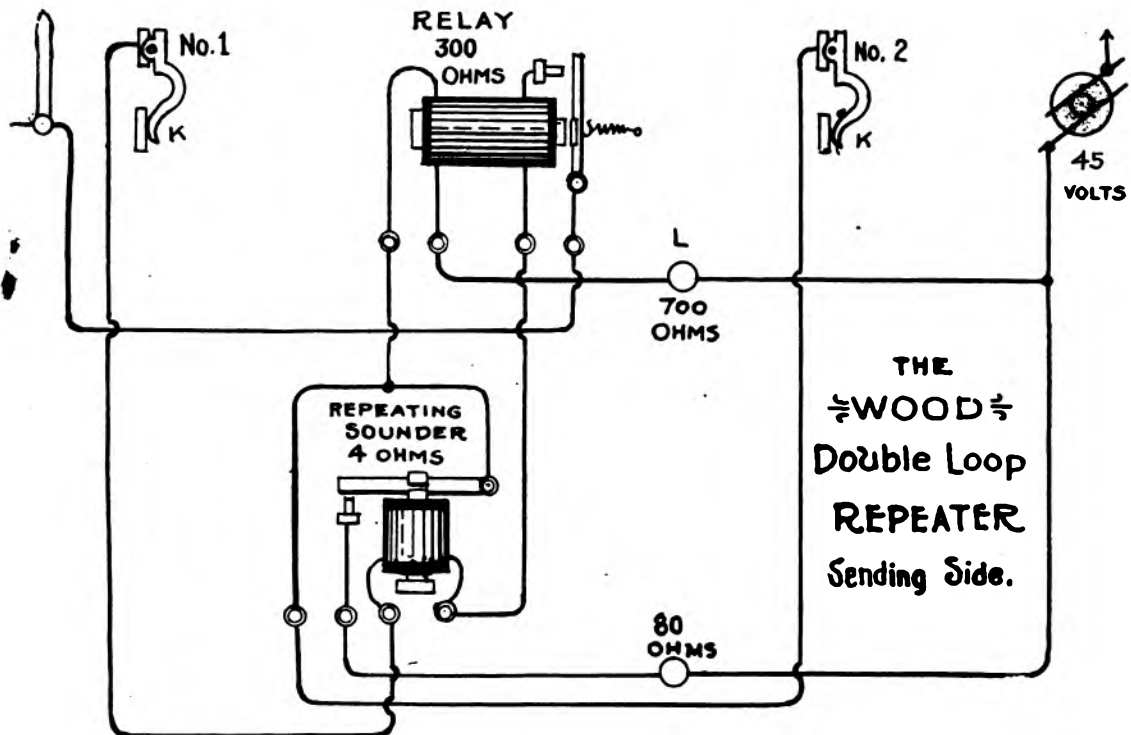
In reply to a recent inquiry concerning this matter we will again try to make the solution of the problem clear. The perplexity is due to the part which the internal resistance of the battery plays in one's calculations.

The student has been told that the electromotive force required to furnish a given strength

of current through a conductor is found by the formula, $C \times R = E$; that is to say, by multiplying the strength of current required by the total resistance in the circuit. Thus, in a main line circuit of, say, 2,000 ohms resistance where relays require 40 milliamperes of current, the number of volts would be found by the formula $.040C \times 2000 R = 80E$.

As the internal resistance of a dynamo is practically negligible, 80 volts from that source will represent the correct value of pressure. And as the electromotive force of a gravity cell is practically one volt, the student naturally concludes that 80 cells of such battery will do the work, but here is where he makes a mistake. The moment he connects 80 cells to an external circuit he has added 160 ohms resistance to it on account of each cell containing at least 2 ohms of internal

It follows then that if we ascertain what proportion of the work is done within the jar the balance of the cell's electrical output represents its effective value for external work. In other words, if the initial value of the electromotive force of a cell be 1 volt its effective value for external work will be 1 minus the pressure required to force the required quantity of current through the liquid in the jar. Now, the internal resistance of a bluestone gravity battery cell in good condition is 2 ohms and its electromotive force practically 1 volt. If the cell is to be used on a 4 ohm sounder circuit there will be 250 milliamperes of current flowing through the cell, and according to Ohm's law $E \div C = R$, $1E \div .250C$ will show that it is capable of furnishing that amount of current through a total of 4 ohms, that is, 2 ohms of external circuit also.



resistance. Dividing $80E$ by $2160R$ shows that the current value would then be less than is required, which loss must be made up by the addition of more jars. If the additional number of jars is estimated by the same rule, the answer will still be wrong, for the reason that while the electromotive force has been made higher the resistance of the circuit has been increased also. A very few words will make this point clear. If we wish to furnish an external circuit with a given strength of current, the electromotive force of the battery must be great enough to produce that value therein in addition to providing an equal strength of current through the cell itself; that is to say, through the internal resistance, for the reason that the strength of the current flowing through a circuit is the same throughout its entire length, and the liquid within the jar is part of the conductor.

It also follows that half of the electromotive force of the cell is used within the jar, leaving the other half as its actual working pressure, hence the number of cells in series required for such circuits is just double the number of volts obtained by the formula, $R \times C = E$.

EXAMPLE.

In a four ohm sounder circuit of 100 ohms, the necessary electromotive force would be $100R \times .250C = 25$ volts. If gravity battery is used, 50 cells will be required.

PROOF.

$50E \div (100 \text{ external } R + 100 \text{ internal } R) = .250C$. It will be seen that the 50 cells has added 100 ohms to the circuit, hence the additional 25 volts is required for internal work.

A simpler method is to divide the total external resistance of the circuit by 2. This will always give the correct number of cells required for 4

ohm sounder circuits, because each cell in series is capable of taking care of 2 ohms of external resistance in addition to its internal resistance. By the same rule the number of cells required for single line 150 ohm relay circuits requiring 40 milliamperes of current may be found by dividing the external resistance by 23, because one cell will take care of 25 ohms in all, 2 of which are within the jar.

EXAMPLE.

Total resistance of external circuit 2000 ohms, current required, 0.40. By Ohm's law $2000R \times 0.40 = 80E$ dynamo. By the simple rule $2000R \div 23 = 87$ cells.

PROOF.

$$87E \div (2000R \text{ external} + 174R \text{ internal}) = 0.40C.$$

Business Notice.

The Telegraphers' Typewriter Company, 122 La Salle street, Chicago, Ill., is distributing a very pretty catalogue among members of the telegraph fraternity in that locality giving them full information regarding the merits of the various makes of typewriters. This company caters to the telegraph trade, and the manager of this department is Mr. O. T. Anderson, a well known member of the telegraph profession.

The Weston Electrical Instrument Company Establishes a New York Office.

For the greater convenience of their numerous customers and to better care for the continued increase of business in New York and vicinity, the Weston Electrical Instrument Company, of Waverly Park, Newark, N. J., has opened a New York office at 74 Cortlandt street. This office will be under the management of Mr. Caxton Brown, who has a theoretical as well as a practical knowledge of the different instruments manufactured by the Weston Company and their particular adaptabilities. This will enable any purchaser, or any person visiting or doing business in New York, who may wish to make inquiries relative to electrical measuring instruments, to come in direct contact with a man who is properly qualified to answer such inquiries.

There will be a show room in connection with the New York office in which will be exhibited the different types of Weston instruments and their special advantages; also the individual parts which make up the instruments. Besides being a great convenience to customers the New York office will eliminate much correspondence in the nature of inquiries, thus reducing time of delivery of orders.

A general impression has prevailed that the Weston Electrical Instrument Company made only voltmeters and ammeters which is not the case. Having what are credited with being the largest and best equipped works in the world for the production of electrical measuring instruments of all kinds, the company is particularly fitted to turn out work of any special character in which the highest excellence of mechanical and

electrical work and design are the important features. They have, in fact, been turning out a large amount of special laboratory apparatus for several years past and are now prepared to make standard cells, standard resistances, galvanometers, and the highest grade of special bridge work, speed indicators, etc.

The Weston Electrical Instrument Company extend a cordial invitation to all interested in the subject of electrical measurements to make use of their New York office either for the purpose of inquiry on the technical points involved or for the prospective purchasing of instruments.

Something for "Wash Day."

There is one disagreeable experience that every family is obliged to pass through, and that is the weekly wash day. Any device therefore, that can be shown to minimize and overcome the usually heavy labor of washing is entitled at least to consideration. More than that, in the case of the "1900" Washer we think a fair trial is warranted on the part of housekeepers by every consideration of self interest. If it can be demonstrated that this washer possesses qualities which the drudgery of the family wash can be overcome, or even ameliorated, then it is only acting the part of common sense for the weary housewife to write to the company for full particulars. Now, this famous washer is advertised on another page and the statement there made is certainly an interesting one, particularly as it embodies an offer to send the washer free, for trial, on especially generous conditions.

The probabilities are that whoever reads it, if the practical side of washing is a dominant weekly adverse influence in the home, will be inclined to look further into the merits of an apparatus so confidently offered. Just write to the "1900" Washer Company, 56-H State street, Binghamton, N. Y.

Municipal Electricians.

"In St. Petersburg, the capital of Russia, the arrangement of fire alarms is rather peculiar and decidedly unique, and the fire alarm telegraph is an unknown thing. Instead a fireman is at all times in the tower of the City Hall, and he watches the surrounding city to catch the first glimpse of a fire. When a fire is discovered during the day he runs up black balls on the top of the tower as signals; at night red lanterns are used. The number of the balls or lanterns shows the district or ward in which the fire is located," says a writer on "Foreign Fire-fighters," in the January Cosmopolitan. "As soon as the signal is seen by the man on duty at an engine house he rings a bell outside, which calls together the members of the company, who may be scattered over a couple of blocks. This method is not conducive to quick time in reaching the scene; and from twenty minutes to half an hour is good work, unless the fire happens to be near an engine house."

Directory of Annual Meetings.

Association of Railway Telegraph Superintendents will meet on May 13, 14 and 15, at New Orleans, La.

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 Atlantic City, N. J.; time not yet selected.

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

Old Time Telegraphers' and Historical Association meets at Milwaukee, Wis.; time not yet agreed upon.

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 June 16, 17, 18, at Nashville, Tenn.

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

Western Union Financial Statement.

The Western Union Telegraph Company issues the following statement for the quarter ended March 31, the figures for the current year being partly estimated, while those for 1902 are actual:

	1903.	1902.	Changes.
Net rev ..	\$1,850,000	\$1,592,218	Inc . \$257,782
Bond int..	260,000	254,770	Inc . 5,230
Balance..	\$1,590,000	\$1,337,448	Inc . \$252,552
Div'ids. . .	1,217,011	1,217,008	Inc . 3
Surplus. .	\$372,989	\$120,440	Inc . \$252,549
Prev surp.	12,176,386	10,209,866	Inc . 1,966,520
Total . .	\$12,549,375	\$10,330,306	Inc. \$2,219,069

The above statement, partly estimated, enables us to give the approximate figures for nine months of the fiscal year (July 1 to March 31) as follows (this year is partly estimated, while the preceding year's figures are actual):

	1903.	1902.	Changes.
Net rev ..	\$6,214,504	\$5,399,852	Inc . \$814,652
Bond int..	765,100	737,810	Inc . 27,290
Balance..	\$5,449,404	\$4,662,042	Inc . \$787,362
Divid's . .	3,651,032	3,651,022	Inc . 10
Sur	\$1,798,372	\$1,011,020	Inc . \$787,352
Prev sur .	10,751,003	9,319,286	Inc . 1,431,717
Total . .	\$12,549,375	\$10,330,306	Inc. \$2,219,069

The actual returns for the December 31 quar-

ter were: Net revenue, \$2,117,330; bond interest, \$252,550; balance, \$1,864,780; dividends, \$1,217,011; surplus, \$647,769; previous surplus, \$11,528,617; total surplus, \$12,176,386. The executive committee recommended the declaration of the regular quarterly dividend of 1 1/4 per cent.

The first part of the statement herewith reviews the figures for the preceding quarter and shows that the net earnings of that quarter ended December 31 last, after deducting interest on bonds, were \$1,864,780, which is \$17,330 more than the estimate made three months ago, and \$250,000 more than the earnings of the corresponding quarter one year ago.

The quarter upon which the company has now entered and which is covered by the last part of the statement is the leanest quarter of the year and the estimate of net earnings for the quarter, after deducting interest on bonds, is \$1,590,000, which is \$252,000 more than the net earnings for the corresponding quarter of last year.

The fiscal year of the company began July 1 last, and the returns now in show actual net earnings over all expenses, including interest on bonds, as follows:

Quarter ended Sept 30, last.....	\$1,994,624
Quarter ended Dec. 31, last.....	1,864,780

Total for the half year.....	\$3,859,404
Add estimated net earnings for the current quarter	1,590,000

Makes total net earnings for the three-quarters (one-quarter estimated)..\$5,449,404

This is at the rate of 7.44 per cent. for the fiscal year.

Recent Telegraph Patent

A patent, No. 721,202, for a fac simile telegraph, has been awarded to Edward E. Kleinschmidt, of New York.

Wireless Telegraphy.

It is alleged that the attitude of the German Government on the whole subject of wireless telegraphy will not be defined until the proposed meeting of the international Congress on the subject is held. The date of this conference is still uncertain, as the British reply to the invitation has not been received.

United States Consul L. H. Ayme of Guadeloupe, reports that a regular daily communication has been established between this colony and Martinique by a system of wireless telegraphy. The submarine cable system to Martinique having been interrupted for several months, this is the only means of communication established with that island.

President Newman, of the New York Central Railroad, has given permission to the De Forest Wireless Telegraph Company to equip the Twentieth Century Limited train with wireless apparatus and the experiment will continue for two months, beginning April 1. Professor Ives,

of the University of Cincinnati, will resign his position, and will assist in the experimental work. The De Forest wireless telegraph station for Cleveland will be located at Euclid Beach, a summer resort about ten miles east of that city. Two masts 200 feet high will be erected. A cross wire will connect the top of these masts. From this wire twenty vertical wires will be strung to the ground and will form the receiving part of the plant.

The Railroad.

Mr. Joseph Munday has been appointed superintendent of telegraph of the Colorado and Southern Railroad, with headquarters at Denver, Col., succeeding F. E. Clary, resigned.

Mr. W. W. Ashald has been appointed superintendent of telegraph of the Grand Trunk Railway, with headquarters at Montreal, Quebec. He will have charge of the telegraph and telephone service.

The March meeting of the Railway Signaling Club was held in New York on the 10th inst., President H. C. Hope, of St. Paul, Minn., presiding. The most important subject discussed was automatic block signaling systems. It was the consensus of opinion that an ideal system of this character had yet to be invented.

Messrs. J. H. Jacoby, president; W. J. Holton, vice-president and P. W. Drew, secretary and treasurer, constituting the Executive Committee of the Association of Railway Telegraph Superintendents, have issued the following circular:

"The twenty-second annual meeting will be held at the St. Charles Hotel, New Orleans, La., on May 13, 14 and 15. Rates at the hotel will be from \$1.50 per day up for each person, European plan, two or more in a room, and from \$3.00 per day up for each person American plan, two or more in a room. Single rooms for one person \$2.00 up European plan, and \$3.50 up American plan. Rooms with private bath attached \$3.00 per day for each person European plan, and \$4.50 per day up American plan. Members are requested to engage rooms personally from A. R. Blakesley, manager. Take receipts for Pullman accommodations full fare going trip, return transportation free upon presentation to Mr. S. M. Carley, district superintendent, New Orleans. The president has appointed as committee of arrangements, Messrs. Geo. M. Dugan, E. E. Torrey and Geo. L. Lang.

"The convention promises to be one of great interest. Every member, active and honorary, who can possibly do so, is urged to be present. Very important matters affecting railway telegraph interests will be brought before the meeting for discussion and action."

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

Personal Mention.

Colonel J. R. McIntosh, general council of the Postal Telegraph-Cable Company, at Atlanta, Ga., is reported to be seriously ill at that place.

Mr. S. S. Dickenson, superintendent of the Commercial Cable Company station, at Canso, N. S., is in New York on business connected with his company.

Mr. Melville E. Stone, general manager of The Associated Press, who has been absent for nearly three months making a tour of the European offices of the association, returned on the 4th inst.

Mr. Charles Selden, superintendent of telegraph of the Baltimore and Ohio Railroad Company, Baltimore, Md., is enjoying a vacation at Nassau, N. P. He is accompanied by his daughter.

Mr. Edward A. Leslie has been elected second vice-president of the Kings County Electric Light and Power Company, of Brooklyn, which controls the Brooklyn Edison system, of which he has been identified for some time past. The office is a new one. Mr. Leslie is an old time telegrapher and during the existence of the Baltimore and Ohio Telegraph Company was its Eastern general superintendent.

Mr. D. H. Bates, whose last active telegraphic service was in connection with the Baltimore and Ohio Telegraph Company, for several years past has been identified with the Willcox & Gibbs Sewing Machine Company, New York City, where he has charge of the "Overlock" machine department. Mr. Bates, however, still retains his old time interest in all up-to-date telegraph matters and is never happier than when any one of his numerous telegraph friends calls upon him. He has been identified with the Gamewell Fire Alarm Telegraph Company, as one of its vice-presidents for over twenty years.

Recent New York Visitors.

Mr. E. B. Pillsbury, superintendent of the Postal Telegraph-Cable Company, Boston, Mass.

Mr. C. A. Darlton, superintendent of telegraph of the Southern Railway, Washington, D. C.

Mr. W. F. Williams, superintendent of telegraph of the Seaboard Air Line, Portsmouth, Va.

Mr. H. J. Pettingell, formerly superintendent of the Postal Telegraph-Cable Company, Boston, Mass., now vice-president of the Erie Telephone Company.

Mr. H. C. Hope, superintendent of telegraph of the Chicago, Minneapolis, St. Paul and Omaha Railroad, St. Paul, Minn. Mr. Hope was accompanied by his daughter.

Everybody in the telegraph service is reading "Pocket Edition of Diagrams," etc. It is endorsed by experts, and no telegrapher who would gain a thorough knowledge of his business, told and illustrated in a manner clear to every reader, should fail to procure a copy. See advertisement.

General Mention.

Mr. A. F. Curlett, formerly operator at the Western Union main office, Wilmington, Del., has accepted a position as operator for the Du Pont Powder Company in that city.

Mr. R. J. Hewett of St. Louis, has entered the employ of The Hall Signal Company, New York. Mr. Hewett has for a number of years been connected with the telegraph department of the Missouri Pacific Railway Company.

Mr. A. A. Davis, formerly manager of the Postal Telegraph-Cable Company., Little Rock, Ark., is now the travelling representative of the Memphis (Tenn.) Exchange, a brokerage concern having many leased telegraph circuits reaching various Southern cities.

Mr. Joseph Maxwell, assistant superintendent of the American District Telegraph Company, Buffalo, N. Y., and Thomas E. Russell, assistant superintendent of the same interests at Meriden, Conn., recently inspected the American District equipment at Milwaukee, Wis., which is regarded as an ideal and up-to-date district plant.

Mr. D. B. Halcomb, a well known telegrapher now in the typewriter business at Sedalia, Mo., has issued an eight-page leaflet entitled "The Little Traveler," which will make its appearance monthly. It contains some local telegraph news, and a good deal of matter relating to the typewriter, which Mr. Halcomb now represents.

Both telegraph companies report a large increase in business recently handled. Probably all telegraph managers are not aware of the fact, but it is true that an efficient and quick service creates new telegraph business. When a manager understands this and he makes it his business to see that every message is handled promptly, he will soon realize that his customers will have more business for him to transmit.

The new line construction work erected by the Western Union Telegraph Company on its right of way between New York and Philadelphia over the Central Railroad of New Jersey, and the Philadelphia and Reading Railroad which was described in our previous issue, has brought forth many favorable commendations by expert judges. Those who are best acquainted with this class of work state that at last the telegraph companies are beginning to recognize the necessity of erecting pole lines that will withstand unusually severe storms. The line referred to is no doubt the most substantial ever constructed in this country. There are 80 to 90 poles to the mile and it has already weathered one unusually severe storm. Substantial lines of this kind are bound to yield good returns to the company erecting them.

Resignations and Appointments.

Mr. H. H. Demarest has been appointed manager of the Western Union Telegraph Company, at St. Joseph, Mo., vice Rodney Smith, resigned, to enter other business.

Mr. W. P. Rivers has been appointed manager of the Western Union Telegraph Company at Thomasville, Ga.

Mr. G. W. Lloyd of the Western Union Telegraph Company, Minneapolis, Minn., has been appointed assistant superintendent of the same interests, with headquarters at that place, vice J. Levin, recently transferred to New York as inspector of the Eastern and Southern divisions.

Obituary.

J. M. Nye, aged 60 years, an old time telegrapher, died at Inkster, N. D., on March 3.

Thomas E. Ryan, aged 27 years, of White River Junction, Vt., died at that place on March 3.

George W. Hughes, aged fifty-two years, a well-known telegraph operator in Pittsburg for twenty-six years, died in that city on January 9, of heart disease.

Anthony Pinkerton Prichard, a member of the United States Military Telegraph Corps, died at his home in Tacoma, Wash., on February 21, where for more than eighteen years he had been a prominent citizen in that city. He was born at Granville, O., sixty-one years ago, and had been in the service of the Western Union at Jamestown, N. Y., and at Jamestown, N. D., at the latter point as manager. The death of Mr. Prichard revives old war memories by former comrades, and it is related how, in 1861, a group of telegraphers consisting of W. J. Dealy, M. H. Kerner, Mr. Prichard and others, went to the front together, there soon to be separated, some to meet in after years and others yielding up their lives for their country, which they served as faithfully as those who carried the musket. Mr. Dealy and Mr. Prichard were assigned to Gen. Banks' headquarters, but the sudden illness of Mr. Prichard made it necessary for him to return to his home, and the two men never afterwards met.

Appointments in the American District Telegraph Company, New York.

In the rearrangement of the executive force of the American District Telegraph Company, New York, in which Mr. D. Skelton lately succeeded H. E. Roberts as superintendent, Mr. J. C. Turner, for twenty-five years connected with the company, having begun as a messenger, and subsequently filling various positions up to the present, for a time being transferred to Rochester, New York, as superintendent of the District Telegraph of that city, was on February 10 promoted to the managership of the messenger department. On the same date Mr. A. J. Roberts, who first entered the service of the company in 1879, as a messenger, afterwards for a period going with the Mutual District Messenger Company, and who has worked his way upward through all posts, was appointed inspector.

Delany's Automatic Telegraph System.

Patent 72,004 issued February 10th to Mr. Patrick B. Delany of South Orange, New Jersey, marks an important step in rapid automatic telegraphy, and, more especially, in chemical recording of signals. The main difficulty in the way of rapid signalling heretofore has arisen from the running together or "tailing" of the characters, due to the electro-static capacity of the line. From the earliest days of machine transmission efforts have been made to overcome or neutralize this hinderance to successful rapid transmission, by use of artificial leaks from line to ground and application of self-induction, and the introduction of clearing currents after each signal impulse, but these remedies have been only partially successful and have been attended with offsetting disadvantages.

Mr. Delany, instead of trying to eliminate the static discharge of the line, utilizes it by making it take the place of the primary transmitted current to continue and complete its record on the receiving tape. This method requires static capacity for operation, and where there is not sufficient present in the line itself it must be supplied by the use of condensers, preferably at the transmitting end.

In the new system all signals, whether dots or dashes, are the result of two impulses of equal duration, positive and negative, the time elapsing between these two impulses determining whether the signal is a dot or a dash. The method is very simple. A transmitting tape is perforated by a machine operated by the ordinary Morse key. When the key is pressed down, a hole is punched in the lower side of the tape. When the key comes up a hole is punched in the upper side. As the tape is constantly running the lower and upper holes bear a slanting relation to each other, the angle depending upon the time that the key is held down. For a dot, the holes are out of vertical line just so that they do not lap. For a dash the angle is proportioned to the length of the character. The speed of the tape puller is regulated to the speed of the operator working the key.

The machine transmitter through which this tape is passed has two contact brushes bearing against the under side of the tape, and two on top, pressing downward. The lower brushes are respectively connected to the positive and negative transmitting currents, the upper brushes which meet them through the holes in the tape are both connected to the line. The lower holes send positive, the upper holes negative, impulses. At the receiving end of the line two fingers rest on top of a moistened chemical tape. These fingers are about 1-16 of an inch apart. One is of iron and connected with the line; the other of platinum is connected to earth. The chemical tape completes the circuit between them. When a lower hole is drawn between the transmitting contacts, a positive impulse goes over the line, and, by electrolytic action, makes a mark at the point of the

iron finger on the receiving tape. If a negative impulse immediately follows, as in the case of a dot signal, the mark at the receiving end is instantly cut off. If the negative does not follow the positive for some little time, as in the case of a dash, the positive impulses continue to mark until the arrival of the negative impulse, thus forming a dash. This extension of the mark on the receiving tape after the hole has passed between the contacts of the transmitter, is owing to the discharge of the line of the "tailing" effect. It will be understood, of course, that the marking is done by the positive current when the impulse goes over the line and passes into the tape from the point of the iron finger. When the positive current goes through the earth, or return circuit, it enters the tape from the platinum finger which is not acted upon electrically, and consequently makes no mark. Hence it will be seen that the static discharge is not discouraged in this operation, but cultivated and tuned to important account, and, if it is not present in quantity necessary for the completion of the longest dash of the Morse code, it is a simple matter to place a condenser of the required capacity from the line to the earth at the transmitting station.

This conversion of the static charge from a foe to a friend, admits of the use of impulses of equal duration and of alternating polarity which are the ideal conditions for rapid transmission and have long been sought for machine telegraphy.

We publish one of the fifteen claims of the patent which is for a method broadly:

Claim 1. In a telegraph system in which each signal is composed of two impulses of opposite polarity sent into a circuit at a transmitting station, the method of transmission and recording which consists in adjusting the capacity or consequent retardation effect of the circuit so that the formation of a record character will be continued after its primary impulse is sent into the circuit, sending the primary impulse of a signal into the circuit to initiate the production of a record thereof, disconnecting the generator from the circuit and permitting the "capacity" effects of the circuit to continue the production of said character, and terminating the formation of the character by transmitting the secondary impulse of opposite polarity.

Improved Poulsen Speech Recorder.

An apparatus for electromagnetically recording speech or signals represented by undulating or irregular currents of electricity, says the Western Electrician, has been invented by William A. Rosenbaum of New Rochelle, N. Y. The invention is in the same class with that of Valdemar Poulsen, and has special reference to means for recording speech, the Poulsen or any other approved method of reproducing the record being used in combination therewith. The plan described in the Poulsen patent for recording the electrical impulses consists in using an elec-

tromagnet in a circuit over which such impulses flow, the poles of the magnet resting upon a steel body, which is moved with respect thereto. The successive variations in the strength of the magnet are thereby imparted to successive parts of the steel body and are retained thereby for reproduction at any desired time. According to Mr. Rosenbaum's invention he records the impulses by means of a permanent magnet or an electromagnet of constant strength, and varies the effect which such magnet has upon the steel body by altering its distance from the body in accordance with or in proportion to the strength of the impulses representing the voice or signals. In other words, the poles of the recording magnet are not in contact with the steel body, and the effect upon the steel body is obtained by altering the air gap between the poles and the body. The electromagnet used by Poulsen for recording is utilized to alter the air gap.

When the voice currents which are created in the primary circuit by speaking into the transmitter flow by induction in the secondary circuit, including the magnet, the magnet will be energized successively thereby in accordance with the strength of such currents. The magnet will in turn attract the armature in front of its poles to varying extents, which will cause the poles of the permanent magnet to approach and recede from the steel body, or, in other words, will vary the air gap between the permanent magnet and the steel body coincident with and in proportion to the impulses originally created by the voice. The result of this will be that the steel body, which is at the same time moving past the poles of the permanent magnet, will be magnetized at successive points to corresponding varying degrees, and such magnetism will be retained by the steel body for subsequent use in reproducing the voice currents in a telephone receiver. The magnet is not necessarily a "permanent" magnet, since an electromagnet connected in circuit with a constant source of electricity will serve the same purpose.

The First American Cable Laid for a Foreign Government.

Dr. A. E. Kennelly of Harvard University, in his recent lecture on "The Laying of the Mexican Government Mexican Gulf Cables," said it was the first cable of American manufacture laid for a foreign government. Dr. Kennelly said that if all the cables now lying at the bottom of the sea were joined end to end they would measure 200,000 miles, or nearly as far as from the earth to the moon. The life history of the cable was shown by a series of lantern slides, from a view of the spool machines in the factory of the cable manufacturing company, to the final joining aboard ship in the Gulf of Mexico. The cable was 500 miles long, one inch thick, excepting near the shore, where it was twice that size, and weighed 1,300 tons. It was carried in four deep tanks in

a Norwegian cable ship of 1,400 tons burden to Vera Cruz; and a partition cable house, which had been brought from the United States, was put together, and a two-mile length of the cable was towed ashore and dragged up to the house. The end at sea was joined to the cable on this ship, which then went to Frontera, where another house was erected, and the operation was repeated. At Campeche serious difficulties were met. The water was very shallow for seven miles out to sea, and although the town had 19,000 inhabitants, it did not possess a steam launch or even a barge. A one-masted schooner was procured by the cable people, the mast was removed, and the coil of seven miles was stowed away in the boat. Another schooner, with two masts, served as a tug. When this tug went too fast the sails were taken in, and when it was becalmed there was nothing to do but wait. Eventually the end of the first long American cable was made fast at the cable house which stands almost on the spot where the Spaniards first landed in Mexico, 400 years ago.

Right of Property in News.

The right of property in news and other information collected for sale to subscribers was upheld in Boston on February 26, in a case decided by the full bench of the Supreme Court. The court followed the decision of the United States Circuit Court of Appeals, which recently sustained, in Chicago, the right of the Western Union Telegraph Company to be protected in the use of a ticker service. The court takes a broad view of the rights of collectors of news and information of every kind and passes on the question of what constitutes a publication, which would deprive a person collecting news of his rights of property in it.

The case is that of the F. W. Dodge Company against the Construction Information Company. The plaintiff is engaged in the collection of information in regard to the erection of buildings, which is furnished to subscribers. It is alleged that the defendant buys these reports from plaintiff's subscribers and resells the information to persons subscribing to defendant's service. The result is alleged to be a damage to plaintiff's business. The defendant filed a demurrer, which the court overruled.

Baltimore News Sued By Old United Press.

The Baltimore News has been sued for breach of contract by the assignee of the Old United Press. The contract, upon which the suit is based, is one of several alleged to have been made some years ago, when the breach occurred between The United Press and The Associated Press. The amount involved in the present suit against the News is something over \$10,000.

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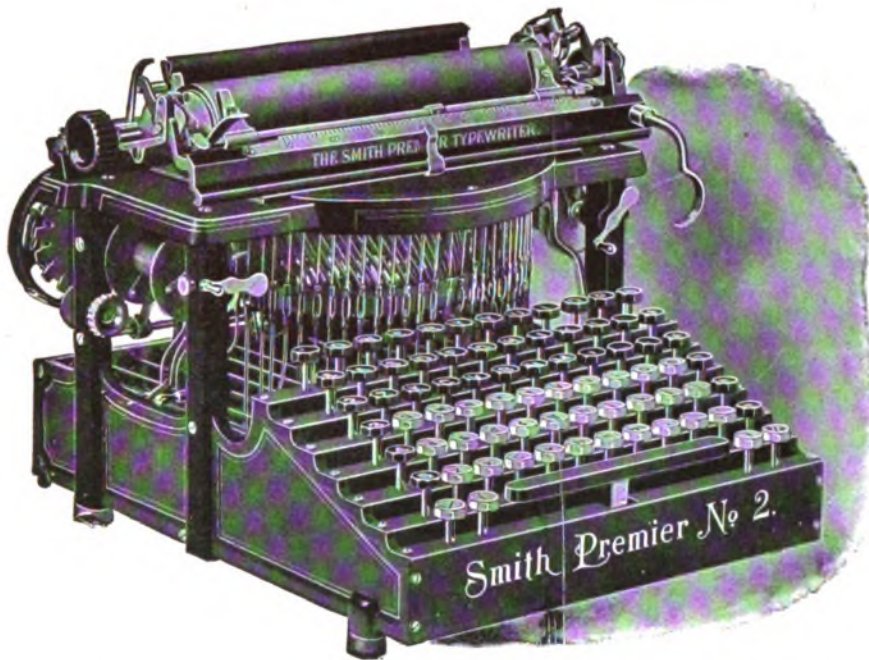
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NEW YORK, March 16, 1903.

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.

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Wireless Telegraphy and Submarine Cables.

Mr. George G. Ward, vice-president and general manager of the Commercial Cable Company, does not appear to have his serenity and faith in the continued utility of the cable as a means of submarine telegraphic communication, at all disturbed by the optimistic utterances so commonly heard now-a-days regarding the future of wireless telegraphy. He confidently proposes to hold on to the cable, which so far has fulfilled all requirements, until it can be shown that something better shall be ready to supercede it. It may be remarked, however, that the fear of such supercedure does not seem to brood heavily on his mind. It is evident that the Commercial Cable Company has no present intention of being forced out of business, for in a speech delivered at the annual meeting of his company recently, published elsewhere in this issue, Mr. Ward significantly remarked that while "telegraphy by means of wires has little to fear from the competition of telegraphy without wires," nevertheless "the etheric waves will be as obedient to us as to anybody if it should ever be found practicable to dispense with cable and wires."

The Western Union Telegraph Company.

The retrospect of the year past in the official management of the Western Union Telegraph Company reveals an interesting, a wholesome and a business-like administration of its affairs. It compasses a chapter in the history of that great corporation that will stand forth preeminently for radical, rational and decisive results achieved.

The advent of Col. Robert C. Clowry to the presidency placed in charge an executive who thoroughly understood from personal knowledge, gained by years of close personal contact with the entire vast system, the exact needs this splendid, yet complex, property confided to his care, required. How well he has performed the task he was called upon to do, he who runs may read.

The adverse criticism due to apprehension, or misapprehension, on the part of the force, that to a certain extent first met the change in men and policy, inaugurated a year ago, has long since become silent as the wisdom of the move became more apparent and its beneficent influences wrought in its favor. It could not, in common honesty be otherwise. There have been many changes instituted, it is true, and some heroic measures have necessarily been adopted, but the good of the company, which should mean and does mean the common welfare of all concerned, officers and men alike, has been steadily kept in view. Appointees to high executive places have been selected from all parts of the country. And in this, not locality, but the rule of fitness has governed.

The Western Union army has been officered by competency. There has been a recognition of Laïns. Fidelity has had its reward. Chicago and Denver and other points have contributed their quota to New York and other Eastern cities, and there has been a weaving out and in

of new men from point to point. Strange faces have been seen in familiar places, but the quickening impulse of new life and new methods have been felt, a higher esprit de corps has been awakened and a superior service has been secured.

There has been a straightforwardness and directness of purpose manifest on all sides. The rule of equivalents, eternal in principle as the hills, has been exacted from all, yet coincident with the spirit of fair treatment, to which the Western Union management stands committed. The tonic methods that have been adopted are causing a marked improvement in the great working force of the company, and everywhere the salutary influence is noted.

In the multitude of important offices reconstructed; in the installation of new and improved apparatus; in line construction that has gone forward with giant strides under most intelligent direction; on the prudent handling of the finances in which a wise economy has been observed, covering the period of the year past, much might be said. The reports of the company show to what an extent material progress has been made. The Western Union Telegraph Company has well started upon a new era of progress.

Books For Telegraph Libraries.

We have received from Mr. D. H. Bates, formerly president of the old Baltimore and Ohio Telegraph Company, a copy of the rare book, "The Telegraph in America," by James D. Reid. Mr. Bates' gift is accompanied with the request that we place the volume, which is valued at \$7, where it will do the most good. We have decided, accordingly, to turn it over to the first telegraph library not possessing a copy of this comprehensive work on the history of the telegraph, which may apply for the same.

In this connection we desire to state that a number of telegraph libraries have of late years been established at various points in this country, many of them being supported by voluntary contribution of books, funds, etc. The object of such libraries is most worthy, inasmuch as they afford frequently the only means operators have for study and research in their chosen profession. It is earnestly hoped, therefore, that those persons who have telegraph books to spare, or who feel disposed to meet the cost of such books, will not neglect the opportunity here afforded for a display of generous giving in behalf of fellow craftsmen.

Telegraph libraries wherever located are exercising a potent influence for good, and much valuable educational work is being effected through their instrumentality. It would serve a most beneficent purpose if every large telegraph office would maintain a library, liberal in its endowments as circumstances will permit, of useful telegraph and electrical books to which operators might have free access. Operators who have had

admittance to such reading, have not alone been the gainers through a broader electrical knowledge acquired, frequently laying the foundation for promotion in the service, but the acquisition to the individual has brought correlative gain to the employing company in strengthening the intellectual force at its command.

We will gladly acknowledge in these columns the receipt of books that may be sent to TELEGRAPH AGE for library purposes, stating where the books have been placed, so that donors and readers alike may know where the volumes have found a permanent home.

International Patent Protection.

It is interesting and encouraging to note that amidst all the blockading and filibustering in Washington over necessary legislation, says the *Electrical World*, the Senate has passed the House bill to render effective the provisions of the additional act of the International Convention for the Protection of Industrial Property. It amends the application of the patent laws so as to make the practice in the United States conform to that of the international convention. This is a decided step forward in creating uniformity of patent law and the extension of international patent protection; and we have no doubt that President Roosevelt will find the measure worthy of his signature. The ultimate aim of such work must be, however, to effect something similar to international postage. It will be remembered that not long since we quoted in these pages the admirable argument of Mr. John S. Seymour, United States Commissioner of Patents under President Cleveland, in favor of a universal patent examination system, which should practically validate a good patent everywhere throughout the civilized world and economize in the cost of securing and maintaining the rights of worthy inventors. Mr. Seymour may seem to some people a little in advance of his time, but civilization means nothing if it does not mean the execution of such ideas as his.

The United States Military Telegraph Corps.

The following letter, which speaks for itself, has been received by Mr. Frank A. Stumm, of 195 Broadway, New York, from Congressman J. W. Fordney:

"I have your favor of the 1st relative to the prospects of the bill which I introduced some time ago providing for pensions to members of the telegraph corps, and note what you say as well as the inclosures. I think an extra session of the House is very unlikely but should one be called I could then better tell what the prospects might be. Kindly let me hear from you if an extra session is called and I will make it my one endeavor to have this matter taken up for settlement."

"Pocket Edition of Diagrams," etc., is \$1.50 per copy.

What an Australian Paper Says About Pocket Edition of Diagrams.

"The Transmitter," a paper devoted to telegraphy, printed at Brisbane, Australia, in its issue of January 17, has the following to say regarding "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students," published by Telegraph Age, the sale of which has been immense reaching all parts of the world:

"We have received from the publishers a copy of Mr. Willis H. Jones' new work bearing the above title. The author is well known to Australian telegraphists as the writer of a series of instructive articles on electrical subjects which have been appearing in the columns of the New York Telegraph Age for some years past. Owing to the free and easy style adopted by the writer even when dealing with hard scientific facts, Mr. Jones' contributions to Telegraph Age can always be read with pleasure and profit, not only by the young student, but also by the more advanced telegraphist.

"We are, therefore, pleased to find in the handy little pocket edition before us, a complete summary of Mr. W. H. Jones' contributed articles, copiously illustrated by diagrams showing clearly the most recent methods employed in constructing and connecting telegraphic apparatus. As a practical telegrapher himself, and having a thorough knowledge of the technicalities of his profession, Mr. Jones saw the necessity for some such work as this pocket edition of diagrams, to replace the more or less inaccurate or incomplete drawings which most students or others who have to deal with lines and instruments, carry about with them. From the standpoint of the American operator, Mr. Jones' work is complete in every detail, nothing being omitted upon which information would be likely to be sought within the bounds of a complete telegraph course.

"Amongst the numerous subjects dealt with of interest to telegraphists in this part of the world are the following: viz:—Electricity and magnetism, including descriptions of various types of local and main battery cell; construction and action of relay; principle of the Stearns and polar duplex; how to balance duplex and quadruplex; faults therein; storage batteries; automatic repeaters for single lines, etc.

"The first copy of Mr. Jones' book was issued in June last, and the first edition exhausted by the end of September. It is now in its second edition, and Telegraph Age, 253 Broadway, New York, are the publishers, and the price, post paid, about 6s. 6d. It may be obtained through Messrs. G. Robertson and Co., whose advertisement appears in another column."

Telegraph Construction in African Wilds.

The construction of the telegraph system in the Belgian Congo territory in Africa, which has been carried out since 1894, according to the Western Electrician, presents some in-

teresting features, owing to the peculiar conditions of the country. The personnel is nearly all native, and is divided into companies of 40 men, each directed by one or two Europeans. From Boma to Leopoldville the line is formed of two phosphor-bronze wires of two millimeters diameter. To protect the wire from the cupidity of the natives it is covered with a blackish paint. The wire is mounted on steel posts placed 300 feet apart; they are 22 feet high and formed of T-iron. At the upper end are three holes, two for the insulators, and the third for the brace wires. The insulators, of the Belgian state type are also of a dark color, to attract less attention. The length of the span has been increased over that of the former lines by using a harder wire, reducing its conductivity to 80 per cent., while the breaking strain is increased to 158 kilograms per square millimeter. Where the line passes through the forest or bush a path 30 feet wide has been cut in order to protect it from forest fires.

At Underhill, where the line crosses the river, a single span is used, mounted upon two towers of angle iron in trellis construction, 50 feet high. As the span is 2,500 feet long, the line wire is supported from four steel wires having a breaking strain of 314 kilograms. The Kassai River is crossed in two spans, with a central tower supported on a small island, in the middle of the river. The three towers are respectively 45, 120 and 125 feet high, and the spans are 1,400 and 2,200 feet long.

The line is equipped with three main offices, nine telephone stations and six telephone cabins for the use of the steamer captains. For the inspection of the line there are 50 stations, the line being divided into five sections. Each section has a corps of five inspectors with a European chief. The outfit of the Congo telegraph stations includes a table with removable legs, a Morse relay, Leclanche cells, an indicating galvanometer, key and sounder, etc. The main telephone posts are provided with microphones of the granular type, with two Leclanche cells, a magneto, bell and annunciator. In the telephone cabins, which are elevated above the ground on posts, so as to be out of the reach of white ants, there is a complete telephone set with dry cells and a special form of switch with points marked 1, 2 and 3. After taking down the receiver from the hook the switch is placed on 1 or 2 to connect with the preceding or the following post. After the communication, the receiver is hung up and the handle falls automatically to 3, which makes direct connection between the two neighboring posts. Many difficulties have been met with in the construction of the line, among these being the cupidity and prejudice of the natives, who consider it as a fetich, and when the wire passes over their houses make haste to move out. A great cause of trouble has been the elephants, which rub against the posts and overturn them. The elephants often uproot the posts with their trunks and twist them into corkscrew shape. In this way many miles of line have been destroyed.

Mr. Estabrook, Western Union Solicitor at New York.

Henry Dodge Estabrook, namesake of Henry Dodge, ex-Senator and ex-Governor of Wisconsin, solicitor of the Western Union Telegraph Company, who came to New York some months ago, is an Eastern man by birth, yet endowed with a Western growth and training. Puritanical blood flows in his veins, for he is a direct descendant of John Alden, for whom was named, coincidentally, the little hamlet of Alden, in Western New York, where Mr. Estabrook was born, October 23, 1854. When but an infant of six months, he was taken West to Nebraska, then marking the extreme frontier, where the family made their home, the father having become the Attorney-General of the then territory of Nebraska. Mr. Estabrook graduated from a law course at the Washington University, St. Louis.



HENRY DODGE ESTABROOK.
Solicitor of the Western Union Telegraph Company, at New York.

in 1876, and entered upon the practice of his profession in Omaha. The only official position he ever held was that of Regent of the Nebraska University, to which he was elected by a large majority, running ahead of his ticket. He was the local attorney for the Postal Telegraph-Cable Company, at Omaha, for three years, when he entered the service of the Western Union Telegraph Company in like capacity at the same point. In 1896, on the death of his father, Mr. Estabrook removed to Chicago, where, at the instance of Gen. Eckert, then president, Mr. Clark and Mr. Fearons, vice-president and general attorney, respectively, he was given the local attorneyship of the Western Union. Later he formed the law firm of Lowden, Estabrook & Davis, a partnership that continued successfully until Mr. Estabrook came to New York as solicitor for the Western Union Telegraph Company, September 1, 1902. Mr. Estabrook is an

astute lawyer, a man of engaging personality, careful and painstaking in his methods, and is a valuable acquisition to the legal staff of that corporation. His sister, now deceased, was the wife of President R. C. Clowry.

The Phillips Code.

BY WALTER P. PHILLIPS.

I read, with great interest, a communication from Mr. D. Kimball, of Chicago, in the New York Sun, not long ago, regarding abbreviations. I am the author of a system of this kind and since it is held that such a system can have no practical value in general newspaper reporting, I purpose to combat that idea most emphatically. Mr. Kimball says:

"Much less can a system of abbreviations, such as reporters use, however cleverly devised, ever come into general use for the ordinary purposes of writing, for the reason that perfect legibility of every word independent of every other word is an essential characteristic of such a system of improved writing."

The spokesman of the Arkansas Editorial Association, according to Texas Siftings, observed on arriving in Austin with his band of journalistic brethren, several years ago, that they "had travelled far and wandered wide." My own experience has been similar and I am always finding that things are being done in many fields of human endeavor of which, up to a certain time, I had no knowledge, and the Phillips Code, published in 1879 and which has been in constant use since then, on telegraph wires and as an aid in general reporting by the telegraph operators who have gone into newspaper work, seems to constitute a system of successful abbreviations of which Mr. Kimball has not yet heard.

Out of the many thousands of telegraph operators employed by the Western Union and Postal Telegraph-Cable Companies scarcely any of even ordinary capacity can be found who does not employ the Phillips Code in the transmission of press despatches, while it is used by some experts in handling messages both social and commercial. This has been going on for twenty-three years and a knowledge of the code is considered so great a desideratum as a part of the telegraphic education that even the tyros take it up at a very early stage of their tutelage. It is related that a youngster who had barely mastered the Morse alphabet, in transmitting a report of a fire from Red Bank, N. J., a year or so ago, said Dbf, then halted and finally convulsed the New York receiving operator by asking "Are you on to the Phillips Code?" Learning that the receiver was, the young man proceeded with renewed confidence to struggle through his task, using more code than the usual sender employs and winding up with Cbi as a final flourish. Dbf means destroyed by fire and Cbi means covered by insurance.

Regarding the use of the Phillips Code in cases

in which a verbatim report is not essential I may say that one of the best newspaper reports of an event that was ever furnished to its clients by The Associated Press was that of the Star route cases, in Washington, over twenty years ago. That trial was reported by Mr. E. M. Hood, a very young operator who had, however, made a special study of the code. Mr. Hood, who has long stood in the front rank of newspaper writers at the capital, used the Phillips Code exclusively in reporting this trial, extended over many weeks, and the excellence of his work was so marked that within a few weeks, Mr. Edward D. Easton, now the President of the Columbia Phonograph Company, who made the verbatim report of the Star route trial for the government, spoke of Mr. Hood's performance in words of unstinted praise.

For several years the decisions handed down by the Judges of the United States Supreme Court were condensed and done into English by Mr. George Kennan, who has since won renown by his writings and lectures on the Russian system of relegating to Siberia, by administrative process, such persons as are regarded as being dangerous to the safety of the nation. These decisions were in the handwriting of their authors and not all of the judges had cultivated the Spencerian system of penmanship while some were at war with Webster on questions of orthography and a few others, if they had ever heard of Quackenboss, had a contempt, as supreme as the bench from which they rendered their decisions, for any ideas he may have tried to inculcate as to rhetoric and composition. Mr. Kennan was not permitted to take these unique documents out of the Supreme Court chamber. So he studied over them and made notes of what they signified in their ultimate essence. These notes were made in the Phillips Code and from them every Monday evening, while the Court was holding sessions, Mr. Kennan wrote marvellously clear synopses of these decisions for The Associated Press. At one time or another he was complimented on his work by every judge on the Supreme Court bench—among them Chief Justice Waite and Mr. Justice Miller. Mr. Kennan is again in Washington and is representing the Outlook. I will venture the opinion that if he has occasion to make notes he brings to his aid the code which stood him in such good stead when he was struggling with the written opinions of those venerable and honored gentlemen who have the last sad say on such disputed questions as float up to this highest of all legal tribunals, in America, from the lower courts scattered all over this broad land of freedom and of persistent litigation.

(To be Concluded in April 1 issue.)

Honor to William B. Wilson.

The only bill for which Speaker Walton of the Pennsylvania Assembly stands sponsor was given unanimous endorsement by the House on February 24, after a pyrotechnic display of patriotic

cratory. The vote was 179 to 0, but those members who spoke exerted themselves as vigorously in its favor as though the fate hung by a thread. The measure, which was buried deep in the postponed calendar of third reading bills, is entitled "an Act to recognize the services of William Bender Wilson during the Civil War." It proposes to confer upon Mr. Wilson, who is in the railroad service as a freight agent at Philadelphia, the title of Colonel and to give him a gold medal of honor. Mr. Wilson is an old time telegrapher and president of the United States Military Telegraph Corps.

The bill was called from its obscure position on the postponed list by Representative Thomas V. Cooper, of Delaware county, himself a veteran of the Sixties. Mr. Cooper made a speech in which he graphically described the work of Mr. Wilson, who as the telegraph operator who cut the wires at the time of Mr. Lincoln's secret departure from Harrisburg, Pa., on the eve of his inauguration as President, did probably as much as any other man in Pennsylvania, to save the latter's life. The Delaware member told how young Wilson, as assistant to Thomas A. Scott, when the latter was acting Secretary of War, did invaluable work, though not in the active military sense, by keeping Governor Curtin informed of Lee's movements at the time of the invasion of Pennsylvania; how by his telegraphic communication established at his peril and by his ingenuity he assisted in enabling General McClellan to win the battle of Antietam and similarly had part in General Meade's crowning triumph at Gettysburg. He explained that there was no pay, no emolument in the commission proposed to be given to this gallant Pennsylvanian by a grateful Commonwealth, but it and the medal were simply designed as well-earned recognition of valuable and heroic service.

Others emphasized the eulogy of Mr. Wilson, uttered by Mr. Cooper, the first named saying that, while on general principles opposed to private bills, here was one that appeals to the sense of justice that must reside in every man's breast. Mr. McClain said the self-sacrifice, bravery and daring displayed by the man it was proposed to honor in the evening of his life, had been unsurpassed, while Mr. March, speaking as a Grand Army veteran, said this bill was simply paying a debt of gratitude which the State owes to a brave and loyal man. The vote by which the measure was adopted was the largest that has marked any bill which has yet passed the Pennsylvania House.

Not alone to the men whose deeds have shone in the glitter and glamour of public fame are all the acknowledgments of a grateful nation and a grateful Commonwealth due. The untrumpeted and frequently unknown heroes, who too quickly are forgotten, if indeed they are ever recognized at all, may be remembered with a like measure of appreciation, and the bill to honor a gallant and modest gentleman is worthy of applause.

Subscribe for TELEGRAPH AGE, \$1.50 per year.

A. H. Stewart, Manager of the Western Union at Nashville, Tenn.

A. H. Stewart, chief operator of the Western Union Telegraph Company, Nashville, Tenn., has been promoted to the head of that office. Mr. Stewart was born in Dayton, O., and at an early age moved with his parents to Central Illinois. He learned the art of telegraphy on the Chicago and Alton road, and after serving for a considerable length of time on that system as agent and operator, was given a responsible position in the office of the general superintendent of the Chicago, Burlington and Quincy, at Chicago, although he was then very young. After two years of service in that position he was forced to resign on account of ill health. He went South, hoping to better his physical condition. He reached Nashville on January 2, 1867, and began at once to discharge the duties of telegrapher in the office of the superintendent of the then Nashville and Decatur Railroad.



A. H. STEWART.

Manager, at Nashville, Tenn., of the Western Union Telegraph Company.

In the fall of 1867 he accepted a position with the Western Union, and with that company has filled successively the positions of operator, night manager and chief operator. In the last named capacity he has been a valuable employe of the company for many years. He assisted in the installation of all the multiplex and automatic systems which the company has in the South, and has done expert work at all the Mississippi River crossings from Cairo to New Orleans.

During the long years of service in the telegraph room Mr. Stewart has displayed a decided inventive genius. He has patents on a number of devices, the most recent of which is an invention for stringing wires and removing obstacles therefrom. The last patent, it is claimed, promises to do much towards revolutionizing the system of stringing telegraph and telephone wires in the crowded city thorough-

fares. He has a patent now pending which covers a system of wireless transmission.

Mr. Stewart is public spirited and has always taken an active interest in the welfare and prosperity of Nashville.

Annual Election of the Telegraphers' Mutual Aid Association, Boston.

The annual meeting of the Telegraphers' Mutual Aid Association of Boston, was held in that city, on March 1.

The following officers were elected: John J. Flaherty, president; David Connell, vice-president; Edward A. Smullen, recording secretary; John A. Roorbach, treasurer; W. T. Sheridan, financial secretary; William J. Mangan, chairman relief committee, with these members to assist: T. J. Falvey, M. J. Flaherty, L. J. Malone and Miss M. G. Golden; J. M. Sullivan, sergeant-at-arms; Auditing Committee, W. J. Ryan, P. J. Beasty, W. V. Price, J. M. Sullivan and J. M. Carter; Executive Committee, the officers and the following four members at large: H. W. Gillespie, R. E. Tobin, A. V. Losea and C. A. McManus.

From the reports of the officers it was shown that the association is in a very good condition financially. In the year past \$581 has been paid out for sick benefits and \$200 for death benefits, two deaths having occurred. The treasurer's report showed more than \$7,000 to the association's credit in banks. The recent ball of the association netted about \$800.

Wire Tappers Foiled.

Six Chicago telegraph operators and a Springfield saloon keeper were arrested at Springfield, Ill., March 3, just in time to spoil a well planned wire tapping scheme and a "killing" at a Springfield poolroom. The men were found in a field near Chatham, where they had established headquarters for the telegraph instruments, tapped the wires and started operations. When first taken into custody the men said that they had tapped the wire in order to obtain the name of a Chicago commission house which was sending quotations to bucket shops in southern Illinois. Later, one of the prisoners admitted that it was the plan to get the race results early for a coup on Springfield poolrooms.

Our Book Table.

We have received from the publishers, Frederick J. Drake & Co., Chicago, a copy of a new volume entitled "Telegraphy Self-Taught," by Theodore A. Edison, M. A., illustrated, 154 pages. The title page states that the book is a "manual of instruction containing chapters and lessons on telegraphy in all its branches, including easy experiments in electricity and magnetism which operators should know."

You can't afford to be without TELEGRAPH AGE.

Telegraphic Bookkeeping. Fourth Article.

BY W. H. DOHERTY.

Half rate messages have always been a stumbling block to beginners, both in the computing of the tolls, and in the correct way of taking credit for the unpaid portions of them. In accepting a half rate message no charge for less than twenty cents should ever be made. All half rates are computed on the basis of full day rates. No night messages are accepted at half rate of night rates. Even when the full day rate on a message is 25, 30, 35 or 40 cents, the half rate on these smaller charges is twenty cents, but at forty cents or above the division may be made equally, except where the full rate is in odd cents, then the company gets the benefit of the half cent. All half rate messages must be entered in the business at full day rates. One portion must be accounted for in cash or charged account, as the case may be. Credit for the unpaid portion is obtained by entering that part of it on the report, known as "Statement of Half Rate Refunds," and taking credit with total amount of this statement on "Account Current" under the head of "Refunds and Uncollects."

The foregoing applies only to "this line" messages. For "other line" messages at half rate, consult rule No. 10 under instructions for business as in the case, for example, of the Great North Western Telegraph Company, page 502 of the present Western Union tariff book. Many managers are not aware of this rule being in the book. But for the sake of convenience it is given here in full, and is as follows:

"Holders of Western Union 'half-rate' franks who offer messages for transmission to or from offices of the Great North Western or International Ocean Telegraph Companies will be allowed a rebate only on that part of the tolls which belongs to the Western Union Company, and then only when full tolls amount to over fifty cents. When the tolls are over forty-nine cents and under eighty cents, the rebate allowed will be the difference between one-half the tolls and twenty cents. When the tolls are eighty cents or over, one-quarter thereof will be allowed as rebate."

A railway superintendent of telegraph, who has been an interested reader of these articles on telegraphic bookkeeping, as something of the first importance to the telegrapher, refers in a recent letter to the second article of the series, a portion of which does not appear to be quite plain to him, as follows:

"We are having continued trouble with the matter of 'other line' tolls on received paid messages. Managers almost invariably show same in column 'D' of form No. 7. From your article I take it that these amounts should be shown, but as I understand it no amounts should be shown."

To correct the wrong impression my correspondent seems to have received, let me further elucidate the point referred to in my second article in which I thought I had made my meaning

clear. In order to do so it would be well to turn to the article in question, which appeared in the issue of February 1. In the case of a message originating, as then indicated, at Hillsboro, Wis., and destined for New York, Union Centre, before referred to, would collect only 50 cents (10 words) as the "other line" is able to collect its own tolls, and New York would only debit Union Centre with 50 cents. We are in no way interested in the "other line" tolls in this case. A good point to remember is, that an officer is checked on "other line" tolls only when "other line" vouchers represent the charge made against the office.

Jews and Telegraph Employment.

Sir Samuel Montagu has been fighting the case of members of the Jewish faith, who are employed by the British telegraph. At the present time they are compelled to work on Saturdays—their Sabbath—to the great distress of the devout among them. Sir Samuel suggests that a compromise could be effected easily. Postal Jews should be excused attendance on the Saturday, and should perform the Sunday duties instead. Postal Christians would then have the Sunday on which to perform their religious observances. The plan seems ingenious but we fancy administrative difficulties may prevent the scheme being adopted. Certainly Sir Samuel Montagu is about the first man to suggest that the Postal Department is capable of considering the souls of its servants. Conscientious objectors, gither to vaccination or Sunday duty, have short shrift if their views come in contact with the "exigencies of the public service."—Civil Service Magazine, London, Eng.

The New Zealand Telegraph Paper.

The Katipo, long the official paper of the telegraphic fraternity of New Zealand, has been merged into a new publication called the Advocate, which will hereafter be the official organ of the New Zealand Post and Telegraph Officers' Association. The new publication will be conducted along somewhat broader but independent lines, and will embrace electrical articles of a general character. Our new contemporary is a valuable acquisition to our editorial file and we extend to our far-away friends our warmest congratulations.

"Wireless Telegraphy," by Richard Kerr, F. G. S., with a preface by Sir W. H. Preece, is a book just off the press, which is meeting a very wide sale, the subject treated being uppermost in the minds of the public at the present moment. This work, which comprises 116 pages, contains a good account of the discoveries in telegraphy without wires. The subject matter is arranged in readable form, the illustrations are excellent, and the descriptions of the experiments are accurate. Copies may be had at 75 cents each by addressing J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Commercial Cable Annual Meeting.

At the annual meeting of the Commercial Cable Company at New York, March 2, it was shown that the net revenue from the submarine cables and land lines (Postal Telegraph-Cable Company) had increased \$123,692.22 for the year.

The net revenue, including the amount brought forward from the previous year, amounts to \$2,514,193.19, out of which have been paid interest on the bonds and debenture stock (\$800,000), and dividends on the capital stock (\$1,066,664), and there has been set aside \$350,000 as an addition to reserve fund, and also an amount of \$150,000 to the fund for insurance of stations, apparatus and repair steamer, leaving a credit balance of \$147,529.19.

The reserve fund now amounts to \$4,934,510.23 and the insurance fund to \$860,209.60.

After the completion of the Commercial Pacific Cable it is expected that the earnings of this company will be materially increased.

The Board of Directors elected was as follows: Clarence H. Mackay, James Gordon Bennett, Lord Strathcona and Mount Royal, G. C. M. G.; Gardiner G. Howland, Charles R. Hosmer, Colonel William Jay, Thomas Skinner, George Gray Ward, Sir William C. Van Horne, Albert B. Chandler, Edward C. Platt, Dumont Clarke, W. Seward Webb and Edwin Hawley.

The following officers were elected at the meeting of the Board of Directors, held March 3: Clarence H. Mackay, president; George Gray Ward, chairman, vice-president and general manager; Charles R. Hosmer, vice-president; Albert B. Chandler, vice-president; Edward C. Platt, treasurer; Charles E. Merritt, assistant treasurer; Albert Beck, secretary, and John O. Stevens, assistant secretary.

Mr. Ward, the chairman, said: "At the last annual meeting some remarks were made by me in regard to wireless telegraphy and its effect upon submarine cables. We see no reason to change the opinion expressed at that time. Admitting the recent transmission of a message across the Atlantic without wires, radical improvements would have to be made in its development before wireless telegraphy could possibly hope to meet the demands of trade and commerce and engage in successful competition with submarine cables.

"A good deal has been said and advertised about the many wireless systems for the last two or three years. As yet there is nothing to show that messages can be transmitted without wires, even between short distances, with anything of the regularity, reliability, correctness and secrecy, at any and at all times of the day and night, demanded of the existing telegraph systems and necessary for the protection of the customers' interests and the development of the telegraph business. Furthermore, the transmission of messages between the European and American coasts of the Atlantic is far from constituting a transatlantic telegraph service as it exists today. The essential adjunct of an extensive inland system for the distribution and collection of mes-

sages on the North American continent must not be lost sight of.

"A large part of the traffic passing by the Atlantic cables is destined for places remote from the seaboard. Messages to and from Chicago, St. Louis, San Francisco, Montreal, Toronto, etc., require and receive transmissions which are measured by minutes. This important traffic would be practically extinguished if senders could not rely on extremely rapid and accurate service.

"Nothing has occurred since I last addressed you to cause us to modify the conservative estimate then expressed, and which I confidently repeat, that telegraphy by means of wires has little to fear from the competition of telegraphy without wires.

"For the benefit of those who do not share my confidence, I may say that the etheric waves will be as obedient to us as to anybody if it should ever be found practicable to dispense with cables and wires.

"On the other hand, we have not been standing still in the matter of improvements. We have for several months past successfully operated a system of automatic translation which enables us to transmit messages across the Atlantic and vice versa without any intermediate stoppage or delay. The shareholders may rest assured that as pioneers of fast speed and reliability the Commercial Cable Company will maintain its pre-eminence, and it has nothing to dread from the competition of either wire or wireless telegraphy.

"In conclusion I wish to say we have every admiration for the eminent scientists connected with the discovery of wireless telegraphy; at the same time we are satisfied it has its limits."

At a special meeting, held shortly after the annual meeting, it was voted that the capital stock of the company be increased from \$15,000,000 to \$25,000,000. More than one hundred thousand shares were represented. The shareholders wished to place the directors in a position to issue new stock for the extension of the company's system as the growth of the company's business warrants.

The Cable.

Mr. D. Coath, assistant superintendent of the Commercial Cable Company station, at Rockport, Mass., was a recent New York visitor.

Mr. John N. Weisiger, cashier of the Direct United States Cable Company, New York, was married in Washington, D. C., on February 12, to Katharine R. Rodrigue.

The Commercial Cable Company on the 5th inst. certified to the secretary of state at Albany, N. Y., that it had increased its capital stock from \$15,000,000 to \$25,000,000. The certificate is signed by George G. Ward, chairman, and Albert Beck, secretary, of the stockholders' meeting.

A contract for furnishing the Signal Corps of the United States army with 1,100 statute miles of submarine cable to be laid between Puget Sound

and Alaska has been awarded to the Safety Insulated Wire and Cable Company of New York. It will be the longest telegraph cable ever made in the United States.

It is reported that 1,200 miles of the new German cable, which is to connect Emden, Germany, and the Azores, has been laid. The remainder of the cable will be laid as soon as it is constructed. The distance between these two points is about 1,000 miles. It is supposed that the 1,200 miles of cable was laid in order to get it out of the way. In these days when cable-laying has been reduced to a science, it is not considered a difficult task to grapple for the end of the cable on the bottom of the ocean-bed, lift it to the cable steamer, splice it to the cable on board the steamer and then proceed with the work.

According to a cable despatch a dispute has arisen concerning the concession held by the Eastern Telegraph Company for a cable between Constantinople and Odessa. The Russian Government bought up the stock of the company, whose concession expires June 1. At the same time the Turkish Government has decided not to renew the concession, but to take over the line and work it by its own telegraph administration. The original agreement gives the telegraph company a preferential right, and it is on this point that the Russian Government will press for a continuation of the concession.

"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.

No telegrapher, no matter what his position may be, who values his place and aspires for promotion based on all-around practical knowledge, can afford to be without "Pocket Edition of Diagrams and Complete Information for Telegraph Engineers and Students." See advertisement.

LETTERS FROM OUR AGENTS.

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

BIRMINGHAM, ALA., WESTERN UNION.

The material for remodelling this office is arriving, and work will begin in a few days. The materials for storage battery are ready to be put in place. All the furnishings of the office, counters, desks, tables and the woodwork of the switch-board will be of light colored oak, and will present a neat appearance. Everything will be new and up-to-date.

Arrivals: O. H. Peacock, H. G. Smith and M. E. Sparks, operators; J. R. Brown, clerk; Miss Cora E. Hart, cashier, vice R. M. Herdon, resigned.

Branch offices: John Batiste, is the lively manager at Bessemer, Ala. C. H. Allison has been appointed manager at Ensley, Ala., vice C. T. Walker, resigned. Mr. Allison is a first class business man, and we wish him success in his new position. J. C. McMurray is the artist at the key at Pratt city, Ala.

Following are the names of the managers on railroad lines leading into this city and who are also subscribers to the "Age": L. T. Washer, manager, Oneonta, Ala.; M. A. Strickland, manager, Kennedy, Ala.; R. E. Whitman, manager, Albertville, Ala.; Claude Harper, manager, Boaz, Ala.; W. R. Cox, manager, Attalla, Ala.; D. P. Wilson, manager, Russellville, Ala.; Sylacauga, Ala., with W. F. Brown as manager; Alexander City, Miss Huldah Bush, manager; Goodwater, Ala., Miss Adrian Vardaman, manager.

AUSTIN, TEX., WESTERN UNION.

The Texas Legislature, now in session here, has increased the business of this office to such an extent, as to necessitate several new additions to our operating force. They are: J. Durelle King, of Sioux City; Mrs. C. N. Philbrook, formerly with Western Union at St. Louis, and A. Legate of Galveston. The personnel of this office now is as follows: O. D. Parker, manager; Miss M. A. Johnson, bookkeeper; A. E. Estill,

chief; J. D. King, Mrs. C. N. Philbrook, Miss C. J. McPaul, O. A. Tryon, A. Legate, T. E. Sterzing, night chief; A. Jernigan and W. Johnson, clerks, and R. Jackson, check.

SAN FRANCISCO, CAL., WESTERN UNION.

Arrivals: L. B. Van Voorhees of Kansas City, W. D. Stewart and E. P. Roche, of Chicago; Miss Marie Mullen, Denver; C. W. Todd and G. H. Gilbert, Little Rock; Charles de Silver, Dallas, Tex., and C. F. Woodward, Buffalo, N. Y.

Miss Nellie Carson, for many years a member of the staff, has resigned, it is stated to go on the stage. She possesses a fine voice as an equipment for this work and our best wishes for success follow her.

Miss Sanquist, time clerk, is absent attending her mother, who is ill.

Mr. Ed. Dorgan is back again after a spell of illness.

Mr. Ed. Harrington, who has been assisting Manager O'Brien for the past year, has accepted a position with the newly organized district telegraph company at Los Angeles, Cal. Mr. Roscius W. Whipple of the operating room succeeds him.

Mr. Charles Weiler, who has so ably managed the race track office most of this season, has returned to the main office.

The sympathy of the whole office is extended to our old friend and co-worker, Mr. John Eagan, whose wife died recently.

CHICAGO, ILL., POSTAL.

During the recent storm and cold snap Chicago was cut off from the East and Operators Reeves, Simpson, Nisonger, Kramer, and Barger were sent to South Bend to work with New York.

Miss O'Neill has returned to the main office after a short period with a private firm.

Mr. Churchill, private stenographer to Mr. Hancock, our traffic manager, has been promoted to General Superintendent Nally's office. Mr. Churchill is well liked here and everyone is glad of his promotion. Mr. Eggleston, who has worked the Cleveland bonus wire for some time, succeeds Mr. Churchill. Mr. Eggleston also is a man who is well liked.

Mr. Kehoe has been regularly assigned to the San Francisco bonus wire.

Among the new arrivals are operators Keene, Springer, Knight, Leeklev and Ahern. Business continues very good for this time of the year.

Mrs. O. T. Anderson who has been ill for nearly a year, recently underwent an operation at Wesley Hospital. Her many Western Union friends will be glad to learn that she is doing nicely and hopes soon to be at home again.

Messrs. Powell and Qua have been appointed managers of West Side branch offices.

CHICAGO, ILL., WESTERN UNION.

J. A. Heffernan, formerly of this office now at Kewanee, Ill., with Geo. T. Sullivan, broker, was married to Miss Bertha E. Barnett, of Canton, this state, the ceremony being performed at Rock Island.

Frank Peterson was called suddenly to his home at Sioux City, to attend the funeral of his wife, whose death was sudden.

Dr. C. M. Glass, for years well known in Chicago, being at one time chief operator at United Stock Yards, died February 14. The interment was at Corey, Mich.

Mrs. Ames returned to her accustomed division after an absence extending through the Winter.

Mrs. Maud Wright is working in a broker's office for the present.

Emil West of the Salt Lake City local, died of pneumonia, after but four days illness. Mr. West had been with the Signal Corps at Manila and it is believed his health was there undermined. He leaves two children.

Frank Wertz, who is located at Rockford, Ill., formerly of this office, was a recent visitor.

On March 6 our esteemed chief operator, L. K. Whitcomb, celebrated the 35th anniversary of his entrance into the telegraph business, the 30th of his coming to this office and the 51st of his birth. We wish him many more pleasant anniversaries and prolonged success.

D. E. Cosgrove, of this office, and Miss Ada Coomer Hollister, of Huron, S. D., were married in this city on February 18. The couple will be at home after April 15.

The Signal Corps, I. N. G., composed of Western Union and Postal Telegraph-Cable Co. operators will hold their annual ball on Friday, May 8, at the Armory. The tickets will be out in a few weeks.

CLEVELAND, O. POSTAL.

A bowling match was played by telegraph between the operators of this company at Detroit and Cleveland. Each club had an operator who called off the game from each end as each man bowled. A big crowd watched the contest at this end, but most of them, being unable to understand the click of the instrument, could not appreciate the little jokes flashed from the fraternity at one end to those at the other regarding the play. None of the players were expert, the Cleveland club having been picked up for the occasion. However, as it was such a big success there will be practice games from now on and the next time we meet the Detroit boys we hope to change the score into our favor.

NASHVILLE, TENN., WESTERN UNION.

The appointment of Mr. A. H. Stewart to the position of manager has resulted in several promotions in this office. As already stated in the AGE Mr. Fisher has been transferred to the position of cashier. Mr. Neil S. Brown, who has been connected with this office for thirty years, has been promoted from wire chief to the position of chief operator. Mr. Robert H. Hunt, for twenty-five years in the service of the company, has been promoted from the position of night traffic chief to that of wire chief and assistant chief and assistant chief operator. Mr. H. B. Geer continues to be traffic chief, and Mr. R. C. Cowardin, assistant wire chief. Mr. E. W. Morgan retains

the place of night chief operator. Mr. W. F. Burton, night wire chief. Mr. John F. Fleming, whose connection with the company dates back twenty years, has been promoted to the position of night traffic chief, vice R. H. Hunt.

Mr. Brown is an expert at the key as well as at the board and we are very glad that we have him for Mr. Stewart's successor. He is genial and pleasant to all and though the company has an officer who is well able to perform its duties in a satisfactory manner, the operators and "checks" have a chief whom it is a pleasure to work under.

Following is the personnel of the office: Day—W. B. Gillespie, chief of the way department; Seth E. Elliott, Jacksonville; W. H. Redford, St. Louis; James E. Sharpe, Louisville; A. Boyd Durrett, first Chicago; J. O. Newman, Sr., Cincinnati; R. L. Redford, New Orleans; Thomas B. Adams, Chattanooga; Mrs. Alice R. Halley, Augusta; Miss Mamie E. Costello, Memphis; Lawrence Brennen, New York; W. E. Campbell, St. Louis; Ozro Stanley, Atlanta; R. G. Stanley, Birmingham; Will Musgrove, city wires; John F. Haas, John M. Ridley, Wm. McKinney, Stanley Norton, Miss Ellen M. Morris, Miss Bessie C. Sullivan and Miss Mamie Fleming.

Split Trick.—Samuel Bell, John Stewart, J. E. Rowe, John Newton, Martin O'Shaughnessy and Lee Bradford.

Night Trick.—E. C. Harris, Chicago; Wm. R. Rich, St. Louis; J. E. Cox, Louisville, and W. L. Mounce, New York; W. C. Atkinson is all night operator.

The extra list is composed of Guy Browning, B. F. Moore, P. D. Dewitt, J. R. Read, S. R. Stewart, J. R. Perry, W. O. Wilkerson and T. A. Shemwell.

David Munroe is at the "American" office. Thomas Durrett has a position with a local broker. John Hailey has returned to Nashville and is employed by Neil and Shofner Grain Company as a combination operator and stenographer.

Recent Visitors.—Harry Lewis and Edward Jenkins of St. Louis.

Ed. Jordan is the chief check day trick; Jones Flippen, chief check night trick; Bennie Sofge, Charles Summitt, and Frank Gleaves.

PITTSBURG, PA., WESTERN UNION.

Mr. W. C. Leith has been appointed night chief operator, vice Geo. M. Eitemiller, who has been transferred to the day force, as assistant chief operator and general wire and repeater chief.

Melville W. Munson, for forty years an operator, who recently resigned, was presented by his old comrades with a loving remembrance as a token of esteem.

BALTIMORE, MD., WESTERN UNION.

The twelfth annual meeting of the Telegraphers' Mutual Aid Association was held on February 12.

The president, A. K. V. Hull, in an address, congratulated the members on the satisfactory condition of the association. The receipts for the year for dues, etc., were \$819; paid out in sick

claims \$449.90. The balance on hand was \$1,758.87.

The following officers were elected for the year 1903: President, Howard C. Conley; vice-president, J. W. Hyman; treasurer, A. Grape; secretary, H. F. Meister; board of directors, E. S. Anderson, R. J. Fields, J. C. Hawkins, A. K. V. Hull, Ferd. Miller, H. C. Conley, H. F. Meister; auditing committee, S. T. Shutt, R. J. Bauer, O. H. Smith; examiners, R. L. Russell, G. A. Dawson.

The annual meeting of the Telegraphers' Mutual Savings and Purchasing Association was held on February 23rd.

A dividend of fifteen per cent. for the past six months was declared and the following officers elected: President, H. F. Meister; vice-president, Wm. B. Gibson; treasurer, J. C. Hawkins; recording secretary, F. F. Basye; executive committee, A. J. Clarke, W. R. McGee, H. Gentry, F. T. J. McCaghey; auditing committee, J. C. Wagner, W. J. Taylor.

MINNEAPOLIS, MINN., NORTH AMERICAN TELEGRAPH CO.

Changes still continue at the Chamber of Commerce office.

G. W. Lloyd, who suffered a fractured ankle shortly after leaving the Western Union to become Chamber of Commerce manager of this company, has returned to the Western Union as assistant superintendent. His connection with this company was short.

J. R. Brown is transferred from the management of the Guaranty Loan office to that of the Chamber of Commerce.

C. H. Ryder has accepted a position with a broker firm, leaving the city.

Miss Kenrick, formerly with the Western Union, is the new manager at the Guaranty Loan office.

T. V. Coleman has returned from the Chicago Postal.

C. W. Michael resigned to accept a position with the Postal at Chicago. E. H. Lee succeeds him.

The Minneapolis Commercial telegraphers held a social dance on Friday evening, February 20, at Malcom's Hall. An enjoyable time was had by those present.

ST. LOUIS, MO., WESTERN UNION.

The combination of snow, sleet and rain which St. Louis experienced for some two days, played some very mean pranks on our force of chiefs.

C. W. Groos, assistant chief operator, was compelled to stay at home for a few days on account of a wrenched wrist of his left hand. It will be some time before Mr. Groos will recover the use of his hand.

J. H. Gallagher, night loop chief, experienced a bad fall, resulting in a sprained ankle, which has caused him a great deal of trouble. He is getting around again, but is still unable to resume his position at the board.

St. Louis was represented at the Kansas City telegraphers' ball by Messrs. Jas. J. McCruden,

Jos. Barry, Wm. Polakoff, Ray Alger, Henry Van Dam and H. Wimmer.

George Bagot has left this office to accept a position in Chicago.

Frank Garosky has returned from Hot Springs, where he was employed in a pool room. His brother, Tony, left the same week for Estell, Nebraska.

J. H. Bennecke has returned from Atlanta, Ga., where he has been working the past six months.

PHILADELPHIA, PA.

My motto—Honorable Dealing—D. A. Mahoney, special representative, Western Union Telegraph Co., Philadelphia. Send for booklets and easy monthly terms for "club plan" now forming for purchase of latest models, Pay-Sholes, Fox, and Jewett typewriters. Old machines taken in exchange and liberal allowances made. All makes rented three dollars monthly. Remodeled Smith's and Remington's \$40 to \$50. small monthly payments. OPERATORS REMEMBER, "NO MILL NO WORK" IN EITHER THE WESTERN UNION OR POSTAL, THIS CITY.

WESTERN UNION.

A pleasant surprise was that in the recent announcement of the marriage of Ida M. Paulhamus to Louis Smearer, both of this office, which occurred February 4 in Camden, N. J. A reception will be given later in the month at the home of the young couple in Merchantville, N. J.

Another marriage which took place in this city on March 7 was that of C. F. Happersett, of this office, recently returned from San Juan, Porto Rico, where he was stationed for three years, in the United States Signal Service, to Miss Emilie G. Wolff. Mr. and Mrs. Happersett have gone on a wedding trip to Florida.

Mr. Jacob Levin, inspector for the Eastern and Southern Divisions, was a recent visitor and seemed well pleased with the general condition of our office and its management.

E. S. Hengst has been appointed manager at York, Pa., vice C. D. Rose, resigned.

E. J. Hennessy of this office has resigned to accept a position with Harrison Bros., this city.

Southern Wire Chief Geo. O. Gregg has secured leave of absence for two months, and accompanied by his wife, he will go to California to visit his son. Mr. J. T. Wilde will fill Mr. Gregg's place during his absence.

L. H. Jordan of Greensboro, N. C., has been appointed manager at Huntingdon, Pa.

Miss Purcell from Buffalo, Lewis A. Riley and Mr. Ruberg of this city are recent arrivals.

THE PROPOSED TELEGRAPH TOURNAMENT.

Referring to the article in the last issue of the "AGE" relative to the coming telegraph tournament, it is earnestly hoped, and I am free to say, desired, by the fraternity here that the committee will select Philadelphia as the place of meeting. Philadelphia has demonstrated in the past that when she does anything she does it well. Access is easy, accommodations unsurpassed, and already pledges have been given, financially and otherwise, of aid that will be proof positive of

an unprecedented success. It is hoped that the City of Brotherly Love will have the opportunity of showing the country at large that she stands preeminent as a successful promoter of feats of skill in the telegraph profession.

POSTAL.

Further manifestations of growth are conspicuous in many departments. Two fifty wire sections have been added to the switchboard, and more space has been allotted to the service department, in the operating roof. These two features alone have caused considerable alterations. In the booking department, Mr. Donnalley's staff has been augmented by the addition of several clerks and new cases have also been supplied to accommodate the demand for increased filing space.

A number of new arrivals are noted, among whom are the Messrs. H. Bell, T. M. Ragan, John Condon, C. D. Strong and J. L. Angle.

Mr. Jos. Lane has been obliged to resign in order to rest a played-out arm.

On account of the severe illness of an especial friend, Mr. Horace Holtzinger's stay in Texas was abruptly terminated by his speedy return to Philadelphia.

A number of visitors were noticed recently, prominent among whom were J. H. Smart, superintendent of the Commercial Cable Company, J. F. Skirrow and W. H. McCollum, all of New York.

Numerous changes have been made in the branch offices recently. Mr. Geo. F. McIntyre has been made manager of the office at 3rd and Chestnut streets, while the office itself has been made more agreeable, both in the interior, as well as exterior, by being newly papered, more attractive signs hung, etc.

An entire new equipment of registers and bells at the Front and Chestnut streets branch office, together with new signs, has done much toward improving the facilities and appearance of that office, while further improvements and changes will shortly be effected. Nor has the front and arch streets office been overlooked in the matter of conspicuous and attractive signs, and Manager Auerbach, the new incumbent, is gratified at the result of his efforts to increase the business.

Miss D. E. Wygant, of Bay City, Mich., has been appointed manager at Camden, N. J., with A. N. Linn as assistant.

Mr. Brittner, of the 14th District American District Telegraph office, is enjoying a well-earned vacation.

ATLANTA, GA., NOTES.

The fraternity in this city organized on November 1, 1902 the Atlanta Telegraphers' Aid Society, which has proved to be a move in the right direction. Already it has a membership of forty, is doing well, and has extended aid to several members who have been sick. It is conducted on the same economical basis that characterize similar organizations located in nearly all large cities, and is worthy of the support of Atlanta and of the surrounding territory. The sick

benefits of this society confer a payment of \$7 a week. The dues are fifty cents a month. The officers are as follows: W. R. Milner, president; W. L. Gilbert, secretary and treasurer. Executive Committee: P. H. McDowell, W. Broadbent, T. C. Alston, R. E. Harper and W. R. Milner.

At the Western Union office a dynamo plant will take the place of the storage battery that has been in use here for the past six years.

W. B. Stuyt, the originator of the tournament, and the man that secured the valuable prize from Mr. Carnegie, is actively at work answering letters pertaining to the next tournament.

MONTREAL, QUE., GREAT NORTHWESTERN.

Hugh Lyle is subbing at a broker's office.

John Vantier is ill with appendicitis.

Edward Driscoll is in Toronto.

Miss Bessie Nelson is ill at her home with measles.

Miss Gertrude Egli has resigned from the ticker department and Miss G. Lucas has succeeded her.

Mr. Quincy, Baltimore, Md., is the latest addition to our staff.

William Burris has resigned to accept a position with the Metropolitan Stock Exchange, Sorel, Que.; Herbert Keating has replaced him at the Montreal Exchange office.

OKLAHOMA CITY, OKLA., WESTERN UNION.

S. E. Hurlbut, who has been our wire chief for the past year, resigned and was succeeded by W. W. Glaze, who has been acting as night chief. Mr. Hurlbut will visit a short time with his brothers in Guthrie, (respectively the manager and wire chief of the Western Union at that point) after which he will accept a position in Los Angeles, Cal.

C. T. Meigs, night report man, is now night chief, which places R. N. Long on night report. A loop has been strung to the "Daily Oklahoman" and that paper is now a full Associated Press paper, with N. C. Gill, from Chicago, in charge.

Mr. R. E. L. Delzell is our newest "extra" and hails from the Choctaw Railroad at Tecumseh, Okla.

Superintendent Horton and Assistant Superintendent Nelson, of the Third District, were in this city a few days ago, admiring the steady growth of the town and business, and, we think, planning extensions and change of location. They are well pleased with the showing the office is making.

BUFFALO, N. Y., POSTAL.

Arrangements are being made for a unique game of bowling to be played between the employees of the Postal of Detroit, Mich., and the employees of this city. The game is to be played by wire. The team in each city are to send the score of the player to their opponents as soon as it is rolled. This office holds several good

bowlers and Capt. Berg says he expects his men to carry away the honors.

Mr. Daniel E. Higgins of the New York bonus wire, who tendered his resignation to take effect March 1, will be greatly missed from this office. Mr. Higgins has accepted a much more lucrative position in Tacoma, Wash., for a railroad. He has the best wishes of his many friends for success in his new position.

Mr. G. F. Reilly, night operator at the Palace Arcade, has returned from Seneca Falls, N. Y., where he was called by the illness of his mother, who, however, is recovering.

Mr. A. H. Lockwood, of the Toronto wire, who has been confined to his home since February 12 with pneumonia, returned to duty on March 8.

Mr. Harry Johnson, who recently worked in the cable office in New York City, has accepted a day position in this office.

Since the mysterious Burdick murder case, which occurred in this city recently, there has been a score of reporters here from the leading newspapers of New York City to report on the matter. It has made this office resemble the week of the assassination of the late President McKinley, for press. The reports are being handled in excellent shape, direct wires being cut through to all the newspaper offices.

NEW YORK CITY.

"My Old Virginia Home Upon the Farm," "Utopian Waltzes," and all popular music, 18c. each. Pianos sold \$1 per week. B. L. Brannan, 105 B'way, N. Y.

WESTERN UNION.

A meeting, composed of ladies and gentlemen of the operating department, was held in room 60, on February 27, for the purpose of forming a dramatic and social organization.

Mr. A. M. Lewis called the meeting to order and Wm. L. Ives was made temporary chairman. Mr. Ives after explaining the objects of the call, said: "I have attended many meetings in this grand old room, but not one of them has given me more pleasure than the present. To be able to stand before such a cluster of the flowers of America needs steady self-poise and something to say, and care as to how it is said. At my right sits Miss Voorhees, who deserves credit for being the inspiration of the movement, and her grand intrepidity in the belief that good results would follow and social footing would mark a new point in the telegraphic circle of to-night. Of course you can't expect to be a Mrs. Carter, a Langtry or a Bernhardt, nor can you young men expect to reach Mansfield or Drew, but you may do the best you possibly can in making the attempt. We all may be 'what we can.' No one can stop your progress if your aim is in the right direction, with a purpose to win—you must be resolute; know no such word as fail. Now, ladies, in my closing word to you, I wish you God speed in this dramatic social club. Nothing is too good for you. The ladies are our guiding stars, and if they are followed, mistakes will be so few that they will be unnoticed."

The following officers were elected: President, F. J. Sheridan; first vice-president, F. A. Turner; second vice-president, Mrs. H. M. Bryant; treasurer, Miss Mary Lee; financial secretary, John Bligh; recording secretary, Miss N. M. Voorhees. Committee on by-laws: S. H. Kroff, F. A. Turner, H. C. Hayden, Mrs. Cora A. H. Mauer and Miss Emily C. Finn. Committee on Ways and Means: A. M. Lewis, John Bligh and F. A. Turner. The dues are 25 cents per month, and a membership of 150 was enrolled.

A cordial invitation is extended to outside telegraph and telephone employes to become members of the society.

At a subsequent meeting at which one hundred persons were present, the name decided upon for the new organization was that of "The Telegraphers' Social and Dramatic Club."

Alternating quadruplex apparatus is now being installed on the Washington, Boston, and other circuits. An alternating quadruplex system will also be installed on the Cleveland, Ohio, circuit without repeaters. Cleveland is about 650 miles distant from New York, and this would be the longest quadruplex circuit worked direct without repeaters ever installed.

The room lately occupied by Mr. J. C. Barclay, electrical engineer, has been taken possession of by Mr. Thomas F. Clark, vice-president. The room vacated by Mr. Clark, which adjoins President Clowry's office, will be turned over to the executive clerks who have previously been confined to very cramped quarters. The new private office of the electrical engineer on the fourth floor is well adapted to the requirements of his department.

Twelve of our operators have been recently transferred to Jacksonville, Fla., to assist the regular force at that point during the rush season. They are: J. Wilson, N. W. Lovegrove, E. C. Davis, H. Gutman, F. A. Gribbon, D. F. Jones, C. J. Chryst, John Gibbons, W. A. Glenn, C. H. Labonte, W. Winter and Ira Baker.

Francis A. Coleman, of the extra force, 42 years of age, a native of Brazil, Ind., and well known in Chicago telegraph circles, died in New York on February 5. A wife and two children survive him. Mr. Coleman permitted his insurance in the Telegraphers' Mutual Benefit Association to lapse in 1896.

Mr. W. J. Quinn having declined renomination as financial secretary of the New York Telegraphers' Aid Society, a spirited contest for that position as well as the recording secretaryship, is taking place. The election will occur on March 25. The retiring secretary, Mr. Quinn, has held the office for about twelve years, and it may be truthfully said that during all these years he has executed the affairs of his office in so satisfactory a manner as not even to cause the slightest friction.

H. A. Fitchett, C. A. Hanson, R. L. Atkinson and L. E. C. Moores, who have been on the jigger switch for some time, have, on account of the

abandonment of the switch, been assigned to duty as operators.

Frank D. Murphy, of the Southern Division has been assigned as emergency traffic chief.

Henry J. Dunn, has been appointed acting traffic chief. He is a capable and energetic man, is well liked by the officials and the operators.

Mr. Fred Catlin has been appointed to the position in the quadruplex department to fill the vacancy occasioned by the death of A. M. Pennock.

Mr. Marion H. Kerner has been appointed superintendent of lectures of the Wadleigh High School of New York, by Dr. Henry M. Leipziger, supervisor of lectures of the Board of Education. Mr. Kerner is a lecturer of wide experience and should fill this position most acceptably. This appointment will not interfere with the course of lectures on the progress of the telegraph which he is now delivering.

POSTAL.

Mr. George W. Blanchard, assistant superintendent, has been promoted to be superintendent of the Marine service and of the New York City main and branch offices.

Mr. D. H. Gage, of the electricians' office, is at Harrisburg, Pa., assisting in the reconstruction work now going on in that office.

Mr. A. E. Chandler has been promoted to the newly created position of Superintendent of Messenger and District Service, New York City.

The fifteen-year-old son of Mr. Isaac Smith, superintendent of tariffs, is rapidly recovering from the effects of an operation for appendicitis and from an attack of peritonitis and the father has every excuse for being in a very happy frame of mind.

At a meeting of the employes of the executive offices, held on March 3, a club was formed under the name of "Postal Club." The object of the club is to promote good fellowship among its members. It is the intention of the members to hold an outing in the summer and a dinner in the winter. The present membership is fifty, but it is hoped that this number will be increased in the very near future. The officers elected were: W. S. Hallett, president; J. J. Cardona, vice-president; W. B. Davids, secretary, and F. J. Kernan, treasurer.

Assistant Manager F. F. Norton is on duty again after a month's very severe illness.

Mr. R. E. Chapman has been assigned to the Pittsburg bonus wire; Messrs. C. M. Hargis and C. Stevenson to the second Chicago bonus wire.

There is a large absentee list by reason of grip, heavy colds, etc.

Promotions from checks to operators are as follows: Miss Grace Crawford, Miss Margaret McEneaney, Master N. Fisher and Master J. Reilly.

Resignations: E. Myers, J. J. Hope, G. Irwin, L. V. Goodwill, T. Conroy and C. Berg.

Subscribe for TELEGRAPH AGE, \$1.50 a year.

Mr. Munsey and his Automobile.

It was an unfortunate day for Frank A. Munsey, the well-known publisher, and old time telegrapher, when he was apprehended by a minion of the law for speeding his automobile along Riverside Drive, New York, at a gait exceeding the legal limit of eight miles an hour. Mr. Munsey, when brought before the court, assured the Judge that his machine was not capable of travelling at the excessive rate of speed with which he had been charged, and straightway offered to prove his assertion by inviting the Judge to take a ride with him. He also sought to strengthen his statement as to his machine's sluggishness of purpose when let loose on the road, by proffering a bet of \$1,000 to \$100 as to its incapacity of going over eight miles an hour. The Judge gazed upon Mr. Munsey with a pitying smile and in discharging the offender bade him not to violate the ordinance again.

This experience of Mr. Munsey reminds us of what happened sometime ago to a prominent and active New York telegraph official. He was arrested for riding a bicycle at night without displaying a head light, as the law requires. He and the officer were followed to the police station by a crowd of young hoodlums who regarded the telegrapher as little less than a hero, supposing of course that he had been arrested for scorching. But when they learned that their hero was not a hero at all, they dispersed with disgust. Mr. Munsey should have been arrested for a better cause, but he hardly can expect his old telegraph friends to believe that his automobile cannot do better than eight miles an hour.

Heed the Advertisements.

We desire to call special attention to the advertising now and at all times, carried in TELEGRAPH AGE. It frequently happens that readers in answering these advertisements fail, probably through thoughtlessness, to give the paper its proper credit for furnishing the information upon which they are acting. If our friends would in all cases remember to do this, their interests, as well as our own, would be materially promoted thereby, for there is no other way to trace the relation between cause and effect so important to the advertiser in determining the value of his advertisements. The advertisements, too, often afford interesting reading and frequently contain offers which the average reader would do well to heed.

For instance, we have been running an advertisement of Fairbanks Glycerine Tar Soap which appeared opposite to the first reading matter page, in which a tender was made to send a sample cake of the soap, free, to any one who would write for it. Surely such an offer was worth acting upon.

Again, in our January 1 issue, in a full page advertisement, J. H. Bunnell & Co., of New York, offer to send the book entitled "Sketches New and Old," by Walter P. Phillips, and which we sell at one dollar per copy, free, on receipt of ten cents to cover the postage. The question is, how many of our readers took advantage of this offer?

As we write an advertisement of the famous Williams' Shaving Soap has been received for

HANDY ELECTRICAL DICTIONARY**VEST POCKET EDITION**Compiled and Edited by
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The size of the book is only 2½ inches by 5½ inches, and ¼ inch thick. Bound in two styles:

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**SEND US AN ENAMELED SIGN OF ANY SIZE AND
WE WILL MAKE YOU UP A SAMPLE RACK**

Manufactured by the

CITY FORGE AND IRON WORKS,**DAYTON, OHIO**

insertion in this issue of March 1. This, too, contains an offer of a free gift of a useful device which, no doubt, many will be glad to obtain.

If readers would closely scan our advertising pages and take advantage of the offers frequently made therein by advertisers, to send free samples of goods, it will be found that the various gifts actually awaiting acceptance would probably more than offset the subscription price to the paper itself.

At the recent civil service examination of applicants for positions as telegraph operators in the Fire Alarm Telegraph Department of the City of New York, three appointments out of ninety applicants were made. The successful candidates were Frank A. Ganung of the Postal Telegraph-Cable Company, N. Y.; John J. Welsh, of the Automatic Fire Alarm Company, N. Y., and John G. Stephens, operator and ticket agent for the Harlem Railroad, at Fordham station, N. Y., each at a salary of \$1,200 per annum.

"A B C of Electrical Experiments," by Prof. W. J. Clark, has just 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.

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

An operator who wishes to spend the months of June and July in Europe and who is an old European traveler, desires to accompany any other member of the profession who has in mind a similar trip. Address: European Trip, TELEGRAPH AGE, New York.

The Fay-Sho Typewriter Leads All. It manifolds forty copies, is fast and up-to-date. Sold on easy terms. All makes of typewriters rented and for sale. Special inducement to railroad operators and agents. Address: Amos L. Boucher, 8th Floor, 195 Broadway, New York.

Bargains in real estate.—Houses in Brooklyn, N. Y.; Ozone Park, L. I.; Mount Vernon, N. Y.; Bayonne, N. J. and Harrington Park, N. J. Lots at Floral Park, L. I., right on line of improvements, which will be favorably effected by the tunnel (very reasonable). Sold on easy payments or discounts for cash. Prices on houses \$1,300 to \$3,600; on lots \$75 to \$175. John Brant, 195 Broadway, New York.

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I have a prosperous Shoe Business in a live town in New Jersey. Am also Manager of the Western Union Telegraph and New York & New Jersey Telephone Companies. Central office located in my store. Would sell at small percentage above inventory. Reason; other business.

Sales about \$10,000 per year. Net profits last year over \$2,200. Terms \$3,000 cash, balance easy monthly payments.

Splendid opportunity for telegrapher.

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Pope's Modern Practice of the Electric Telegraph. A handbook for operators. 223 pages, fully illustrated. Price, \$1.50, postage prepaid. Address J. B. Taltavall, TELEGRAPH AGE, 253 Broadway, New York.

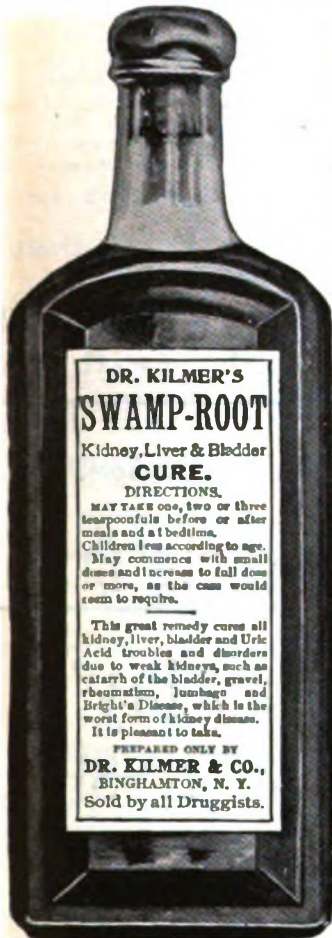
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To Prove What Swamp-Root, the Great Kidney, Liver and Bladder Remedy Will Do for YOU, Every Reader of "The Telegraph Age," May Have A Sample Bottle Sent FREE by Mail.

It used to be considered that only urinary and bladder troubles were to be traced to the kidneys, but now modern science proves that nearly all diseases have their beginning in the disorder of these most important organs. Therefore, when your kidneys are weak or out of order, you can understand how quickly your entire body is affected, and how every organ seems to fail to do its duty.

If you are sick or "feel badly," begin taking the famous new discovery, Dr. Kilmer's Swamp-Root, because as soon as your kidneys are well they will help all the other organs to health. A trial will convince anyone.



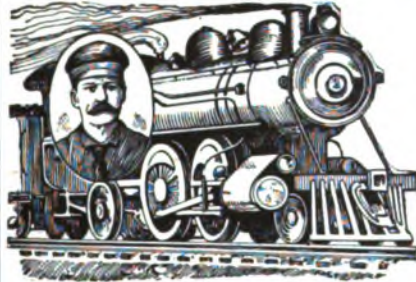
(Swamp-Root is pleasant to take).

EDITORIAL NOTE---If you have the slightest symptoms of kidney or bladder troubles, or if there is a trace of it in your family history, send at once to Dr. Kilmer & Co., Binghamton, N. Y., who will gladly send you by mail, immediately, without cost to you, a sample bottle of Swamp-Root, and a book containing many of the thousands upon thousands of testimonial letters received from men and women cured. In writing, be sure to say you read this generous offer in "Telegraph Age."

A Railroad Man's Cure.

Engineer Van Scoyoc in writing to Dr. Kilmer & Co. says: "I have been thinking that worst from me would benefit those who may be suffering as I was before I began taking your Swamp-Root, the great kidney, liver and bladder remedy."

I am a locomotive engineer, employed on the Tyrone and Clearfield Branch of the Pennsylvania Railroad.



ENGINEER T. J. VAN SCOYOC.

Member of Brotherhood Locomotive Engineers, Lodge 467, Tyrone, Pa., P. R. R.

Three years ago I was afflicted with kidney and bladder trouble, so bad that I was compelled to lay off duty from my engine and was in the care of two doctors. However, their medicine did not benefit me. One day while reading the Baptist Commonwealth I noticed your advertisement, to send name and address for a sample bottle of Swamp-Root. At this time my trouble had reached such a serious stage that it was with great difficulty that I could urinate. I sent for the sample bottle, and in three days received a small bottle of Swamp-Root, which I took according to directions, and by the time I had taken the contents I could pass water more freely. I was so pleased with my experiment that I sent my wife to the drug store of W. M. Millick, Phillipsburg, Pa., and secured a one-dollar bottle. I continued taking Swamp-Root until I was entirely cured. Now, whenever I feel any pain or soreness after being exposed to bad weather or hard work, I take a dose or two of Swamp-Root. I cannot recommend this remedy too highly, especially to brother engineers who are more or less troubled with their kidneys, (more than any other class of men).

Yours truly,

T. J. VAN SCOYOC, Engineer P. R. R. Wigton, Clearfield Co., Pa., formerly of Phillipsburg, Pa.

If you are already convinced that Swamp-Root is what you need, you can purchase the regular fifty-cent and one-dollar size bottles at the drug stores everywhere. Don't make any mistake, but remember the name, Swamp-Root, Dr. Kilmer's Swamp-Root, and the address, Binghamton, N. Y., on every bottle.

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Mr. Tassell made \$1,500 the first five months. Mr. Wise, of S. D., \$12, 1st day. Mr. Clay, of Vt., \$9 first day. Mr. Doerge, of Me., \$10 one afternoon. Mr. Elliott, of Pa., \$17 first two days. Mrs. Howard, of Ia., \$59.50 in one week. Hundreds of others making big money selling and appointing agents for Quaker Vapor Bath Cabinets. Prices reduced. Let us start you. We furnish everything. Anyone willing to work can make \$20 to \$40 a week easy. Greatest money-maker known. Just what everybody needs. Wonderful Seller. We're old firm. Capital \$100,000.00. Write for New Plan. Terms, Etc., FREE. Address, WORLD M'FG CO., 619 World Bldg., Cincinnati, O.



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IF OPERATORS would avoid and cure that dreaded affliction.



Telegraphers' and Writers' Cramp

They should use



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Paralysis
Exerciser**

It will strengthen the relaxed cords of the hand, wrist and arm; will arrest and cure all cases of paralysis and cramp of years' standing; also stiff joints caused by accident.

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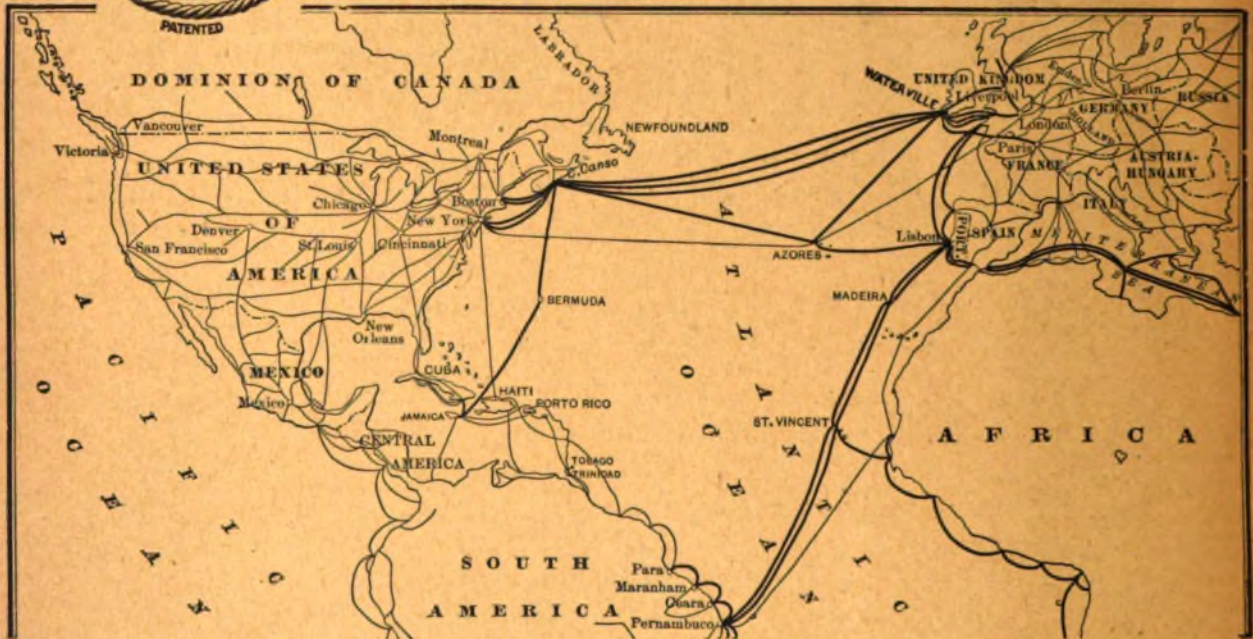
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