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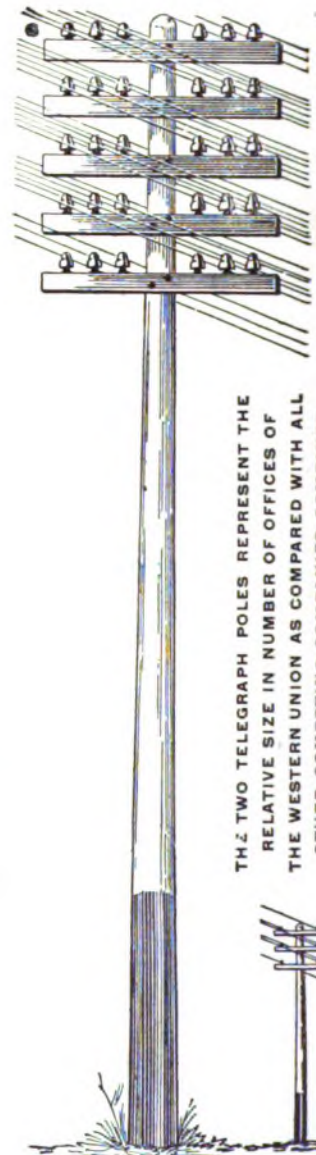
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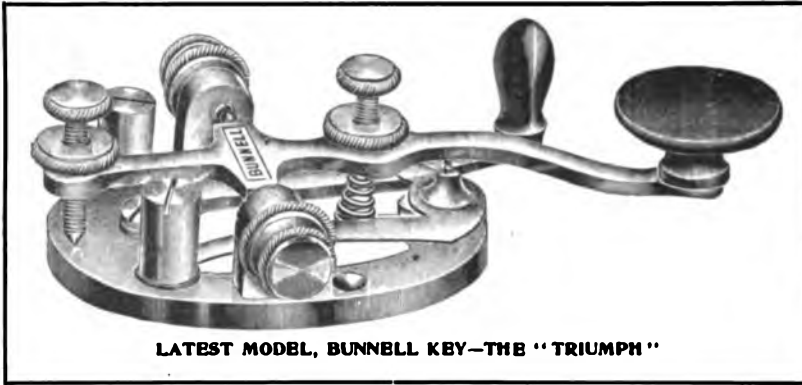
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Book Review.

"Telegraphic Systems," by Arthur Crotch (, B. Lippincott and Company, Philadelphia, 270 pp., 222 illustrations), a member of the engineer-in-chief's department of the British telegraphs, adds another volume to the works of this author, those preceding it being "Elementary Telegraphy and Telephony," "Telegraph Secondary Cell Installations" and "The Hughes and Baudot Telegraphs." In the present volume the author deals with his subject in the same plain and lucid manner that has marked his previous efforts. His aim has been to give a plain and concise description of the main systems in use in practical telegraphy. In the fourteen chapters comprised within the book, full consideration is given of batteries—primary and secondary; of universal battery working, duplex, diplex, quadruplex, automatic and multiplex telegraphy; the Hughes type-printing instrument, the Baudot system and the Murray type-printing telegraph are reviewed; there are also chapters on test and battery boxes, circuit concentrator, repeaters, and submarine telegraphy, the closing chapter being devoted to wireless telegraphy. The volume is carefully indexed, is printed on good paper, the illustrations are well drawn, and the various subdivisions of a great subject are clearly presented. The price of the book is \$2, and it will be sent to any address, carrying charges prepaid, on receipt of price. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

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Twenty-sixth Year.

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SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

Why a Positive Current Stains and a Negative Current Will Not.

A correspondent writes as follows:

In what particular manner does a positive current of electricity stain the chemically prepared tape used in rapid automatic telegraph systems when registering the dots and dashes, and why is a negative current unable to leave a similar mark?

Text books tell us that electricity is one and the same thing regardless of its source. Is it direction of flow, then, that does the trick, or does positive possess some individual property not present in the negative current? Furthermore, as the stain goes clear through the tape and shows on both sides, why is credit for the mark given to the positive polarity only? If you will explain this riddle you will greatly relieve the perplexed lay minds of a few readers of *Telegraph Age*, who have been discussing this question among themselves without arriving at any definite conclusion.

The writer of this query touches upon an interesting subject, and doubtless there are many who will welcome an elucidation of the matter. Let us say, then, in the first place that neither the direction nor the consistency of the current itself has anything to do with the actual staining of the tape except, inasmuch as the electric current is the factor which causes the necessary changes to take place in the compound contained in the chemically prepared tape that force the coloring

element therein to accumulate on the tip of the needle which leads to the positive source of the battery. In other words, the electric current itself is merely the active agent which creates coloring material or the necessary conditions therefor.

To make this point plain, the following facts should be understood: When a current of electricity flows through an electrolyte the compound molecules of which it is composed split up into their component parts. One of the elements passes over and settles on the negative electrode, and the other element possessing the coloring property makes its appearance at the positive electrode and manifests its presence there by a stain on the damp paper. The stain is made at the positive pole only, but on account of the thinness and partial transparency of the moistened paper it may be seen clear through to the negative side, but of course with diminishing effect.

That the positive needle leaves no stain may readily be seen by an inspection of the performances of the two needles employed in any automatic system of telegraphy using chemically prepared paper. In such a system the two needles are placed almost side by side on the top surface of the moving tape, but separated by a space of probably a quarter of an inch. The positive current delivered by one needle, therefore, does not flow downward or through the paper's thickness to reach the negative outlet, but passes transversely across the tape to the companion needle, yet there is no resulting stain between those points except where the positive needle actually touches the tape. It is obvious, therefore, that the stain does not go "clear through," as stated, or at least it will not if the tape is made thicker.

The reader may recall that a glass tube containing a litmus solution is sometimes employed to determine the polarity of a battery by passing the current through the solution.

When this is done the solution is quite clear, except near the positive pole, where it becomes colored a deep red. The same principle is involved in the decomposition of the chemically prepared tape.

In connection with this subject it may be interesting to know that the great rapidity attained in making the Morse characters by the staining process is made possible, first, because the chemical action due to the electric current is instantaneous; and, second, because there is no mechanical motion of the marking needle required in the operation. Furthermore, as there are no magnets or other coils of wire in the line circuit, the current is not retarded in doing its work, as is the case where it must first build up a magnet

to a certain value in the face of opposition before the latter becomes effective.

Another question somewhat in line with the foregoing inquiry, which was recently received, is this:

Why will a current of electricity not cause a bar of brass to become a magnet, the same as it does a bar of iron? In one of your previous articles you explained that the iron became magnetic owing to the rearrangement of the molecules thereof which are set in a uniform manner when the current flows around the said bar. Now, a brass wire or rod also elongates under similar treatment, which would indicate that its molecules are also rearranged methodically. Why should the bar not show like results?

It is not the mere elongation of the bar or rearrangement of molecules itself that creates a magnet; that part of the performance is a mere incident.

In the first place the current does not create the magnet. It simply aids a multiplicity of little magnets which already exist in iron to get together and exert their individual forces all in one direction; hence an appreciable result. Brass and nearly all other metals contain no little magnets. Hence there is nothing to be gained by altering the positions of the respective molecules in the mass of a brass bar.

Recent Telegraph Patents.

A patent, No. 912,029, for a telegraphic key or transmitter, has been granted to H. O. Putt, of Millbury, Ohio. The key lever is provided with a spring carrying a supplemental contact for the production of the dot impulses and has a weighted end, so as to be capable of rapid vibration when once set in motion in order to permit a number of closures of the circuit, thus giving a number of dots.

The following patent has expired:

Patent No. 468,755, for telegraphy, held by W. F. Wentz, of Newark, N. J.

The First Automatic Repeater.

In the article on the first automatic repeater, by George F. Milliken, on page 166 of the February 16 issue of *Telegraph Age*, a curious mix-up of type occurred due to the dropping out of a slug and the misplacement of another, following an order for correction, and thus by line disarrangement, impairing, in part, the sense of the paragraph. It should have read:

"In making these statements, as elsewhere in his article, Mr. Clark utterly ignores the essential feature of adjustable retardation employed in the Milliken repeater, and assumes the only advantage to be in the elimination of the extra armature. In this repeater the holding is really done by the adjustable retractile spring of the armature lever, entirely independent of the relay magnet or its armature adjustment, this construction being a different proposition and having nothing to do with the incidental elimination of extra weight."

Personal.

Mr. Thomas A. Edison, on February 11, reached his sixty-second birthday. He is hale and hearty, and evidently has many more years of useful life before him.

Mr. H. B. Thayer, president of the Western Electric Company, New York, has been elected a vice-president of the American Telephone and Telegraph Company.

To Miss Daisy Andrews, the daughter of a New Yorker, but who was born and has always resided in France, Paris owes its new messenger service. In 1905 she obtained from the French Government the concession which gave the company she organized its rights to use the canalization and conduits throughout the city for their lines. The boys were recruited upon the recommendation of the Government from among the sons of the employees of the postal and telegraph department and were furnished with bicycles. Until then the city was without any organized messenger service. Miss Andrews is now in New York on a visit to her parents.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

The recent unusually severe sleet, wind and rain storms have caused greater damage to telegraph property than was ever before experienced since the telegraph came into general use for commercial purposes. The storms were not confined to any one particular locality, but were widespread throughout every section of the country. As soon as the damage caused by one storm had been repaired, others would follow in quick succession, inflicting greater loss than before. All lines shared equally in the general destruction of property.

Mr. F. J. Scherrer, assistant secretary of the company, and private secretary of President Clowry, accompanied by his wife and daughter, were in Chicago last week, called thither to attend the funeral of a near relative.

Mr. J. E. Jenkins, electrician at New Haven, Conn., has installed three mercury-arc rectifiers at different points in his district within the past two months, which give satisfaction.

Mr. William Salisbury, chief operator of the Omaha, Nebraska, office, was married to Miss Nina Ernestine Stein, on February 16.

RESIGNATIONS AND APPOINTMENTS.

Mr. H. A. Carroll, formerly manager at St. Augustine, Fla., has been appointed manager at Macon, Ga., vice W. B. Powell, appointed general inspector of the Southern division to take the place of S. L. Burts, made manager at Atlanta, Ga. Mr. C. F. Fox, manager at Waycross, Ga., has been appointed manager at St. Augustine, Fla., vice Mr. Carrell. Mr. W. R. Clayton succeeds Mr. Fox at Waycross, Ga.

C. O. Blandin, chief clerk to Superintendent S. E. Leonard, and for several years manager at

Topeka, Kansas, has resigned on account of ill-health, and has moved to his ranch near Greeley, Colorado. R. L. Jackson, cashier of the superintendent's office, has been promoted to the position of chief clerk.

The Morse Electric Club.

The dinner of the Morse Electric Club took place at the Hotel Savoy on the evening of Saturday, February 27. W. C. Brown, the newly-elected president of the New York Central lines, was the guest of honor. Many speakers made admirable addresses, and altogether the occasion was an unusually interesting affair. Owing to our having gone to press before a suitable record of the event could be prepared for publication, we have reserved the details for our March 16th number.

Postal Telegraph-Cable Company.

EXECUTIVE OFFICES.

Among recent executive office visitors was: Edgar W. Collins, superintendent at Cleveland, O. Mr. Collins spent several days in the city and took occasion to make a number of calls on personal friends.

Mr. H. D. Reynolds, superintendent at Buffalo, N. Y., was also a recent executive office visitor.

Articles of incorporation were filed, February 5, at Reno, Nev., by the Postal Telegraph-Cable Company for the purpose of operating a line of telegraph through Nevada from other states. The company is formed by Salt Lake people, and work on the line will soon be commenced. The incorporators are W. P. S. Hawk, O. W. Powers and W. S. McCornick of Salt Lake City. The company is capitalized at \$25,000.

Mr. Leona Lemon, recently promoted to the division superintendency of the Eastern division, has established himself in the executive offices of the company. He was recently relieved of the superintendency at Philadelphia by Charles E. Bagley of Pittsburg, who was in turn superceded by Henry Scrivens, advanced from the position of chief clerk in the office of Vice-President Charles C. Adams, New York.

Mr. Charles P. Bruch, vice-president, is confined to his home with typhoid fever. Mr. Bruch had been ailing for several weeks past, but his case did not assume this serious form until a few days ago.

The New York City branch office managers gave their annual dinner at the Marlborough Hotel, Broadway and Thirty-sixth street, at half-past six o'clock, on the evening of Tuesday, February 23, at which C. F. Leonard, superintendent of offices of Greater New York, was the guest of honor. S. E. Ostrom acted as toastmaster. F. F. Norton, manager of the main office operating department, led off in the speechmaking. Mr. Norton was followed by J. F. McNeil, H. E. Wilson, A. S. Hunter, J. J. Alcock and H. E. Robson, all of whom spoke interestingly, the principal object in the mind of each speaker being the benefit of

the service. Many practical ideas were exchanged, while the sociability of the occasion was not overlooked. Superintendent Leonard made a splendid address, which was enthusiastically received by the seventy-three managers present. The occasion was undoubtedly one calculated to promote beneficial results in branch office management.

RESIGNATIONS AND APPOINTMENTS.

Mr. L. A. Ott, a well known telegrapher, who has been engaged in other business for the past year, has re-entered the telegraph service by accepting the managership at Austin, Tex., for the Postal Telegraph-Cable Company of Texas.

The Cable.

The French Cable and Telegraph Company, which controls the telegraph lines in the Dominican Republic, has reduced its tolls to an average rate of five cents per word between any points on the island. Formerly some of the rates were as high as twenty cents per word.

Cable communication is interrupted February 25, with:

Venezuela	Jan. 12, 1906
Madura Island (Dutch East Indies) Feb. 3, 1908	
Macao	Aug. 29, 1908

Messages can be mailed from Hongkong.

The Government Alaska cable which was reported in the February 1 issue as being broken, caused, it was supposed, by an earthquake shock which occurred on January 11 off Vancouver Island, was in reality broken six miles off shore by being fouled by the steamer Patterson. The cable steamer Burnside repaired the break. Another break occurred in the cable on February 23, which has not yet been repaired.

Tom Bradley, aged fifty-five years, an operator in the employ of the Direct United States Cable Company at Boston, Mass., died of heart disease on February 8. He was a native of England, and had been in the service of the Direct Cable Company at Rye Beach, N. H., and at Boston, for the past thirty-four years, he being one of the original staff.

The Spanish Administration has notified the laying of new submarine cables between Cadiz and Santa Cruz de Teneriffe, 765.122 nautical miles; Garachio and Santa Cruz de la Palma, 72.668 nautical miles; Port Hierro and San Sebastian (Gomera), 55.718 nautical miles; San Sebastian (Gomera) and Tejita (Teneriffe), 39.809 nautical miles; Santa Cruz de Teneriffe and Las Palmas, 56.299 nautical miles; Las Palmas and Puerto Cabras (Fuerteventura), 154.022 nautical miles, and Puerto Cabras (Fuerteventura) and Arecife, 40.461 nautical miles.

At a meeting of the directors of the Anglo-American Telegraph Company, held at London, on February 5, Acting-Chairman R. H. Benson had this to say regarding the Henniker-Heaton agitation for a penny a word cablegram:

It had been decided to have a conference of the British Colonies on the matter, and they had received the assurance from the Postmaster-General that the North Atlantic companies would have an opportunity of expressing their view before that conference, and consideration would be given to any proposals which were suggested by them before anything was definitely adopted. It must be borne in mind that the opening of telegraphic communication between the British Colonies had been left to private enterprise, and in anything that was done regard should be had to that aspect of the matter. A similar agitation was raised seven years ago, and an inter-departmental committee appointed. That committee in their report said that they were firmly convinced that the question of cable communication was of paramount importance, and that the great network of British-owned submarine cables which extended over the world should continue to be remunerative to those whose enterprise had created it. Further, the committee stated that the Atlantic companies had not formed the subject of much public controversy. They had received no subsidies; they provided under influence of competition an efficient service at a low rate (which they had attempted, though unsuccessfully, to reduce still further) and no complaint against the companies had been laid before them. That company felt that during the fifty years of their existence they had had a duty to perform, and that they had done it well. When the Government decided to reduce the rates, they should deal fairly with those who had carried on the work for many years without Government assistance. That company when they started had only one line across the Atlantic; now there were six companies owning sixteen cables. There were two English companies, two American, one German and one French company, and the rates were as low as 1s. a word. That was 1s. a code word, and he had known a code word to contain when it was translated as many as seventy or eighty ordinary words, so that was six words for a penny. Public policy demanded that a business like theirs should be built up and not pulled down. It would be a hardship if the thrifty shareholders were to be interfered with by the introduction of the penny-a-word messages.

A German paper, referring to the question of the new cable to be laid between Germany and South America, states that the traffic between the two countries is at present principally effected by way of the Emden-Vigo cable. The telegrams at Vigo are taken in hand by two English companies—the Eastern and Western telegraph companies. The return traffic proceeds either via the same way or via the cable Pernambuco-Fernando de Noronha-Dakar of the South American Cable Company, which is under French influence, and from Dakar via the French cable to Brest, or over French and Spanish lines to Tenerife and Cadiz. Owing to the brisk development taking place in the German South American traffic, it

is now proposed to provide a special connection with Brazil. The laying and working are to be undertaken by the German and South American Telegraph Company, of Cologne, which was recently brought into existence. As the distance between Germany and Brazil is too great to work a cable direct, sections must be formed, and Tenerife has been selected as the intermediate station. The distance thither amounts to 2,163 nautical miles, and two possibilities come into consideration for the continuation of the cable via Tenerife. One is the direct connection, 2,766 nautical miles in length, and the other way is about 1,000 nautical miles longer, via Monrovia, the capital of the Negro Republic Liberia, which is still without a cable connection. The latter route might offer the advantage of allowing the German protectorate districts on the west coast of Africa to be easily connected from Monrovia to the new cable. At present Togo is connected by means of landlines with the Gold Coast and Dahomey, the Cameroons by the English cable Duala-Bonny, and German South West Africa, also by an English cable to Cape Town. It is not yet settled whether the direct route or whether via Monrovia will be chosen. Permission to land at Liberia and Brazil has been granted. The cable is to have one core, and is to be equivalent to the Borkum-Tenerife section to a type of 600 pounds of copper, 340 pounds of gutta-percha per nautical mile, in order to obtain a suitable speed of telegraphy. With the direct route between Tenerife and Brazil, there would have to be employed a type of 650 pounds of copper, 375 pounds of gutta-percha, and a type of 360 pounds of copper, 250 pounds of gutta-percha if the cable were laid via Monrovia. The cable is to be worked from Emden from the German side. The connecting section between Borkum and Emden (3,286 miles) is to have two cores, of which one will serve as the earth conductor. The company is under the obligation to start the working of the Emden-Tenerife section by the end of 1909, and the section from Tenerife to Brazil by the year 1911 at the latest.

Mr. J. R. Irwin, for many years in the telegraph service in South Africa, but for the past twelve months with the Commercial Cable Company at New York, has accepted a position with the Marconi Wireless Telegraph Company, and is located at the station at Siasconsett, Mass.

Great interest is being taken by members of the American Institute of Electrical Engineers in the anniversary dinner at the Hotel Astor, New York, on March 11, celebrating the close of the first quarter of a century of its existence. There is already every evidence that there will be a record attendance.

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

The Military Telegrapher in the Civil War.

PART XIV.

John R. Dixon, of Chicago, was a military telegrapher during the Civil War. Like many another similarly engaged, he served his country with exemplary fidelity of purpose and with personal bravery, actuated by the highest impulses of patriotism. The accompanying engraving, made from an old-fashioned carte-de-visite, taken at Sterling, Ill., in the winter of 1862, now forty-seven years ago, shows a picture of young Dixon as he appeared at twenty years of age. In a recent letter to *Telegraph Age* Mr. Dixon writes of his experiences as follows, beginning his account with a brief reference to his ancestry in response to a request therefor preferred by this journal:

"My paternal grandfather, John Dixon, for whom I was named, was born at Rye, N. Y. Afterwards when engaged in business in New York City as a tailor, on John street, in the early part of the nineteenth century, he became acquainted with Robert Fulton, the inventor of the steamboat, on whose first experimental craft, the *Clermont*, he once made a short voyage on the Hudson river. Another acquaintance was Samuel Colgate, the soap manufacturer, and founder of the present well known firm of Colgate & Co., whose place of business on John street is not far distant from where my grandfather was located more than a hundred years ago. These three men were members of the same Bible class and were, with others, due to influences growing out of the class training instrumental in founding the American Bible Society.

"My father was born in New York, and he accompanied my grandfather to Illinois in 1830. In 1832 the old gentleman built a log cabin in the Rock River valley, and here the family became the first white settlers in that locality. During the Black Hawk War this cabin afforded a shelter at different times to Abraham Lincoln and Jefferson Davis, both of whom were engaged in that memorable Indian conflict, in which my grandfather, because of his knowledge of the country, acted as scout for our troops.

"I was born in the Rock River valley in Dixon, Ill. Early in life I became a telegraph operator, and when I enlisted in 1863 I was working at the key in La Salle, Ill. My first detail was to service in the military telegraph corps at Memphis, Tenn., at General Washburn's headquarters. One foggy night in August, 1864, the rebels effected its capture, and my partner, Charles Pierson, was among those taken prisoners. The attack was in the nature of a raid, and although my gun was taken from me, such was the haste of the marauders that somehow I was overlooked, and so escaped. Subsequently I served as an operator for General Reynolds, whose headquarters were established on a steamboat moving up and down the Mississippi River, the principal

business of which appeared to be dodging rebel masked batteries on shore. After that came various experiences extending over a long period of war service. I was with General Gordon Granger on the Pascagoula raid, about forty miles back of Mobile, Ala., a series of operations which occupied about four weeks' time. We had a field outfit and Operators Upham and Dorsey Berry were associated with me. Then followed the siege of Mobile and the last land and naval battle of the war, fought on the 9th of April, 1865, the Union land forces being under the command of General E. R. S. Canby, who defeated the Confederates, receiving the surrender of Generals R. Taylor and E. K. Smith.

"During the summer following Colonel William L. Gross succeeded Captain William G. Fuller at New Orleans as superintendent of government telegraph of the Department of the Gulf. Although the war was now over, politically chaos reigned, and much remained to be done by the general Government in settlement of affairs and restoring the *status quo*. In obedience to a re-



JOHN R. DIXON, OF CHICAGO.

quest by Colonel Gross, I volunteered to remain in the telegraph service for another year, and in August was sent to Texas by steamer from New Orleans to Galveston. My destination was Houston, which point I reached by train. L. B. Spellman had charge of the Department of Texas. Working in the Houston office besides myself were William Anderson, from New York City; Edward A. Scott, from Philadelphia, and Edward C. Greene, from Michigan. We handled over the same wires a great deal of commercial business in addition to the regular government demands. The military business, of course, was given the preference. This traffic would usually commence coming about 8 o'clock in the morning, and in the course of about two hours would be cleared up; then generally for the next two hours we would handle commercial business, much of it coming from New York City, frequently occupying two days in getting through.

"Texas people at home saw but little of the hardships, the suffering and woe of the Civil War.

Their state was too remote from the scene of operations. Indeed, I often met people who throughout the struggle had remained in sympathy with the North. Houston then was full of a rough element, much after the style of our own western frontier towns in early days. It was nothing unusual to see or hear of a dead man being found lying stiff and cold on the corner of some street nearly every morning. The idleness of the soldiers of the Lost Cause, and the general unsettled condition of the country at the time was largely responsible for this state of society. Frequently Scott and I, after working late at night, would leave the office for our 'mess' room several blocks away, walking arm in arm, one pointing his six-shooter forward while the other would point his gun backward, as we silently sneaked along through the dark, muddy streets, asking the question in a whisper what we should do if we should hear a bullet coming our way—stop it?

"On the first of December I was sent to Austin, the capital city of the state, as cipher operator at the headquarters of General George A. Custer. The trip of one hundred and eighty miles, following a roundabout course, was made, seventy-five miles by railroad and the remainder by stage coach. My stay there during the long winter months was without special incident, routine duty only engaging my attention.

"Let me digress here to say that three of the commanding general officers under whom I served as cipher operator, during the term of my enlistment, Generals Reynolds, Canby and Custer, afterwards lost their lives in Indian frontier warfare—a 'frontier' that has long since disappeared, together with the Indian as a savage foe, in the obliteration caused by advancing settlement and civilization.

"The office clerks at General Custer's headquarters were soldiers detailed from different regiments as was generally the rule observed throughout the army. In this particular instance it so happened that all were good musicians. Growing out of this fact a string band was organized, besides a quartette of singers. It would occasionally happen that we would treat the society people of the town with a midnight serenade. These musical associations were in frequent demand, the band being often invited to play for both private and public dances. The attendance at these affairs would be made up of two classes, those who were loyal to the Confederacy and those whose sympathies were with the Union, and Austin contained a good many of the latter. While meeting thus, and mingling in the square dances, pleasantly enough to all outward appearances, the Southern ladies would refuse to touch the hand of a Northerner, or one who had been loyal to the North.

"I remember of often taking horseback rides that winter, being invited to do so by some who had been soldiers in the Confederate Army. It was the custom to go riding in that manner in that then far-away outpost of Texas civilization, and

we would often relate at such times occurrences that had happened when the Blue was arrayed against the Gray. One acquaintance, a former captain in the Southern army, had been taken prisoner by General Grant, and with others had been sent North to be confined in a government prison at Rock Island, Illinois, there to be held until exchanged. He related to me how bitter cold the winter weather was and the long time his party were compelled to wait at a railroad station called La Salle where a change of cars had to be made in order to reach their final destination a few miles distant. He went on to tell how the telegraph operator at the station had made them comfortable by building a fire in a stove in a vacant room in a warehouse where they waited, and how they promised to make it "warm" for the operator in case they ever got exchanged and caught him down South. It was a pleasant surprise when the identity of the two was revealed as the horseback riders, and as we galloped on I showed my companion my picture taken in those days and told him the rest of the story as I have outlined it here.

"Sometimes, looking backward and reviewing a half century of a busy life, I recall memories of the war time and think of the hardships many of us members of the military telegraph corps endured in following the army in that stormy period. Those who performed their share of duty as they understood it, and were in the midst and shock of battle, rejoiced at the dawn of peace, and since have rejoiced still more in the belief that that peace shall never again be broken. Our joy was hushed and our hearts saddened at the close of the war when President Lincoln, whom the army loved as a father, was stricken down. The recent glad acclaim of this country to the memory of this great man, abides with a most precious meaning in the hearts of those who served in the army during the terrible years of war."

Mr. H. G. Haddon, general manager of the Martha's Vineyard Telegraph Company, at Wood's Hole, Mass., has been highly complimented for the efficient manner in which his corps of operators handled the thousands upon thousands of words sent over the cable from Nantucket, during the two days following the collision between the steamers Republic and Florida. Mr. Haddon has also received notes of appreciation from both the Marconi company and the New York office of the White Star line for the excellent service which his company rendered.

The practical side of the telegraph is discussed in every issue of *Telegraph Age* in a manner of interest and aid every individual operator in the service. Why not secure the benefits of such information by subscribing for the paper—\$2 a year.

Radio-Telegraphy.

A new Marconi wireless telegraph station is in course of erection at Clifden, County Galway, Ireland.

The wireless telegraph distress signal "C. Q. D.," which is much quoted in newspapers in these days, represents, it is said, come quick, danger.

The Wireless Company of America, capital \$10,000,000, is in process of organization by Brooklyn and New York capitalists. The moving spirit in the enterprise is P. M. Smith, of 64 Wall street, New York.

The four-masted schooner Pendleton Sisters, in the Atlantic coastwise trade, is the first sailing vessel to be equipped with a wireless telegraph outfit. Ralph Seeley is both second mate and telegraph operator.

Mr. J. H. Ginman, chief operator of the Marconi wireless telegraph station at Siasconsett, Mass., is in England on business connected with the service. E. T. Edwards is in charge of the station during his absence.

A patent, No. 912,209, for radio-telegraphy, has been granted to H. R. Von Traubenberg, of Berlin, Germany. The arc-lamp, which produces rapid electrical oscillations, has its electrodes provided with cooling ribs to dissipate the heat.

A patent, No. 908,742, for space telegraphy, has been granted to S. Cabot, of Brookline, Mass. Prevents arcing at the spark gap and increases the power factor of the power circuit by means of an intermediate circuit with a condenser connected across it, so proportioned as to increase the power factor.

The House passed the Burke wireless telegraph bill on February 16. This bill provides that all ocean-going ships carrying more than fifty passengers and traveling two hundred miles or more shall be equipped with a wireless instrument and an operator. The bill prescribes a penalty of not to exceed \$3,000, or imprisonment for a term not to exceed one year, or both, for violation of its provisions. One year is allowed for the installation of the equipment.

A patent, No. 910,430, for a wireless-telegraph transmitter, has been issued to Charles P. Steinmetz, of Schenectady, N. Y., assignor to the General Electric Company. Consists of a spark gap fed by periodic discharges of a condenser, a transmission line carrying low-potential alternating currents, a step-up transformer, a mercury-arc rectifier receiving discharges from the transformer and discharging into the condenser, and means for leveling the rectifier discharges.

Dr. Lee De Forest, it is stated, has invented a system of wireless telegraphy which relies on a low power, high speed continuous wave train which, it is claimed, exceeds the spark system in both penetration and range and is faster in operation. Its signals are occasioned by instantaneous interruptions which can be made at the rate of

more than a hundred a second, instead of the flash and pause system in vogue to-day. The principles of this system is used now in the wireless telephone system on battleships.

The rates agreed upon at the Government wireless station, recently established at Bolt Head, near Plymouth, England, are as follows: The charge for communication with ships in most cases will be eight pence (sixteen cents) per word. This charge is made up of three and a half pence (seven cents) per word for the coast station, four pence (eight cents) per word, in most cases, for the station on board the ship, and the ordinary telegraphic rate of one-half pence (one cent) per word for the transmission by wire to and from the station.

A lightning flash, intercepted by the electric waves of a message being thrown from a wireless mast to a steamer at sea and deflected down the wires to the operating-room of the wireless station, near San Francisco, badly burned William J. Smith, the operator, who was seated before his instruments. The peculiar accident occurred during an electrical storm. Smith was rendered senseless for ten minutes, and on recovering found that fantastic designs had been burned on his flesh by the current.

For some time past negotiations have been in progress in England with the Marconi Wireless Telegraph Company and the shipping companies for obtaining meteorological reports by wireless telegraphy from liners crossing the Atlantic. The necessary instructions as to observing and coding have now been issued, and the shipping companies have been asked to allow their officers to report observations to the English meteorological office upon the forthcoming passages. The United Wireless Telegraph Company furnish daily similar information derived from coastwise vessels to the Weather Bureau at Washington.

The annual meeting of the International Telegraph Construction Company (Shoemaker), now controlled by the United Wireless Telegraph Company, was held at the offices of the company, 42 Broadway, New York, on February 9. The following were elected directors for the ensuing year: C. C. Wilson, S. S. Bogart, W. A. Diboll and Harry Shoemaker. The old officers were re-elected as follows: C. C. Wilson, president; S. S. Bogart, vice-president; W. A. Diboll, treasurer, and C. C. Galbraith, secretary. A very flattering report on progress was made and a substantial statement entirely satisfactory to the stockholders was given out.

At a meeting of the Society of Wireless Telegraph Engineers, held at Boston, recently, Dr. R. T. Wells delivered an address on the subject of "The Inductance, Resistance and Impedance of Telephones as a Function of the Frequency of the Current Actuating Them." Sewall Cabot spoke upon the power rating of wireless telegraph stations, and John Stone Stone spoke on the audibility of wireless telegraph signals in their relation to the spark frequency at the transmitting

station. He gave the results of a mathematical inquiry which indicates that the audibility of wireless telegraph signals is more a function of the harmonics than of the fundamental of the wave-train frequency.

THE TELEFUNKEN COMPANY.

Telefunken wireless apparatus is installed at the following navy stations along the Atlantic Coast, and all these stations, and particularly the Fire Island station, have excellent records for long range work: Fire Island (L. I.); Cape Elizabeth (Portland), Me.; Cape Cod (North Truro), Mass.; Newport (Torpedo Station) R. I.; Nantucket Lightship (Nantucket Shoals). At this point the equipment is installed on both the regular and the relief vessel Nos. 66 and 85.

Both lightships are, and always have been, equipped with storage batteries for emergency purposes, and it was the battery (and Telefunken apparatus) that saved the lives of the entire crew of relief vessel No. 58 several years ago when she suddenly sprung a leak in a heavy storm and the water came in so fast that it put out her fires and stopped her dynamos before the operator could have sent out his "C. Q. D." signal had he depended upon the dynamos alone. Help had to come from New Bedford, and when the light-house tender "Azalea" finally got out to No. 58 in spite of the storm, they were not a moment too soon, because the lightship went down before the lifeboat got back to the tender with the crew on board.

The Telefunken Company has also just completed and turned over seven long-range stations for the Cuban Government as follows:

Havana, Pinar del Rio, Santa Clara, Camaguey, Santiago de Cuba, Baracoa and Nueva Gerona (Isle of Pines). All these stations are part of the Cuban Government telegraph system and handle regular commercial business between the points named every day in the year, in addition to being able to communicate with vessels several hundred miles off shore.

The Telefunken Company also only recently completed and turned over to the Peruvian Government several stations on the upper Amazon River that have made telegraphic communication possible between several important towns in the interior and the coast which it has never been possible to connect before on account of the difficulties of maintaining either land lines or cables in that section.

Telefunken apparatus is also used on board of many United States naval vessels and on the revenue cutter "Mohawk" stationed at Tompkinsville, S. I., including the Yankton, tender to the battleship fleet, which has just accomplished the circumnavigation of the globe, and which acted during the trip as a relay station connecting the flagship Connecticut with the mainland.

Orders for books on telegraphy, wireless telegraphy, telephony, all electrical subjects, and for cable codes, will be filled by Telegraph Age on the day of receipt.

A Timely Study of Wireless Telegraphy.

There has been a steady demand for operators in the wireless telegraph service, as that system has extended its operations, until to-day hundreds who were formerly employed as Morse operators are now occupying lucrative positions in the wireless field, at seaside, or on steamer, stations. The passage of the wireless telegraph bill in the House, doubtless soon to be followed by like action in the Senate, making it compulsory that practically all ocean-going vessels engaged in carrying passengers shall be equipped with wireless telegraphy, makes it evident that a very much larger field of employment, and at good pay, in the immediate future is opening up to the telegraph operator who will adapt himself to the newer method of radio-telegraphing. Operators everywhere are earnestly investigating this branch of the telegraph, since as its vast opportunities to benefit the individual become more apparent with the development of the system now progressing so rapidly.

A good text book on wireless telegraphy is the first need of any who contemplate the study of that system. The sale of such works has increased enormously of late, clearly indicating the development of a widespread desire for knowledge on the subject.

For the convenience of our readers we have prepared and publish on page iii., together with prices, a carefully selected list of standard books treating on wireless telegraphy. These volumes furnish the best information on the subject obtainable, the kind giving the most efficient aid and direction to the student. Orders for the books enumerated, or indeed for any others that may be required, which must be accompanied by the cash, will be filled on the day of their receipt, and sent with all the carrying charges prepaid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Under the direction of Marion H. Kerner, the well known telegrapher, the sacred drama of the Passion Play, to be shown in a series of views on canvas, will be presented at Durvea's, 200 West 72d street, New York, on the evenings of March 1, 8, 15, 22, 29 and April 5. This is a realistic and faithful representation of the Passion Play produced every ten years at Ober-Ammergau. The captivating illusions incidental to the entertainment were designed by Mr. Kerner during his stay at Ober-Ammergau in the summer of 1890, when the play was last produced with all the original characters in the cast. An excellent quartette under the direction of Mr. Le Grande Howland, will render the impressive music which accompanies the beautiful transformation.

Telegraph Age constitutes a "school of instruction" to every would-be telegrapher. It is accurate and authoritative and worth many times the price of subscription (\$2.00) to any who would inform themselves respecting the telegraph.

Review of New Books.

"The Life Story of Sir Charles Tilston Bright," as told by his son, Charles Bright, F. R. S. E., in the revised and abridged edition just at hand, is a recital dictated alike by filial love and the worthy desire to place before the world a true history of the events, many of them of great historical import, of the busy life of one of the leading telegraph engineers of the world. The career of Sir Charles was a brilliant one, and the volume before us is of intense interest, for it reveals the record of a strong character, a keen, perceptive and well-informed personality, who won distinction by achievements calling for the exercise of exceptional engineering abilities. When it is remembered that at twenty years of age young Bright became chief engineer of the Magnetic Telegraph Company, extending its lines throughout the United Kingdom; a year later connecting England and Ireland by a deep-water cable, and in 1858, when at the age of twenty-six years, receiving for his distinguished services in connection with the laying of the first Atlantic cable, the honor of Knighthood—all these eloquently attest scientific attainments of the man in early life. His subsequent career was equally brilliant. Essentially a man of action, versatile, overcoming difficulties, accomplishing much, giving to the world many inventions, he was a pioneer in the field of applied electricity, more particularly as it effected the telegraph, from which the present generation may well derive inspiration. His name is vitally associated with the extending of the telegraph, land lines and cable to India, with the West India cables, with the direct United States cable arbitration, etc. In this volume the author, himself an electrical engineer of distinction, has presented a carefully prepared story, unique in itself, that will be read with interest, with charm and with instruction from cover to cover.

The book, which embraces over 480 pages, is well indexed, has nearly seventy illustrations, and is well printed on exceptionally heavy coated paper. The price of this book is \$5.00, which includes delivery charges. Orders, which should be accompanied by the cash, may be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

One of the finest works treating on the general features of electrical engineering is that embodied in a volume, just issued, giving a series of lectures delivered by Charles P. Steinmetz, A. M., Ph. D., the consulting engineer of the General Electric Company and professor of electrical engineering in Union University, Schenectady, N. Y. The lectures, seventeen in number, were given during the winter of 1907-8 under the auspices of the University, to a class of younger engineers, consisting mainly of college graduates. The subjects were treated in such a simple and intelligible manner that when editing the lectures, which was done by Joseph L. R. Hayden, Mr. Steinmetz's assistant, it was found possible to avoid the use of mathematics altogether, and so make the lectures

equally available to that large class of engineers who do not care for mathematics, or are not familiar with them, without in any way increasing their value for the college trained engineer. The lectures give a broad review of the entire field of electrical power, generation, transmission, distribution, control and use, showing the close relation and dependence upon each other of all the factors of the problem. An appendix, in two parts, discusses, first, light and illumination, and, second, lightning and lightning protection.

These lectures, which are given with all the comprehensiveness, clearness and authenticity of statements, characteristic of Professor Steinmetz's utterances, offer a valuable contribution to a proper understanding of the subjects discussed. "General Lectures on Electrical Engineering" is well worth a place in the library of every student, at least, of electrical engineering. The book, printed on heavy paper, is bound in cloth, with leaves gilt topped, has 275 pages and forty-eight illustrative diagrams, besides a portrait frontispiece of Dr. Steinmetz in photogravure. All orders will be filled, carrying charges prepaid, on receipt of price, \$3.00. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

The Polyglot Stenocode, which provides a universal code system, the designative cipher word of which is "Papa," has made its appearance, the ingenious product of A. C. Baronio, of London, England. This code system, which was described very minutely in an article written by Mr. Baronio himself, and printed in Telegraph Age nearly a year ago, namely, May 1, 1908, provides a code, while primarily an integral part of the stenocode system of signaling, designed for general use of wide range, economy, adaptability and safety. The principles upon which the code is constructed were fully considered in the published article referred to, and showed with what understanding and constructive grasp of his subject the author labored in producing this work. The method used may be referred in summary in part as a particular formation of the words which result from the permutation of a distinctive syllabic alphabet of thirty-two characters, each requiring the same number of telegraphic elements for its transmission. As this syllabic alphabet consists of thirty-two biliteral sounds expressed by combining a consonant and a vowel, it follows that with them a chain can be formed, the pronounceable links of which may be continued ad infinitum, and thus is afforded an inexhaustible supply of combinations which are not only in a most convenient form for code manipulation, but also admit of a substantial saving of the time required in transmission by removing the necessity for spacing the letters and words which at present exists.

The general arrangement of this code will be readily grasped, so that an ordinary user thereof may acquire the ability to decode any message on any subject. Proper names, addresses and words of any foreign language which can be expressed in

Latin characters may be spelled from the Vocabulary, so that the ordered sequence of syllables need never be disturbed by the necessity for interpolating words in plain language.

A copy of this work can be found in the office of Telegraph Age, New York.

Annual Report of the Mackay Companies.

The annual report of the Mackay Companies was issued February 15, and is signed by the seven trustees, namely: Clarence H. Mackay, William W. Cook, George G. Ward, Dumont Clarke, Edward C. Platt, Robert A. Smith and Henry V. Meredith. The report states that the Mackay Companies owns the whole or part of the capital stock of one hundred and two cable, telegraph and telephone companies in the United States, Canada and Europe, including the entire capital stock of the Commercial Cable Company and the various companies constituting the land line system known as the Postal telegraph.

Outstanding preferred shares (\$50,000,000) have not been increased during the last two years and the outstanding common shares (\$41,380,400) have not been increased during the last four years.

Dividends have been regularly paid on the preferred shares since April, 1904, at the rate of 4 per cent. per annum, payable quarterly. Dividends have been regularly paid on the common shares since January, 1905, such dividends having been increased to 4 per cent. per annum, payable quarterly, commencing July, 1906.

Physical properties of the subordinate companies are maintained in excellent condition. All reconstruction is charged to operating expense. All extensions, improvements and investments are being paid for from annual receipts and not by the issue of shares or bonds.

The Mackay Companies has no debts. During the year 1908 the earnings of the Commercial Cable Company (which has paid regular quarterly dividends for more than nineteen years) showed a decrease in gross receipts and net profits.

Notwithstanding this decrease in the gross receipts and net profits of the Commercial Cable Company, and notwithstanding the depression of business which prevailed throughout the United States during the last year growing out of the panic and financial crisis of the fall of 1907, the profits which the Mackay Companies might draw from the companies which it controls have increased. Economies which have been rendered possible without impairing the service have more than offset the decrease in gross receipts. The service now rendered by the telegraph and cable systems controlled by the Mackay Companies is faster and more efficient than ever before. The financial results of the entire year serve to demonstrate the soundness of the plan on which the Mackay Companies is formed, namely, so wide a distribution of its interests as to minimize the effect of any decrease in profits from one particular source.

During the last year additional wires have been strung on one of the transcontinental land lines, and the service of the Postal Telegraph-Cable Company has been extended to Tonopah and the mining regions of that district in the western part of the United States. An additional transcontinental route will be put into operation in 1909 by building from Salt Lake, Utah, to Sacramento, Cal.

The Mackay Companies states that its holdings of stock in the American Telephone and Telegraph Company, commonly known as the Bell Telephone Company, are nearly six times larger than those of any other stockholder.

The cost of the submarine cable from New York City to Havana and also the cost of extensions of the land line system during several years last past, and also the cost of taking the proportion of the increased capital stock of the American Telephone and Telegraph Company, have been paid from profits, thereby strengthening the financial basis and increasing the available income of the Mackay Companies.

The Mackay Companies states that it will not oppose the recommendation of the President of the United States in his annual message to Congress of December, 1908, that telegraph and telephone companies engaged in interstate business should be put under the jurisdiction of the Interstate Commerce Commission.

The Postal Telegraph Employes' Association, which was formed under the auspices of the Postal Telegraph-Cable Company shortly after the strike of 1907, now has practically all of the employes of that company enrolled as members, the number having increased during the last year. The workings of the association have been eminently satisfactory and have removed all further danger of unions or strikes. Furthermore, the association has been so harmonious that there is every reason to believe that it has now become a permanent feature of the land line system. The benefits during sickness or upon death have been especially helpful to and appreciated by the employes.

The employes of the Commercial Cable and Postal telegraph systems have invested their savings very largely in shares of the Mackay Companies, their holdings now being about two million dollars par value.

In order that the Mackay Companies might have close supervision over the daily operations, contracts and finances of its various companies, a Finance Committee of the Mackay Companies has been in existence for nearly three years last past. This committee sits daily throughout the business year, passing on reports from general managers and treasurers and considering and determining all important current matters and the policy to be pursued.

Telegraph Age is the leading journal of its class in the world, and should be in the hands of every progressive operator; \$2 a year.

Important Subjects Treated in Back Numbers.

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

British System of Timing Messages Dec. 1, 1902
Buckingham Long Distance Page Printing Telegraph.....Sept. 1, 1902
Burry Page Printing Telegraph Apl. 1, 1903
C. K. Jones' Automatic Telegraph Circuit Protector and Sig-naling Machine June 16, 1903
Collins Overland Telegraph May 16, 1903
Crebure-Squire Automatic Telegraph System.....May 16, 1902
Definitions of Electrical Terms,
Mch. 16, Apl. 1-16, June 1, July 1-16, 1904
Earth Currents May 1, 1903
Engraving of Clarence H. Mackay Nov. 16, 1902
Engraving of Col. Robert C. Clowry Apl. 16, 1902
Engraving of the Late John W. Mackay Aug. 1, 1902
Field's, R. D., Quadruplex May 1-16, 1904
Ghegan's Automatic Repeater June 1, Dec. 1, 1903
Ghegan's, J. J., Multiplex System Aug. 1, 1904
K. K. Law as Applied to Quadruplex Circuits.....Jan. 1, 1904
Postal Telegraph-Cable Company, History of (with por-traits of officials) Feb. 1, 1904
Postal Telegraph-Cable Company Rules Governing Con-struction and Repair of Telegraph Lines, Apl. 1-16, May 1-16, 1904
Printing Telegraph Systems, Story of Jan. 1, 1903
Progress of Telegraphy During Last Thirty Years, W. Mayer, Jr. Mch. 16, 1904
Protection of Telegraph or Telephone Lines When in Hazardous Proximity to High Speed Lines June 1, 1904
Repeaters:
Atkinson Feb. 16, 1902
Half-Milliken Feb. 16, 1902
Horton Mch. 1, 1902
Defective Loop Mch. 1, 1902
Double Loop Mch. 16, 1902
Milliken Jan. 16, 1902
Nelson Feb. 1, 1902
Weiny Phillips Feb. 1, 1902
Wood Double Loop Mch. 16, 1902
Rowland Printing Telegraph System..... Sept. 11, 1903
Scott-Phelps-Barclay-Page Self-Winding Ticker Oct. 1, 1903
Specifications in Construction of 35-foot Pole Line, Ameri-can Telephone and Telegraph Company...Feb. 16, Mch. 1-16, 1904
Typo-Telegraph (Dr. Cardwell), F. J. Swift June 1, 1903
Western Union Telegraph Company, History of (With portraits of officials) Jan. 16, 1904
What Constitutes a First-Class Operator Oct. 1, 1904
What Constitutes a First-Class Chief Operator.....Nov. 1, 1904
What Constitutes a First-Class Manager Nov. 16, 1904
What Constitutes a First-Class Superintendent.....Dec. 1, 1904
What Constitutes a First-Class E. E. Operator.....Dec. 16, 1904
Churcher Rectifier, J. P. McCabe Aug. 1, 1903
Fire Alarm Telegraphs, History of May 16, 1903
Morse Patents, Covering Invention of Telegraph.....Dec. 16, 1903
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Telegraph Tournament, International, at Boston,
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Wright Keyboard Transmitter and Printer, B. Hitchcock...Apl. 1, 1903
Automatic Telegraphy—Various Systems Discussed....Dec. 1, 1907
Dean Rapid Telegraph System.....Aug. 16, 1907
How to Make a Telegraph Company Popular.
Feb. 1, 16, March 1, 16, 1907
Rowland Telegraphic System May 1, 16, 1907
Steno Telegraphy June 16, 1907
Alphabets Telegraph.....Feb. 1, 1908
Anniversary Number, Twenty-fifth Year, Containing Full-Page Engraving of Officials and History of Various Telegraph Companies....Jan. 1, 1908
Barclay Ptg. Telegraph System (serial) June 16, 1908, to March 1, 1909.
Commercial Cable Company.....Jan. 1, 1908
Composite Telegraph and Telephone Systems—E. R. Cunningham July 16, 1908
Creed Receiving Perforator.....Nov. 16, 1908
Great North Western Telegraph Co., History of and Portraits of Officials and Principal Managers Jan. 1, 1908
Maver, Wm., History of Atlantic Cable.....Oct. 16, 1908
Mercury Arc Rectifier.....Sept. 1, 1908
Military Telegrapher in the Civil War Apr. 16, 1908 to date
Patent in U. S.—How to Secure One.....Nov. 16, 1908
" Law in Great Britain.....Apr. 1, 1908
Pension Fund for Military Telegraphers, Car-negie Jan. 16, 1908
Polyglot Stenocode May 1, 1908
Poles, Preservative Treatment of, by Open Tank Process Jan. 1-Feb. 16, 1908
Poles, Arborvitae, for Telegraph Purposes..Feb. 16, 1908
" Experimental Treatment of Mch. 16, 1908

Rugh's Composite Telegraph and Telephone System May 1, 1908
Simultaneous Telephony and Telegraphy.....May 16, June 16, July 1, Sept. 16, Nov. 1, 1908
Telephony for Railways.—W. E. Harkness..July 1-16, 1908
Train Despatching by Telephone.....May 16, June 16, July 1, Sept. 16, Nov. 1, 1908
Wire Chief, How to Become a..Jan. 16, Feb. 1 and 16, 1908

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 of a kind which all telegraphers should be supplied. We furnish a neat and attractive cloth board binder, which will be sent by mail, prepaid, for \$1. 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 a number of years, and when 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 his library, embracing a wide variety of telegraph, electrical and general information.

The publisher of Telegraph Age urges upon subscribers to this journal the desirability of having the paper sent to their home address rather than to their place of business. The reason is obvious. If it goes to your home it reaches you without danger of obstruction or abstraction by your office associates who are sometimes prone to borrow your copy to your discomfiture and their edification, but at your expense. This naturally is a source of irritation and of course you don't like it. If a man wants Telegraph Age he should pay for it, and the individual who is paying for his copy should be guaranteed in his rights.

As we regard our subscribers as our friends, and believe we are supplying them with a tele-graph paper the like of which does not elsewhere exist, we dislike to see them disappointed, and wish to protect them in their prerogative so far as we are able. We believe that a good many dis-appointments of non-receipt of the paper might be averted if our suggestion of sending it in all cases to the homes of its subscribers were adopt-ed. Changes of address will be made as often as desired.

Directory of Annual Meetings.

- Association of Railway Telegraph Superintendents meets at Detroit, Mich., June 23, 24, 25, 1909.
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, 1909, at a date to be named later.
Old Time Telegraphers' and Historical Association, will meet at Pittsburg, Pa., at a date to be named later.
Postal Telegraph-Cable Company meets the fourth Tues-day in February, at New York.
Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.
Train Despatchers Association meets in 1909 at Columbus, O., at a date to be determined upon.
The stockholders of the Western Union Telegraph Com-pany meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

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MARCH 1, 1909.

The Book Department of Telegraph Age, has always been a prominent and carefully conducted feature of this journal. The desire has been and is to furnish our readers and buyers everywhere the readiest means possible of securing such technical books as they may require. Aiding buyers in their selection with advance information, which at all times is cheerfully furnished; promptness in sending books, filling all orders on the same day of their receipt, has brought to this department a generous clientage. Catalogues fully covering the range of books treating on the telegraph, wireless telegraphy, the telephone, as well as those on the general subject of electricity, together with the principal cable codes, will be sent to any one asking for the same.

Death of Edward Hancock Bowen.

Edward Hancock Bowen, associate editor of Telegraph Age for the past fifteen years, died suddenly from the effects of a stroke of apoplexy at his home in Brooklyn, on February 21. Mr. Bowen was well and favorably known to members of the electrical fraternity throughout the country, and the announcement of his death will be received by them with sorrow. Mr. Bowen was a writer of marked ability, and his literary contributions have had a wide reading during his entire newspaper career, which extended over a period of thirty years. As associate editor of this publication, he was painstaking and thorough. He loved literary work as he did his family, and whatever task he undertook he accomplished with the fine finish of a master writer. Mr. Bowen was at his desk all day Saturday, and greeted numerous callers in his accustomed and courteous manner. On Sunday morning, at the breakfast table, without a moment's warning, he was strick-

en down by the disease that he had often stated would be the cause of his passing away. Mr. Bowen was a native of Woodstock, Conn., where he was born November 30, 1845. He is survived by his wife and one son, and a brother and sister. Rev. Or. Nacy McGee Waters, of the Tompkins Avenue Congregational Church, conducted the funeral services. Interment was in Greenwood Cemetery.

Telegraph Message Delivery by Telephone.

The controversy in Tennessee between the Postal Telegraph-Cable Company and the Cumberland Telephone and Telegraph Company over the use of the telephone in the delivery of messages was carried into the United States Court, January 25, the telegraph company alleging that the telephone company was threatening to remove its telephone boxes and asking an injunction against such a procedure.

The bill states that the Postal company is a subscriber in the telephone exchanges and has paid the regular flat rate per month; that about October 1 the defendant company demanded that in addition to the regular flat rate the defendant should receive fifteen per cent. of all sums received by the Postal company from patrons on messages delivered by the Postal through telephone in cities where subscribers to defendant company exceed 1,500, and two cents per message on all messages received by the Postal company from other points and delivered to it through the telephone, notifying the Postal management that they would otherwise remove all of the telephones now installed in the offices of the Postal in the State.

Later the telephone company made another proposition under which they placed all telephones on a commission basis, that is, fifteen per cent. of the tolls of all telegrams received by the Postal company via telephone from its patrons, and two cents per message for all messages delivered over the telephone, and two cents for each telephone call.

The Postal company claims that the defendant company suspended for a time execution of the threat, but within the last few days the defendant company has repeated the threat and charges that the defendant will remove its instruments, unless the Postal accedes to the demands.

The Postal company claims that to accede would leave little or no profits from business in which the telephone is employed, and charges that the demand of the defendant is unreasonable and illogical.

The Postal also charges that in all towns where it is a subscriber the defendant company has a fixed rate for subscribers generally classified so as to have one fixed monthly rate for all subscribers whose telephones are connected with their places of business, and another fixed monthly rate for subscribers whose instruments are connected with their residences, and in none of the towns in which complainant is a subscriber is the schedule of rates fixed, based upon the amount of use which

the particular person or business enterprise is likely to make of the telephone system.

The complainant charges that the defendant company is a common carrier, that it has assumed to act in a public capacity to satisfy a public want and necessity and is under obligations to serve all members of the public in as far as it can with impartiality. The complainant claims that the Postal company is entitled to demand and receive from the defendant the highest grade and class of telephonic service for the rental exacted of business houses.

The complainant alleges that from information it has learned that the defendant company is a very prosperous company, making large profits and paying large dividends to its stockholders. Complainant alleges also that rates which have been fixed by it and are now being collected are reasonable and just and furnish to complainant company a reasonable profit on the investments made in the construction and operation of its telephone exchanges. Complainant argues further that demands made by the Cumberland company are unreasonable, unjust and discriminatory and contrary to the statutes of Tennessee. The complainant prays that the court grant a writ of injunction commanding the defendant to desist and refrain from the removal of telephone instruments from complainant's offices, and that at the determination of this suit the injunction be made perpetual.

Action similar to that instituted in Tennessee, has been taken by the Postal Telegraph-Cable Company in Kentucky covering its offices in that state.

Jack Binns to the "Telegraphists of America."

A letter addressed by the Editor of Telegraph Age to John R. Binns, the wireless telegraph operator of the ill-fated steamer Republic, who bravely and with the utmost coolness remained at his post of duty in a time of danger, and whose wireless messages brought succor to the disabled and sinking steamer, following the collision with the Florida, conveying to him the greeting of the telegraph fraternity of America, elicited the following reply from the intrepid operator, written under date of February 7, on board of the steamer Baltic, while on his return to England:

"It was with extreme pleasure that I received your very kind letter of the 28th ult., more especially as it contained such a kind greeting from my confreres of America. Unfortunately, however, it was delivered to me too late to allow of my answering it before this ship sailed.

"I should be very greatly indebted to you if you would be good enough to transmit to the telegraphists of America my appreciation of the kind sentiment which they have expressed over the manner in which I was so far successful in accomplishing my duty.

"Will you also be good enough to do me the honour of accepting my sincerest thanks and best wishes."

Legal.

The case of Oakes Ames and Francis W. Breed, of Boston, both shareholders in the Telephone and Telegraph and Cable Company of America, who brought suit against the American Telephone and Telegraph Company to recover damages from it under the Sherman "anti-trust" law, has been disposed of. They alleged that the American company secured control of the cable company by purchase of stock for the alleged purpose of preventing the free operation of competition in interstate telephone traffic, and that the cable company has since been managed by the nominees of the defendant and its agents not for the purpose of developing the business for which the company was organized, but for the purpose of preventing the company from doing business. The company is now in the hands of a receiver; and the defendant, it is claimed, has since monopolized the interstate telephone commerce. The two plaintiffs also complained that when the old company secured control of the new one their stock in the latter was worth \$15 a share but has since become valueless. Judge Brown, of the Federal Court in Boston, holds that the damage done—if any—was to the cable corporation itself, for which the corporation alone can maintain an action at law under the Sherman act; a private individual cannot sue in equity under it. This decision does not, of course, go into the merits of the case itself—but it emphasizes the fact that there was and is no field for an enterprise like the Telephone and Telegraph and Cable Company of America. If there had been, those who controlled it would have made it pay profits.

The article covering the Barclay Printing Telegraph System, written by William Finn of this city, and which has been running in series during the past nine months, is brought to a close with this issue. This interesting subject has required eighteen installments in its recital, told with abundant and elaborate illustration, the first installments having appeared June 16, 1908. There has been a steady demand for the numbers containing this splendidly descriptive article of a device that has already gained wide recognition and acceptance in this country. In consequence there are only a limited number of back issues now available, hence those who desire to preserve complete files of the paper containing a full account of the Barclay Printing Telegraph System, will consult their own interests by ordering without delay any numbers that may be missing. We will furnish all of the issues from June 16, 1908, to March 1, 1909, inclusive, until the supply is exhausted, at three dollars, sent to any domestic address, postage or express charges prepaid. All papers over three months old are regarded as back numbers and cost twenty-five cents per copy.

Watching the hands of a clock go 'round makes a long day of it.

A Unique Dinner at Montreal.

A dinner that is unique in the annals of Montreal, Que., was held at the Windsor Hotel, in that city, on the evening of February 12, when seven citizens of Montreal, each of whom is president of an American International Association, gathered together to celebrate the fact that so many Montreal men should be selected for high honors from continental associations. A silent toast was drunk on the occasion to the memory of President Lincoln, that date being the anniversary of his birth. While most of the gentlemen present were connected with railway work, there were several interested in other spheres, and it was felt that so remarkable a fact should be worthily commemorated. The speakers during the dinner laid stress upon the fact that through these citizens of Montreal, Canada, has obtained a recognition among the international associations altogether beyond anything it could possibly claim by population or any other influence except the signal ability of the men who are to-day directing her leading industrial concerns.

Those present at the banquet were:

G. T. Bell, general passenger and ticket agent of the Grand Trunk, president of the American Association of General Passenger and Ticket Agents; W. J. Camp, electrical engineer of the Canadian Pacific Railway telegraphs, president of the Association of Railway Telegraph Superintendents; J. H. Callaghan, general storekeeper Canadian Pacific Railway, president of the American Railway Storekeepers' Association; William McNab, assistant principal engineer of the Grand Trunk, president of the American Railway Engineering and Maintenance of Way Association; H. H. Vaughn, assistant to the vice-president of the Canadian Pacific Railway, president of the American Railway Master Mechanics' Association; C. H. Gould, librarian of McGill University, president of the American Library Association; James Powell, secretary of the Canadian Railway Club, president of the American Society of Railway Club Secretaries.

In honor of the event a handsome souvenir menu was arranged, adorned with portraits of each of the seven Montreal presidents of the International Associations. Each of the presidents made fitting remarks covering the work accomplished by the association of which he was the head.

Louisiana Work In Wood Preservation Has Good Results.

The investigation of economic methods for the preservation from decay of loblolly pine poles has recently been carried out by the Forest Service with gratifying results. The object of the government was to demonstrate that a creosote treatment could be applied successfully and at a low cost to loblolly pine poles. A treating plant for the purpose, located in Louisiana, which has been in operation since the latter part of October, 1908, is of the "non-pressure" or "open tank" type. The installment of this style of plant costs much less

than a plant of the "pressure" type, which is the ordinary type of plant for commercial purposes throughout the country. The "open tank" system depends fundamentally upon the immersion of timber first in a hot bath of the preservative, followed by a rapid change to a cold bath. This method does away with the installment of high pressure and vacuum pumps and a treating cylinder of massive construction to withstand a high internal pressure, which are necessitated by a plant of the pressure type. It is usual, however, to install a treatment cylinder of light construction where any great quantity of material is to be treated, since the cost of handling the material and loss of preservative through volatilization during the hot bath is in this way reduced to a minimum. Extensive experiments carried on by the Forest Service in recent years have shown that the "open tank" system is admirably adapted to the treatment of certain classes of timber, and especially so as regards loblolly pine.

The plant used in the experiment herewith referred to is equipped with a horizontal treating cylinder fifty feet long and six feet in diameter. It was designed by the Forest Service, whose representative also supervised the construction and operated the plant for several months. During this period 3,000 poles, 2,500 cross-arms, and 500 ties were treated, an amount sufficient to determine the most economical methods of treating these classes of material.

The Barclay Printing Telegraph System.

BY WILLIAM FINN.

(Part XVII.)

THE RECEIVING APPARATUS—CONTINUED.

(Conclusion.)

The different local circuits of the printer system having now been treated separately, it will next be in order to present the circuit arrangement as a whole, as in Fig. 61, wherein much of the wiring has been omitted and the tracing of the circuits simplified by the use of reference letters, numerals, etc. The facility which this method affords of rapidly tracing the connections between various parts of the printer system is shown by the fact that the presence of similarly marked letters, figures, or combinations thereof at the different places on the diagram, denotes the existence of an electrical connection (either permanent or possible) between the corresponding characters; as, for example, terminals 1 to 32 on the distributing relay base, connect with terminals 1 to 32 on the printer base. Also in tracing the course of any letter-magnet circuit through the bank of distributing relays, it will be well to bear in mind that, beginning with No. 1 distributing relay, the spring numbers on each relay are permanently wired to the corresponding tongue numbers of the next relay in regular succession; thus springs 1 and 2 of the first distributing relay are connected with tongues 1 and 2 of the second relay; springs

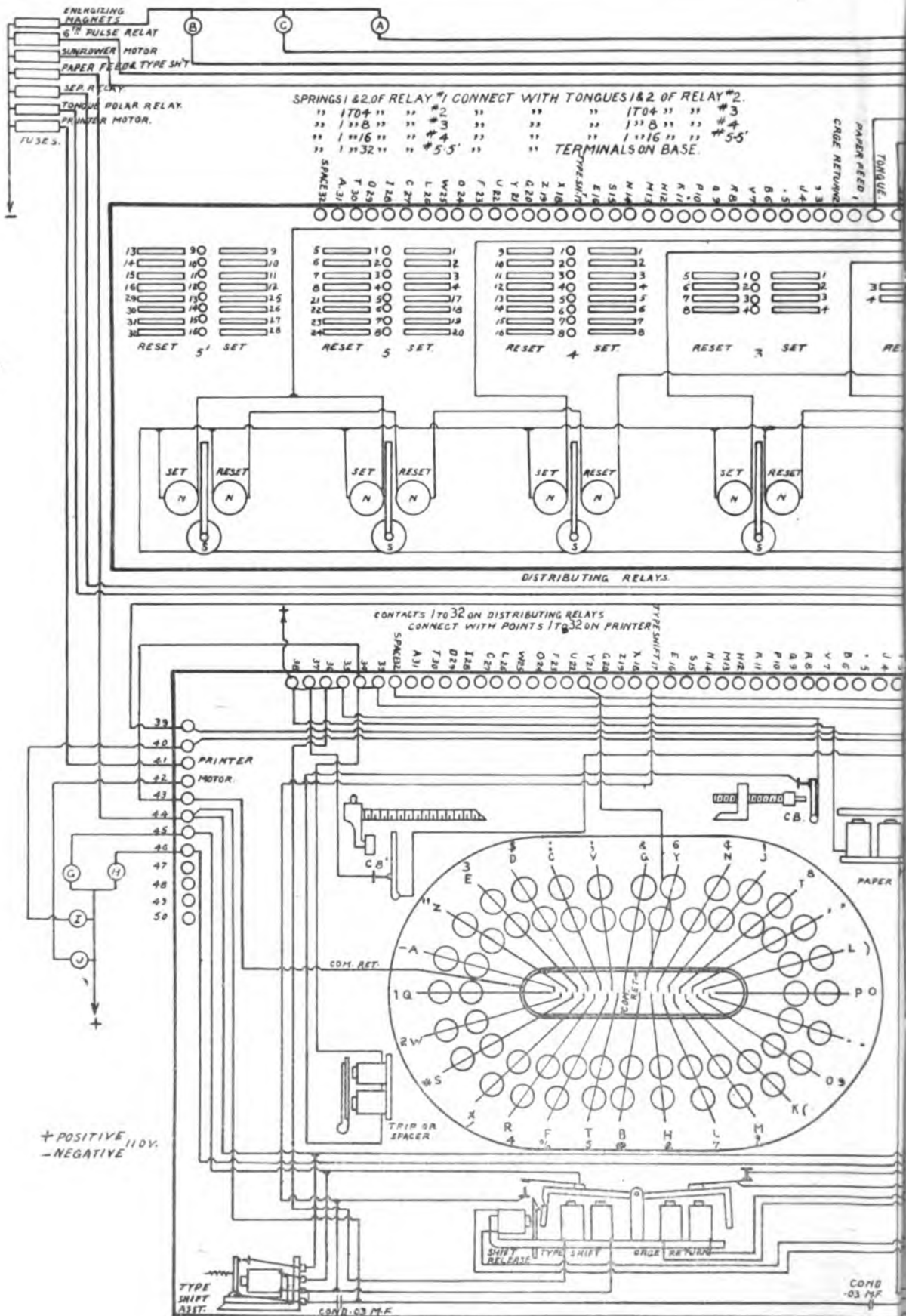
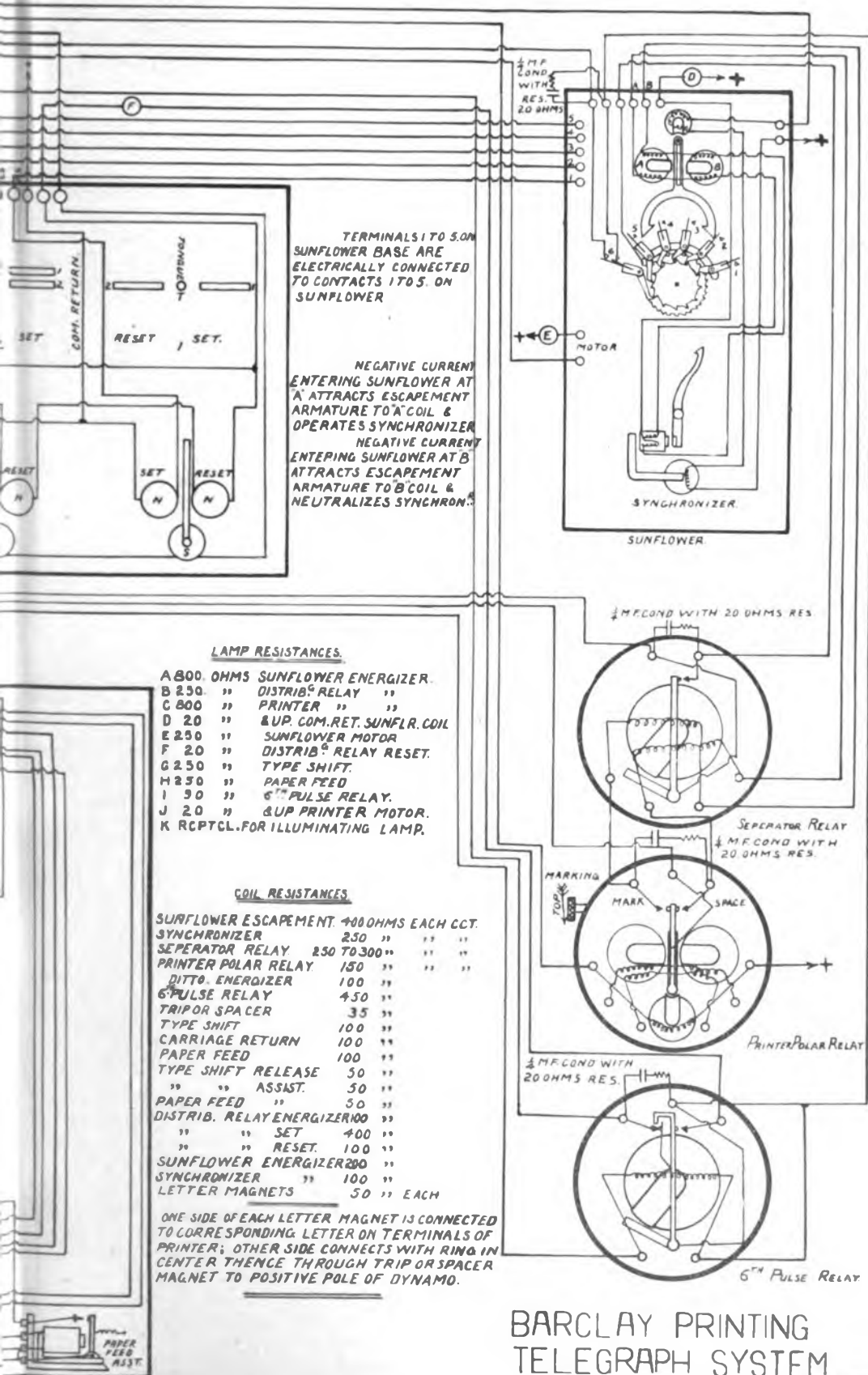


FIG. 61. DIAGRAM OF PRINTER CONNECTION



TERMINALS 1 TO 5 ON SUNFLOWER BASE ARE ELECTRICALLY CONNECTED TO CONTACTS 1 TO 5 ON SUNFLOWER

NEGATIVE CURRENT ENTERING SUNFLOWER AT 'A' ATTRACTS ESCAPEMENT ARMATURE TO 'A' COIL & OPERATES SYNCHRONIZER
 NEGATIVE CURRENT ENTERING SUNFLOWER AT 'B' ATTRACTS ESCAPEMENT ARMATURE TO 'B' COIL & NEUTRALIZES SYNCHRON.

LAMP RESISTANCES.

- A 800 OHMS SUNFLOWER ENERGIZER.
- B 250 " DISTRIB^o RELAY "
- C 800 " PRINTER " "
- D 20 " & UP. COM. RET. SUNFLR. COIL
- E 250 " SUNFLOWER MOTOR
- F 250 " DISTRIB^o RELAY RESET.
- G 250 " TYPE SHIFT.
- H 250 " PAPER FEED
- I 50 " 6th PULSE RELAY.
- J 20 " & UP PRINTER MOTOR.
- K RCPTCL. FOR ILLUMINATING LAMP.

COIL RESISTANCES

- SUNFLOWER ESCAPEMENT. 400 OHMS EACH C.C.T.
- SYNCHRONIZER 250 " " "
- SEPARATOR RELAY 250 TO 300 " " "
- PRINTER POLAR RELAY 150 " " "
- DITTO. ENERGIZER 100 " " "
- 6th PULSE RELAY 450 " " "
- TRIP OR SPACER 35 " " "
- TYPE SHIFT 100 " " "
- CARRIAGE RETURN 100 " " "
- PAPER FEED 100 " " "
- TYPE SHIFT RELEASE 50 " " "
- " " ASSIST. 50 " " "
- PAPER FEED " 50 " " "
- DISTRIB. RELAY ENERGIZER 100 " " "
- " " SET 400 " " "
- " " RESET. 100 " " "
- SUNFLOWER ENERGIZER 200 " " "
- SYNCHRONIZER " 100 " " "
- LETTER MAGNETS 50 " EACH

ONE SIDE OF EACH LETTER MAGNET IS CONNECTED TO CORRESPONDING LETTER ON TERMINALS OF PRINTER; OTHER SIDE CONNECTS WITH RING IN CENTER THENCE THROUGH TRIP OR SPACER MAGNET TO POSITIVE POLE OF DYNAMO.

BARCLAY PRINTING TELEGRAPH SYSTEM

1, 2, 3 and 4 of the second relay connect with tongues 1, 2, 3 and 4 of the third relay, and so on. This arrangement is shown in detail in Fig. 62, which represents the actual wiring and method of joining up the series of distributing apparatus. It may be here remarked that what is known as the fifth distributing relay is really made up of two relays, on each of which are sixteen springs, or a total of thirty-two, representing the number of branch circuits leading to the various letter and other character magnets, as illustrated in Fig. 50 of the January 16 issue.

As an example of the method to be pursued in tracing the local current through any one of these

may be directly traced from the negative end of the dynamo through sunflower points (6), and back stop of sixth pulse relay as far as the terminal marked "tongue" on the base of the distributing apparatus. From this terminal a permanent connection extends to the small circle marked T, which represents one end of a small screw inserted in the commutator bar of distributing relay No. 1. (See Fig. 49, January 16 issue.) This screw, or tongue, as it is called, having been rocked or deflected to the right by the "setting" of No. 1 relay, contact is established between it and spring 1, which latter is connected with tongue 1 of No. 2 relay. This relay being also

BARCLAY PRINTING TELEGRAPH SYSTEM
DISTRIBUTING RELAYS

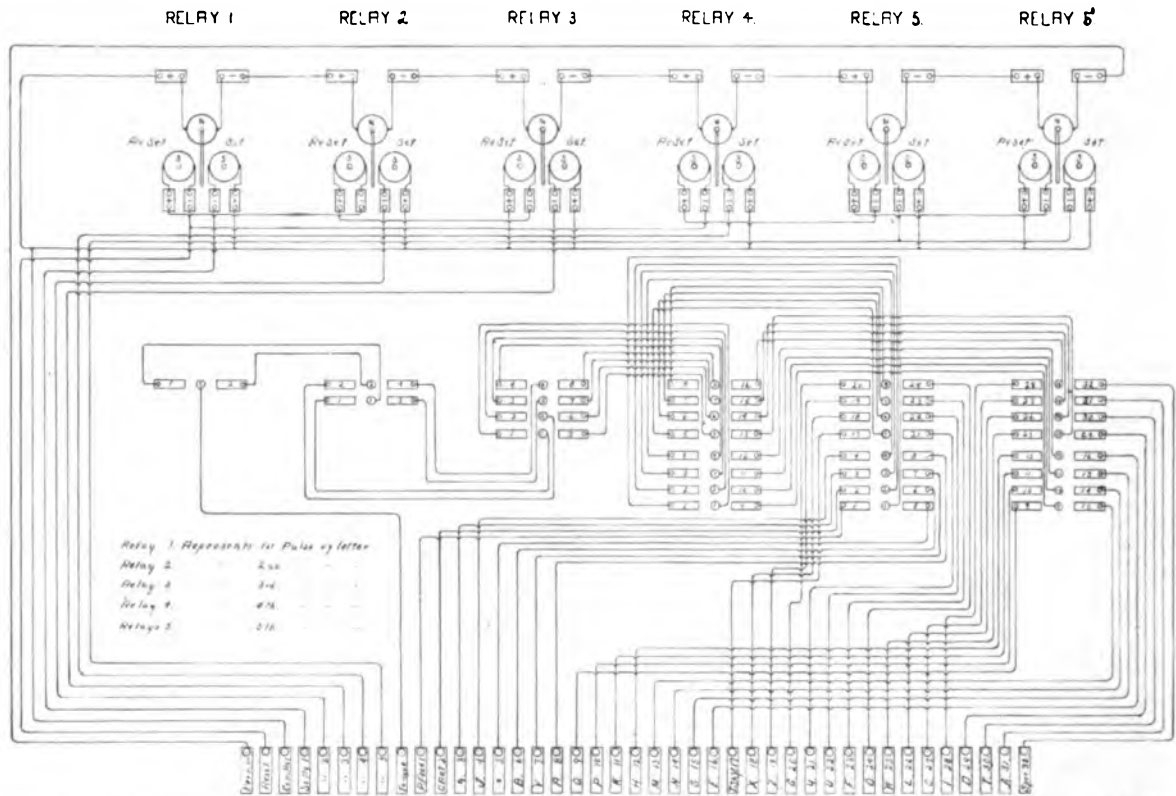


FIG. 62.—DISTRIBUTING RELAY WIRING ARRANGEMENT LOOKED AT FROM BACK OF PRINTER TABLE.

branches, let us consider the signaling combination in connection with the letter y. This combination is made up of a long marking, a long spacing, a short marking, a long spacing, and a short marking pulse in the order named. (See Fig. 1 of June 16, 1908, issue.) Now remembering that the distributing relays are only brought into action through the medium of the long pulses of either polarity, it will be obvious that the first, second and fourth pulses, being prolonged ones, will operate or "set" the corresponding relays of the distributing series, leaving No. 3 and No. 5 relays in their neutral or "reset" positions. Under these circumstances, the circuit of the y magnet

"set," causes its tongue 1 and spring 1 to come into contact, and thereby extend the circuit as far as tongue 1 of No. 3 relay. This tongue being on the "reset" side, connects with spring 5, and from thence with tongue 5 of No. 4 relay. As the latter relay stands at "set," its tongue 5 and spring 5 are brought into contact with each other, as well as with tongue 5 of No. 5 relay, from which latter tongue a junction is then formed with spring 21, owing to the "reset" position occupied by the last-named relay. Looking now for another number corresponding with that of the spring just mentioned, we find it on one of the terminals on the printer base, from which point

the circuit may be continuously traced through the y magnet, common return wire, trip magnet, and circuit-breaker, back to the generating source.

The various sections of the printing apparatus, as assembled on the printer table, are shown in Fig. 63, which also indicates the manner in which the underneath wiring is made between the different parts by applying the "reference" principle to the corresponding letters and numbers in

power currents. The apparatus consists of a condenser, an inductance coil and a spark-gap. The line pressure may be used to produce the sparks, or a small transformer, or a spark coil fed from a separate source. At the receiving end there is a spark-gap in series with condensers and shunted by a relay, which may be used to close the circuit of a call bell. Communication is effected by Morse signals.

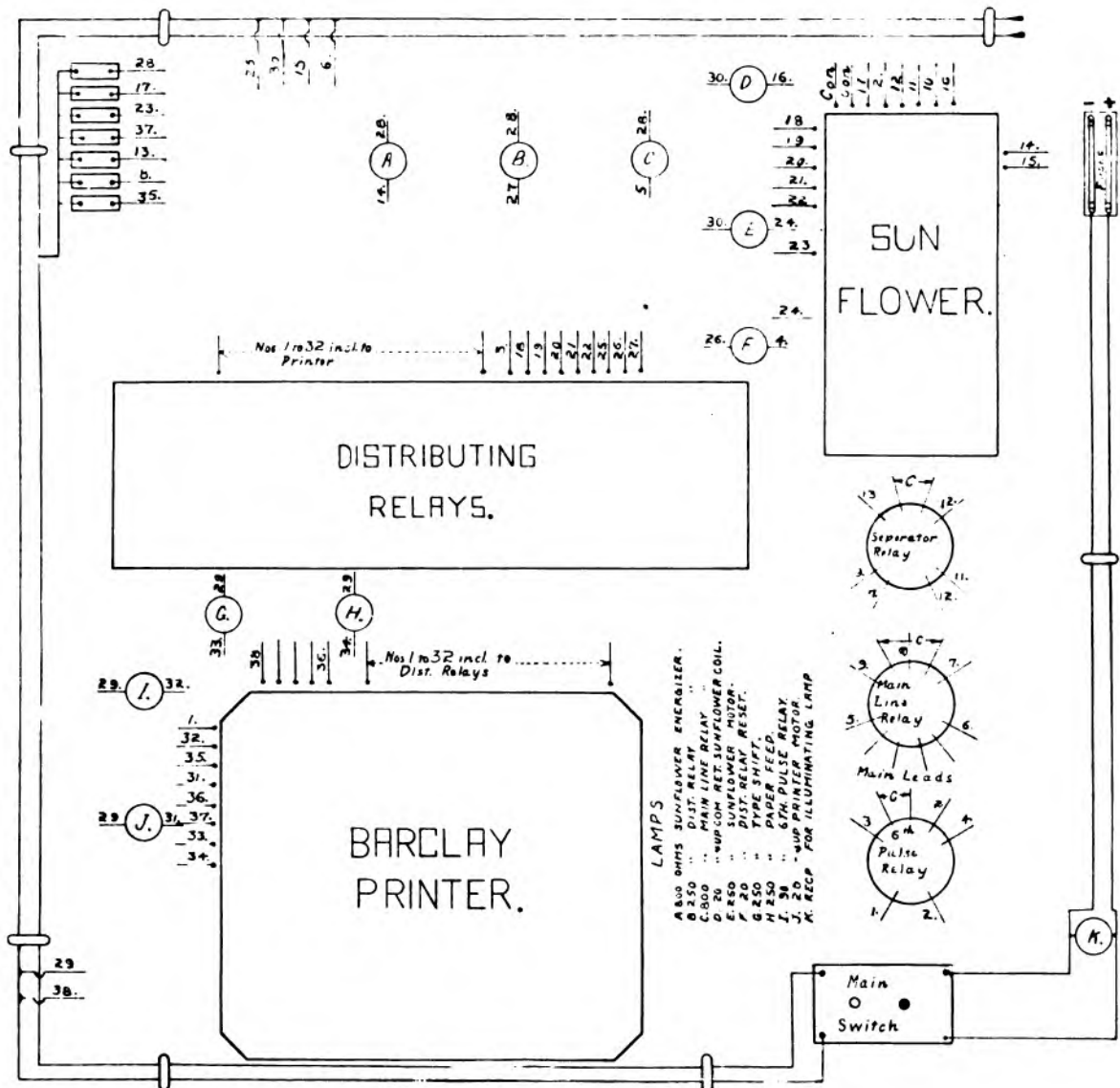


FIG. 63—PRINTER TABLE WIRING.

the diagram, as already explained in connection with Fig. 61. (The End.)

Telegraphing Over Power Lines.

In L'Industrie Electrique M. L. Neu recently described a method of communication over high-pressure power lines by means of high-frequency currents, thus saving the expense of a separate telephone line. The principle is that of superposing a current of very high frequency upon the

It is stated that Professor Korn has improved his process of telephotography, thus enabling a picture to be transmitted from Berlin to Paris in ten minutes.

Mr. L. S. Wells, superintendent of telegraph and signals of the Long Island Railroad Company, New York, in a letter renewing his subscription, says: "The January 1 edition of Telegraph Age is a prize-winner."

Stanley Mac Nider.

Stanley Mac Nider, now and for many years past, a resident of Guatemala, is well remembered among the older telegraphers of New York, among whom, although in the long ago, he was formerly hail fellow. In a letter to *Telegraph Age*, of which published reference was made in September last, he enquired most affectionately, and with much solicitude, after a number whom he had known in the old days. It will be interesting to many, especially to those who knew him, as well as to those who know him only by reputation, to read a biographical mention of Mr. Mac Nider in these columns, and to look upon his picture. If the latter does not exactly portray that of the younger man he was when he went away, few who knew him then will fail to recognize the more matured features of the kindly face that greets them from this page.

Mr. Mac Nider is a Canadian, having been born at Montreal, April 13, 1838. His connection with the telegraph dates back to its early days, for it



STANLEY MACNIDER, OF GUATEMALA.

was on May 24, 1852, that he became a messenger in his native city in the employ of the Montreal Telegraph Company, at a time when that system was under the management of Orrin S. Wood, who is now living in retirement in New York, at the venerable age of ninety-one years. Subsequently becoming an operator, and, it may be remarked, a good one, he served first the Montreal Company and afterwards the British North American Telegraph Company at the key, of which latter company he was for two years the manager.

Mr. Mac Nider came to New York in February, 1856, and until April of the following year he was an operator in the old Union line office at 23 Wall street, the building in which it was located, standing where now is that in which J. P. Morgan and Company have their offices. Although Mr. Mac Nider remained but a short time in New York, he nevertheless succeeded in making a large number of friends and acquaintances, and those who are still living, silvered though

their hair may be, hold the young Canadian of half a century ago in pleasant memory, and will be glad to have him brought again to mind through the medium of this reference.

The Panama Railroad at this time was a comparatively new undertaking, and opened up a great highway of travel across the Isthmus, more especially in this particular accommodating California traffic, and young Mac Nider cast his fortunes with that enterprise, and for a year and a half, from April, 1857, found employment in its service as an operator. Of a bright turn of mind, efficient and adaptable, he soon won promotion, and until 1871 held numerous positions of importance. Larger opportunities awaited him in Salvador and Guatemala, in both of which countries he was successful in establishing telegraph lines, most of those, indeed, constructed in the latter State being built by him. For several years at San Jose, Guatemala, he was the manager of a shipping agency, and for the year ending in February, 1887, he was manager of the Acajutla-Santa Railway of Salvador. Prior to this, during a portion of the year 1882, he was in the cable service, and held the superintendency of the Central and South American Telegraph Company, covering the Panama-Salina Cruz section, during which brief term he had some exciting experiences. His various Central American occupations have gained for him a competency. In a recent letter he says:

"The last ten years have found me occupied as agent for Guatemala of the Commercial Union Assurance Company of London; and incidentally one of the staff of directors of the International Bank of Guatemala—*Empresa Eléctrica de Guatemala*—the Verapaz Railway and *Compañía de Agencias del Norte*."

The London Times, of which Robert P. Porter, the former well-known director of the United States census, is the American correspondent, maintains an extensive bureau in New York, connection being had with its Washington office by means of a direct leased wire service. Over this circuit the important happenings at the capital are transmitted to New York, where they are put in proper shape to be forwarded to London, cable loops being installed in the office for that purpose. Frequently, however, the Washington office works direct with the cable. The telegraph department in the New York office is under the direction of J. F. West.

Owing to the protest of the diplomatists against China taking over the entire control of the telegraph office at Peking, a proceeding which was contrary to the agreement of 1901, a foreign superintendent of telegraphs has been appointed. A reduction of twenty per cent. in the rates on internal telegrams became effective on January 22.

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

Foreign Wandering Operators.

BY J. R. IRWIN.

A recent article in *Telegraph Age* pointed out the restlessness of the average American operator, and its possible cause. This "wanderlust" is not confined to the American "Morseman" by any means, and the article brought to my mind the many interesting telegraph characters of various nationalities I have met in my own wanderings. When I entered the business in the West Australian telegraphs (state owned) in 1895, that country's gold fields, which have since developed into such great producers, were in the pioneer stage. New fields were being constantly discovered and developed, and the consequent "rush" called for the construction of new lines and the opening of new offices in all directions. "Coolgardie" and "Kalgoorlie" were magic names, and these fields, of which they were the center, were the Meccas of tens of thousands of seekers of the mighty dollar. The resources of the telegraph administration were thus strained to the utmost to meet the altered circumstances; operators were scarce and the older services were drained of their young and best talent, and England was requisitioned for men. Promotion for a youngster was therefore rapid. As a telegraph line was constructed and new offices established along its route, make-shift office accommodations, often of the most primitive type, would frequently be established in a small duck tent with perhaps a bush "fly" (shade). One of the principal occupations of the operator would be chasing his stationery and business, which a willy-willy (whirlwind) had lifted through the tent flap. Water was very scarce and far from good, therefore washing was a luxury, and a bath an unheard-of extravagance. Miners may light their pipes with five dollar bills (I've never seen this much described stunt myself), but to a West Australian gold fields operator of the early days, a bath was included in his dreams of rippling brooks, green valleys and lapping ocean waves. When it was necessary to study economy in the use of water a rub with a clothes brush was the only cleansing one's shirt would get.

Later I was transferred to the region of the Northwest, a vast, thinly populated territory situated in the tropics, many parts remaining unexplored and others only then being crossed by the telegraph construction party. The line traversed a country often populated only by the operators and linemen located at repeating maintenance stations, with a few scattered sheep and cattle ranches as distant neighbors. The line runs parallel to the coast from Perth to Wyndham in the extreme north and is used chiefly for connecting the cable station at Broome with civilization. This Northwest was to the Australian operator, what Siberia is to the Russian.

An operator is generally supposed to serve three years or more in this region and does so with one fixed purpose in his mind, and that is,

to get out. Yet strange as it may sound there are men there who decline to quit, remaining year after year at stations located fifty to one hundred miles from the nearest white men. Rations are sent by schooner, or overland, once in two or three months, "tinned dog" (canned meats) and preserved vegetables being the staples. Ah, what dinners one conjures up in imagination, where the sun is hot enough to tan the whites of your eyes, and mosquitoes, sand flies and common and garden flies make their headquarters in close conjunction with your own.

At one station, it was my duty as junior operator to go out on the line on inspection duty once a month, for a week's trip, accompanied by a colored lineman who answered to the name of "Doughboy." At that time there had been no rain for two years and, as may be imagined, the country was suffering terribly from drought. Along the line there were erected catchment sheds, as they were called, and tanks for storing water, and because of this fact, the first trip afforded a pleasant experience, an agreeable change from the restricted life at the isolated station. The next time, however, that I made the trip, conditions were changed, for some overland cattle drover had broken off the padlocks of the tank, tapped and almost drained them of their contents, what little water remained containing many black ants. Over the surface of the water scum an inch thick had accumulated. The taste and smell of the fluid was vile. However, in a country "where a man can raise a thirst," there was nothing for it but to overlook such objections as these and make the best of the situation. I had to go forty-five miles without water and almost lost a horse in consequence, and was forced to camp for two days in order to get him well enough to walk. However, we finally pulled into the station all right, and as I had only food enough left for a few days, the delay caused me to dine on a tin of sardines and a few crackers on Christmas day, greatly to the disgust of my black aide de camp, "Doughboy."

After I had left this office, I heard a rather amusing incident connected with "Doughboy." He ran foul of the law and was serving a sentence of six months in consequence in the local jail. He was given an outside job and was handcuffed by means of a light steel chain to a wheelbarrow. Tiring of this, he one day placed the barrow on his head and "beat" it, or "skipped," as you say in the States. The warden brought him down, however, with a shot, and my old supporter was obliged to "do" another six months on recovering. The fellow originally had a huge contempt for me, whom he described as a "big fella new chum picanin," but overcoming his antipathy he afterwards conceived a great friendship for me.

Receiving promotion, I was sent to a big repeating station at Roebourne, where I took the place of an operator who had died of heat apoplexy.

Roebourne is said to be the hottest place in Australia, and I have no reason to doubt the strict accuracy of that statement. I have personally seen the thermometer register 126 degrees in a shaded verandah, reputed to be a "cool" spot. The village is quite a place, its principal boasts being that it contains four hotels. These are mostly patronized by stockmen, prospectors and others out for a spree. I once saw it stated in a newspaper that the chief products of the town referred to were "delirium tremens and empty bottles." This, however, I regard as a base slander, for I only saw one old sport thus afflicted, who declared that he "saw an old woman chasing him with an axe." He immediately left town, to return in six months with another wad to "blow" in. In these Northwest stations are gathered men from all parts of Australasia and the old country. The depressing life experienced there and its debasing surroundings is apt to promote wandering propensities on the part of all who come within the pale of its influences.

Compared with the operator's lot in America, that of his colleague in Northern Australia is indeed a hard one, for which he is certainly not adequately paid, giving as he does, the best years of his life to the country's service. It is but fair to say, however, that conditions have much improved since the federation of the Australian states, thanks to the strong organization effected by the men, which has proved to be sufficiently influential with the authorities to overcome these anomalies.

After almost three years of this work I decided to quit, and the Boer War being then in full blast, I found my way to South Africa. Leaving the telegraph business for the time being, I enlisted with an irregular regiment. I had described myself in the enlistment paper as an operator. After the battle of Brakenlaagte, where our regiment was severely cut up and the column commander killed, we were refitting at a small railway siding in the Eastern Transvaal. The regular operator being overworked, I was commandeered and sent to assist him. He belonged to the Royal Engineers, had seen service in The Soudan and India and was a very interesting fellow. I helped him out, and on leaving a few days after I filled a bag with some of his choice tinned goods, which he and the railway men in turn, had "commandeered" from passing store trains. As they came easy to him, and he was in the land of plenty, while I was going where luxuries were scant, I allowed my conscience to rest easy. Such foraging on active service is perfectly legitimate and is always called "commandeering," and never by the harsh name of "stealing!"

After serving with my regiment to almost the end of the war, I left, and joining the Transvaal Government telegraphs, I found in the chief office in Johannesburg, a most cosmopolitan crowd of "key punchers," men from all parts of the world, except America, which is only accounted for by the fact that the American operator works

American Morse, while the Continental method is used there. Operators from all over Africa, England, Scotland, Old Ireland, Holland, Australia, China, India, all working cheerfully together! I remained in the Transvaal service for six years. The work of organizing a telegraph service in a country devastated by a three years' war was no small proposition, but gradually and most effectively it was done, and I have no fear of contradiction when I say that South Africa has a telegraph service second to none in the world. The staff, coming as they do, from all quarters of the globe, combine a variety of talent, and socially are a fine lot to meet. But commercial depression and subsequent retrenchment has played havoc among them and caused a splendid lot of young operators to leave. They scattered in all directions, some going to America, some to Australia, others to South America. In Johannesburg I first met Jim Brown, who is now well known in wireless and Western railway circles in this country. Jimmie has tried every service in Africa from Table Bay to Uganda. When he first arrived in Johannesburg, he had just come in from the Komati Valley, an exceedingly bad fever spot and was as full of malaria as he well could be and live. He had been railroading and previously had served in various regiments during the war; he had been also in Central Africa on the Cape to Cairo railway, fighting the natives in the Matabele rebellion, etc. He left the Transvaal in the endeavor to rid himself of malaria and set out for Japan. The Russian war being then in progress, no opportunity for employment presenting itself, he turned for America. Wireless telegraphy first engaged his attention, which he quit for railroading in San Francisco, to return again to the wireless service in a voyage which took him to Honolulu, Panama, and so back to New York. He is off again intending to go to Australia and New Zealand, pausing to call on friends in South Africa en route. Jimmie is averse to paying good money to railway and steamship companies, as he expresses it, and will work his way as a wireless or land telegrapher whenever possible. An article from his pen covering his journeyings would make excellent reading.

I obtained leave of absence in 1906 and proceeded with the Transvaal troops in the Zululand and Natal native rebellion of that year and had a fine trip, coupled with plenty of excitement, serving with the Signal Corps throughout. Since then I have made America my home and for a while worked in a big cable office in New York. I found the place full of the same old class of wanderers, men who had worked the cable and telegraph in every part of the world. Leaving there, I joined the Marconi Company, where I am now located. I am one of a staff of four at Siasconset, Mass. My three colleagues are veritable globe trotters, one having worked in England, Cuba and up and down America; another is an Australian, who has worked in South Africa and at many places in North and South America, while

the other has visited most European and American ports in the wireless service. Of those telegraphers who left the Transvaal with me, three are in South America, two in New York, still another being in Labrador.

Yes, it may truly be said that the Continental operator has it "on" his American Morse brother, for the latter must confine himself to America, while the former has the world to wander about in. Yet the question may well be asked on the theory that "a rolling stone gathers no moss," Does the experience gained pay?

Comic Effects of Type Errors.

While the telegraph is sometimes responsible for errors, and occasionally those of a ludicrous nature, errors of statement creep into every expression of human endeavor, and newspapers even have their share, for according to that veracious journal, Fourth Estate, typographical errors have in the past produced comical or other effects and they are likely to continue to do so until the last newspaper is printed.

It is probably safe to say that a perfect edition of a daily newspaper was never printed and that it never will be, for in spite of the great care taken to attain the highest possible degree of accuracy errors creep in and can even be found on the front pages and on the editorial pages of the most carefully edited high-class daily papers.

In an article recalling the days when all type was set by hand the St. Louis Republic called attention to a few of the slips which came under its notice, adding, however, that comparatively few of them were allowed to contribute to the gayety of the subscribers, as the majority were squelched in the "House of Correction," as the proofroom was facetiously termed. From a collection made by a proofreader the following instances of ridiculous misreading of copy are taken.

"His blushing bride" was transformed into "his blustering bride."

A captain was said to have "served with destruction in the Confederate army," but the writer thought he wrote "distinction."

Two pictures entitled "The Galley Slave" and "Each in Their Turn" were referred to as "The Galley I Love" and "Enoch in Shin Town."

Having in mind the influence of former citizens of the land of the shamrock upon the political destinies of the town, what more natural than that the printer should set up an "Irish District Court" where it had been the "First District Court?"

Professor Frank Gecks was mentioned as having rendered "violent selections" rather than "violin selections."

Somebody was quoted as saying that "all the singing folks on the vaudeville stage have hundreds of wives," but the copy, when carefully examined, was found to read "husbands or wives," and a sensation in the theatrical world was averted.

"They sailed for three days around the cape and finally slaughtered a small Italian," was corrected to read "sighted a small island."

On one occasion a reporter wrote of certain "dwarfed and hungered children," who were made to appear perhaps more pathetic when the compositor substituted the words "doorfed and haggard."

"He takes delight in talking on his family shame" was a shameful thing to say about him, for "favorite theme" was meant.

"Red Cross Society will fight Corbett" was the way the typesetter transformed the copy concerning a crusade against cholera.

How to Make a Chemical Rectifier.

BY GEORGE P. FRENCH.

Probably a good many persons having access to alternating currents desire some cheap but efficient means of changing alternating current to direct current.

The cheapest apparatus is the chemical rectifier. Procure three glass jars, 6x8 inches, each to have a wooden cover. The covers should be boiled in paraffine wax to prevent leakage, although shellacking will do. Procure three pieces of 1/16-inch sheet lead, 4x6 inches, with a 3/4-inch lug in one corner. Also procure four pieces of sheet aluminum the same thickness and size as the lead plate. Fasten the plates to the cover by bending the lug at right angles to the plate and screwing them one inch apart. Two of the jars will have one aluminum and one lead plate. The middle jar will have one lead plate in the middle and two aluminum plates, one on each side of the lead plate.

The solution is made by dissolving as much baking soda as the water will dissolve, thus making a saturated solution. Usually two or three handfuls of soda will be enough. With this preparation fill the jars within an inch of the top and lower the plates into them. It is advisable to put a lamp bank of six 110 volts 32-candle power lamps on one side of the alternating current, because if low resistance was put on the direct current load it might burn out the wires.

The writer has used these rectifiers with three 32-candle power lamps for charging storage batteries at a charging rate of two amperes.

The uses to which this rectifier can be put to are various, such as running small motors, spark coils, charging storage batteries, and lighting arc lamps. A fresh solution should be made after the rectifier has been in use about forty hours.—Modern Electrics.

Mr. W. C. Lloyd, manager of the Postal Telegraph-Cable Company at New Orleans, in renewing his own, and sending us two additional subscriptions, remarks: "I find that Telegraph Age is good at all times, but I wish to especially congratulate you on the issue of January first."

Electricity Will Perform An Important Part in the Tabulating Work of the Next Census.

Although it is yet more than two years in advance of the beginning of actual enumeration, preparations are already under way for the next national census of the United States, that of 1910.

With a new policy of forehandedness the officials of the bureau of the census have not waited for the congressional appropriation, but are already busy with the administrative details of the coming census, and, even more important, the mechanical experts of the census bureau have been gradually evolving a number of wonderful new machines which will enable the compiling of the census returns more quickly and more accurately than has ever heretofore been possible. These early preliminaries have been rendered possible by the creation of the permanent census bureau which came into existence after the last national census, that of 1900. In days gone by, each successive census was an independent enterprise, with all the disadvantages that might be expected to result from entrusting a gigantic task to officials not familiar with the work and employes wholly or partly inexperienced. To remedy these defects congress in 1902 established the bureau of the census as a permanent government institution.

The forthcoming federal census will entail upon the nation an expense of about \$14,000,000. Of this total about \$1,500,000 is needed for the maintenance of the permanent census bureau mentioned, whereas \$12,500,000 represents the anticipated outlay for the canvass of the country's population. In addition to this, S. N. D. North, the director of the census, will ask congress at its coming session to appropriate the sum of \$675,000 to purchase a site and erect a six story building as a permanent home for the census institution.

Mechanical mathematicians of one kind or another have been in use in the United States census office since 1870, but the system of electric tabulation which will be employed for the thirteenth census will be so far in advance of all predecessors in the matter of the machinery utilized as to mark a new era. Under this plan the census will be compiled on the card index system with a card for every man, woman and child in the country. However, it will be different from the card index system found in the average office, in that instead of data being copied on the cards by means of penmanship or typewriting, the information will be recorded by punching holes in the cards. The position of the holes on each card will carry significance as indicating facts relative to the individual whose biography the card holds. No writing whatever will be necessary on any of the cards.

The use of this short cut in census taking requires the use of two main classes of machines. First, there are the machines that punch the holes in the cards as described, and, secondly, there are the tabulating machines that take these cards after they have been punched full of holes and solely by mechanical means add and classify and make

up totals from the cards. The style of card punching machine heretofore in use at the census is a rather simple affair in which the pressure of a lever by hand power is necessary for the punching of each individual hole. It has not been all that could be desired in speed, it is easy to make a mistake and spoil the card being punched, and finally its operation is very fatiguing to the young women who do nothing else all day long.

However, it was no easy matter to find a substitute for this machine that would constitute an improvement. James Powers, the mechanical expert of the United States census, has been puzzling his brain over this problem for years past and only within the past few weeks has he finally triumphed and perfected the invention of a marvelous new card punching machine. The new machine is built on the plan of a typewriter with two hundred and forty keys, and the mere depressing of any desired keys and the switching on of an electric current serve to punch the holes as needed. Heretofore the most expert operator, using the old hand machine, could not punch more than nine hundred cards per day. With the new machine any of the young women at the census bureau can punch from 3,500 to 4,000 cards per day. Moreover, with the old machine, a first class operator would usually spoil at least one-tenth of the cards handled. With the new machine not one card in a hundred is spoiled.

Possibly the most interesting fact in connection with the invention of this new machine is that it will enable the announcement of the total population of the country in record breaking time. This is possible of accomplishment because in the new machine automatic counters are attached to the keys, registering on a dial every time a hole is punched. Thus, just as soon as there have been punched the eighty odd or ninety million cards, representing the people of the United States, the census bureau will be enabled to announce the eagerly awaited totals as to the different classes of our population—males, females, native, foreign, white, colored, married and single.

The next census will also see the introduction of a new style tabulating machine that marks almost as long a step forward as does the card punching machine. In the new tabulator, as in the one in use at the last census, the work is performed by a pin box, equipped with a needle for each possible hole in a card. Each of these needles is set on a fine spiral spring and when the pin box is brought down over each card in turn the needles which meet the unpunched surfaces are repressed, while those which pass through the holes make an electric contact and cause one or more counters or dials to register. In the old style machine the counters had to be read and the results recorded by hand, a proceeding productive of many errors, and then all the dials had to be reset by hand, a time consuming operation.—Walden Fawcett, in Office Appliances.

China and Japan Telegraph Convention Ratified.

By an exchange of notes between Mr. Ijuin and the Wai-wu-pu, January 12, the telegraph convention between China and Japan, which was signed in Tokio on October 12, 1908, and the supplementary agreement, signed on November 7, following, were ratified. The convention, says the London Times, settles the question of a cable between the Japanese leased territory in Manchuria and Chi-fu and the question of the Japanese telegraph lines in Manchuria outside the leased area, a matter previously referred to in Telegraph Age.

The convention contains eight articles and stipulates that the cable shall be of two sections, the Manchuria end being worked by Japan and the Chi-fu end by China, the connection being a point seven and one-half miles from Chi-fu. Japan undertakes under reserve of the most favored nation treatment not to land submarine cables or construct telegraph or telephone land lines or establish any kind of wireless telegraphy in China outside her leased or railway territories without first obtaining the consent of the Chinese government. Japan also undertakes on the payment of 50,000 yen (about \$25,000) immediately to hand over to China all Japanese telegraph lines in Manchuria outside her railway territory. Further, Japan will not extend her present telephone system in Manchuria without first obtaining the consent of the Chinese government. China undertakes to place special telegraph wires between the treaty ports, An-tung, Niu-chwang, Liau-yang, Mukden, Tie-ling, Kwang-cheng-tsze, and the railway territory at the exclusive disposal of the Japanese government for a period of fifteen years, the telegraph service on such wires to be worked by Japanese clerks in the employ of the Japanese government from the Chinese telegraph building, but only used for the exchange of telegrams from or to places under the direct control of the Japanese telegraph system. Japan also undertakes to pay China a small annual royalty on all messages forwarded over the Japanese-Manchurian telegraph lines.

The supplementary agreement provides for the use of the Gregorian calendar and the English language in all communications.

Thus it will be seen that the terms of the settlement are highly favorable to China and more advantageous than at one time seemed possible. China was represented in the negotiations by the Danish expert, M. Dresing, adviser to the Chinese Imperial Telegraphs, who also represented China at the recent international telegraph conference in Lisbon. During the negotiations, early in September last, while he was living in the Imperial Hotel at Tokio, M. Dresing was the victim of a sensational outrage one night. While he was asleep in bed his room was entered, he was stupefied, probably with chloroform, and all his papers were stolen, consisting of a large number of confidential agreements and other documents.

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The Railroad.

Mr. George C. Kinsman, superintendent of telegraph of the Wabash system, with headquarters at Decatur, Ill., was a recent New York visitor, coming on business connected with his railroad. He took occasion while in the city to make a number of calls on personal friends.

To facilitate the sending of train orders by telegraph and telephone, the names of fifteen two-word stations on the Eastern, Fitchburg, Concord and Passumpsic divisions of the Boston and Maine Railroad have been changed to one word, as follows: Scarborough Crossing to Rigby, West Moreland to Gilboa, North Ashburnham to Naukeag, East Andover to Halcyon, North Boscawen to Gerrish, Andover Plain to Alpine, South Danbury to Converse, Grafton Center to Cardigan, West Concord to Garrison, West Henniker to Emerson, Mount Sunapee to Edgemont, East Barnet to Inwood, St. Johnsbury Center to Centerville and North Theford to Northboro.

Mr. George O. Perkins, superintendent of telegraph of the Mexican Central Railway, City of Mexico, has sent to Telegraph Age diagrams and a description of his composite circuits as arranged for use on his railroad system designed to meet varying local conditions in the most economical and efficient manner. Where three telegraph circuits terminate at a jack-box, a howler for each circuit and one telegraph is provided. At most points where two telegraph circuits terminate a telegraph and a howler are furnished and connected in such a manner that by throwing a switch each instrument will be transposed from one circuit to the other. These novel installations were designed by Mr. Perkins, and have been found to meet adequately the requirements of the service.

Executive officials of the Pennsylvania Lines west of Pittsburg having received and approved reports of tests made along the Fort Wayne railroad with concrete telegraph poles, authority has been given to extend the use of these poles along the Fort Wayne and Panhandle systems and other lines of the system west of Pittsburg. While no specific amount of money has been set aside for this work, the engineering and signal departments have been authorized to use concrete poles for renewals at all points. It is expected that when the construction and improvement programme for 1909 is taken up, orders will be issued to place many miles of concrete telegraph poles. Division officials have sent their list of proposed improvements to the general offices in Pittsburg, and it is expected that definite action on the 1909 programme will be taken in the near future.

The meeting of the western division of the railway telegraph superintendents (E. A. Chenery, chairman), train dispatchers and others connected with the movement of trains took place at the St. Louis Railway Club, on February 12. W. E. Harkness of the Western Electric Company, New York, read a paper on train despatching by

telephone, demonstrating the utility of the system by apparatus representing a number of stations. W. W. Ryder, of Chicago, read a paper on the same subject, which was a modification of the one read by him at the Montreal convention of the association held last June. The paper showed the development of this method of handling trains which had taken place during the past eight months. Both papers were discussed by E. H. Millington, of Detroit; C. S. Rhoads, of Indianapolis; G. A. Cellar, of Pittsburg; J. B. Sheldon, of Omaha; G. C. Kinsman, of Decatur, Ill.; I. T. Dyer, of Los Angeles; Percy Hewett, of Houston, Tex.; O. C. Greene and E. J. Little, of St. Paul, Minn., all of whom, with others, related their experience in the development of the telephone for train despatching purposes. A. W. Sullivan, general manager of the Missouri Pacific Railroad system, also spoke on train despatching by telephone from the standpoint of executive officers. He favored the telephone train despatching system.

James O. Fagan, the "Signal Man," spoke recently in Boston on "The Railroad, the Man and the Accident." He said in part that the relations between the management and the men were governed entirely by the schedule and agreement, and it was on the schedule that the general public relied in making the railroad a common carrier. The railroad man is subjected to more analytical and physical examination than any other man in a semi-public position.

Every year the rule and the signal are being connected with the employer and the employe, and year by year the careless and negligent men are becoming fewer in the ranks of the railroad men. There is not enough interest among the railroad men in the subject of safety and the American public is going to look more and more every year to the individual employe instead of to the railroad companies for the safety of the traveling public. It is therefore necessary that the railroad brotherhoods shall evince more interest in the matter of safety devices in railroading.

Taking chances, he thought, was a characteristic of the American railroad and the deplorable accidents occur too frequently. The railroad man's labor organization was, in the opinion of the speaker, one of the ways to reach the men who are responsible for them.

"I think there are better times ahead and I firmly believe in a splendid future for the railroad man, but there are breakers ahead for him. Today the railroad man is actually on top, and it is up to him to say just how he will make use of his great power and influence."

Mr. Thomas A. Edison is spending some weeks at his plantation at Fort Myers, Fla. He will not return to his home at Orange, N. J., until some time in April. Among other interesting subjects that have been occupying his attention of late is the perfection of a new form of telephone transmitter for service on railroads in connection with

the despatching of trains by telephone. During the period of carbon transmitter invention around 1877-8, Mr. Edison made innumerable types and an exhaustive investigation; and he is now resuming some of the work that promised results at that time. After the telephone passed out of his own hands at the time of consolidation, according to the *Electrical World*, Mr. Edison said, he lost much of his interest in it, and other cares engrossed him in the lighting field. The demand and imperative necessity in the railway field has been urged upon him so strongly of late by many of his friends in the railroad telegraph departments, he has been led to take up the subject again, with most gratifying results. The new transmitter is remarkably sensitive. Mr. Edison notes that even to-day, "Unless something is already known of the speaker or the subject, people frequently have to repeat and repeat or are asked to spell it out, or give it up. With my new transmitter, of the variable pressure type, but with very novel electrodes, I think I compass the entire alphabet with a clearness and sharpness of enunciation never before attained." Mr. Edison said the transmitter would doubtless find extensive use outside the service for which he primarily intends it. Several railroads are awaiting the production of these telephones before making extensions of their despatching systems.

W. H. POTTER BECOMES SUPERINTENDENT OF TELEGRAPH OF THE SOUTHERN SYSTEM.

Mr. W. H. Potter, who has been appointed superintendent of telegraph for the Southern Rail-



W. H. POTTER.

Superintendent of Telegraph, Southern Railway, Washington, D. C. way Company, Washington, D. C., to succeed the late Charles P. Adams, obtained his first telegraph and railway experience with the Philadelphia and Reading Railroad, later resigning to take service with the Central Railroad of New Jersey. He was made chief clerk of the telegraph department of that company in May, 1899, which position he retained until September, 1902, when he resigned and went with the Choctaw, Oklahoma

and Gulf Railroad as superintendent of telegraph. This position was abolished in April, 1904, and the duties of that office were assumed by the superintendent of telegraph of the Chicago, Rock Island and Pacific Railway. Mr. Potter was transferred and assigned to special duty with that company at Chicago. He severed his connection with the Rock Island system in September, 1904, to accept the chief clerkship in the telegraph department of the Southern Railway Company, at Washington, D. C., from which position he has been advanced to the superintendency, as already stated. Mr. Potter's success is attributable wholly to painstaking labor in the interests of the railway telegraph service with which he has so long been identified.

Mr. Gifford a Manager Under the Late Mr. Wood.

The death of Otis E. Wood, the veteran ex-telegrapher, on January 11 last at his home at Etna, near Ithaca, New York, moves Sidney B. Gifford, of Syracuse, than whom no one has a greater fund of reminiscent telegraphic lore, so far, at least, as New York State is concerned, to write:

"Mr. Wood while in charge of the New York, Albany and Buffalo Telegraph Company, installed me as manager at Canajoharie, my first office, December 1, 1851. The office was a transfer point for business between the main line and a branch just completed by a local company, to Cherry Valley and Cooperstown. Canajoharie was not a railroad station, but across the river from Palatine Bridge, and the conductor not knowing its location, told us to get off at Fort Plain, which we did, and were obliged to walk down the track three miles, as there would not be another train for several hours, and there was no other conveyance. There was no New York Central railroad and no information bureau in those days."

Among a number of books on the market treating of the general subject of train despatching, that bearing the generic title of "The Train Dispatcher," written by A. W. Early, a train dispatcher himself, has gained a wide popularity, its value being based on the fact that it is one of the best books of the kind ever produced. It supplies a certain practical information of a class desired by the ambitious worker as a guide and inspiration to him in his daily work. Its 104 well printed pages are packed full of educatory matter, and the volume should be, as it has been, a welcome possession to every telegraph operator and train dispatcher in the railway service. This book will be sent to any address on receipt of price, \$1.00. Address J. B. Taltavall, Telegraph Age, 253 Broadway, N. Y.

The testimony of progressive operators is that Telegraph Age is so thoroughly comprehensive in character as to make it absolutely indispensable to those who would keep informed. Its technical articles are of high practical value. Write for a free sample copy.

Stephen D. Field, Electrical Engineer and Inventor.

One of the most engaging personalities in the inventive field of applied electricity, including that of the telegraph, in which he has been an industrious worker, and where he is well known, is Stephen Dudley Field, of Stockbridge, Mass. Mr. Field, who reached his sixty-third year on January 31, is a nephew of the late Cyrus W. Field, of Atlantic Cable fame, and of David Dudley Field, the eminent jurist. In an extended interview lately appearing Mr. Field expresses an highly optimistic view respecting the very general application in the early future of electricity as the accepted motive power on railroads, and refers to his published utterances on the subject, predicting the substitution of electricity for steam as far back as 1883. Mr. Field talks interestingly, and as his name is closely linked with much that



STEPHEN D. FIELD.
Stockbridge, Mass.

has made for American electrical progress, and to show how closely ideas embodied in his trolley patents, granted in 1880, have been followed in recent development, we quote:

Since the opening of the new tunnel between Italy and Switzerland, where electrical traction was enforced, the locomotives are almost exact replicas of the electric locomotives that I used in New York on the elevated railroad in 1887. The rails are bonded with a particular kind of rail bond, which I introduced in my work in Geneva, Switzerland, and now known as the Swiss rail bond.

Stored in the cellar of "Inventor's Lodge" at Stockbridge, are remnants of the first trolley car ever constructed in this country. It was built in 1880 near the present Stockbridge Casino, and was equipped with third rail and later with trolley. In August of that year Mr. Field invited some fellow-citizens to inspect the trolley car built for two, which moved about the lawn smoothly and with speed. Mr. Field next equipped a trolley road for the business exposition of railroad men at Chicago, 1883. The tracks were laid about the exposition grounds and a fare of ten cents was charged. That was the first public trolley line in existence. After litigation over pat-

ents, Mr. Field sold out in 1896 to the General Electric and Westinghouse companies.

From 1863 to 1879 Mr. Field was in California. While associated with the San Francisco Fire Alarm Telegraph Company the first great earthquake occurred in that city in 1868, Mr. Field says:

I was in the old City Hall building at 7 o'clock the morning the buildings began to shake. I waited until it was all over and then made my escape. Returning I found that the fire alarm had been turned in. This I transmitted to various engine houses over such lines as remained intact.

I was lauded for this act, when, as a matter of fact, I was too paralyzed with fear to do otherwise. While the alarm was being transmitted a man came rushing over the ruins to the tower in which I was operating the keys and told me to stop sounding the alarm. He pointed up to the heavy fire alarm bell over my head, which was on the point of toppling over on me. Before I could get out the tower came crashing down about me. My instruments were destroyed and I thought I should be crushed. One large timber fell across my office and saved me.

While on an expedition with a party of engineers to the Frazier River, British Columbia, in 1865, Mr. Field found himself alone in the wilderness with a red shirt, a pair of corduroy trousers, a felt hat with a hole in it and a roll of blankets as his sole earthly possessions. As Cyrus W. Field had not at that time successfully operated the Atlantic cable for commercial use, the Western Union Telegraph Company sought to extend its lines up the Pacific Coast to Alaska and across the Behring Strait to Siberia. Then it was planned to cross Asia to St. Petersburg and run a line to Paris and London.

Mr. Field said:

I was inveigled, with some sixteen other engineers, to join the Collins Overland Telegraph Company, which was to build the line up through British Columbia, on an engineering expedition. I was told one morning to pack up the mules for a trip to the mountains. I told the manager I wasn't hired for that and didn't propose to be a slave for any man.

"Very well, you may quit, then," said the manager.

I quit on the spot. I was sixty miles from any sort of civilization, without a cent in my pocket. I made my way through the wilderness by sleeping alone under the fir trees at night, and eating sparingly of the lunch that the boys had given me, down to Victoria, B. C., whence a purser of an old side-wheeled coast steamer took me down to San Francisco.

Mr. Field says he was never so near death as one day in Smartsville, Cal. He describes the occurrence:

I was hired to fire a blast of 2,500 kegs of powder under a bank of gravel. Making a miscalculation in the conductivity of the wire employed, I was obliged to double the wire back on itself until I got within the danger zone of the blast. The blast was a great success, but the boulder behind which I was seeking safety was badly scarred. My apparatus was blown to atoms. I was suffocated by gas from the powder, so that I was insensible. My heart stopped beating; for half an hour they thought me dead. Finally with brandy they brought me to.

"During the summer vacations," says Mr. Field, "I frequently subbed for telegraph operators here in the Berkshires. My first invention was designed to answer automatically when the office call passed on the wire, receive and record the message and answer 'O. K.' at its termination."

For a time Mr. Field worked at the Western Union Telegraph office in Pittsfield and later in the office of the Samuel J. Tilden Manufacturing Company of Lebanon Springs, N. Y. His early education had been secured in the ancient Williams Academy of Stockbridge.

Mr. Field equipped the first long-distance telephone line in this country. It ran from the French corral in San Francisco to the summit of the Sierras, sixty miles, and had twenty-four stations. Some of Mr. Field's greatest inventions were perfected in California, notably the first electric elevator, the first successful electric hotel annunciator, the first multiple call district telegraph box, the first central station for light and power in the United States, the first electrically illuminated theatrical representation, the first police patrol telegraph, the first automatic ringer and first selective signal in a telephone exchange, the first dynamo plant for telegraph lines.

For three years Mr. Field served as electrical engineer for the Western Union Telegraph Company at San Francisco, and in 1872 organized the California Electrical Works, which he ran for eight years. Returning to New York in 1879, within a year he brought out the dynamos for furnishing power for telegraph instruments, and his quadruplex is now in constant use. Later he invented the tickers on the New York and Boston stock exchanges.

A thoughtful, discriminating reader, Mr. Field has one of the best libraries in Berkshire county. He is a member of the Institute of Electrical Engineers of Great Britain and of the American Institute of Electrical Engineers.

Obituary.

Cassius L. Mingus, of Spartanburg, S. C., a prominent telegrapher, formerly manager of the Western Union Telegraph Company at that point, died on February 7. For several years he was in the government telegraph service at Manila, Philippine Islands, and at one time acted as superintendent of construction of government lines at Manila.

Wallace Leaning, aged seventy-two, an old time telegrapher, and well known in telegraph circles in New York previous to a quarter of a century ago, died of heart disease at Cooperstown, N. Y., on February 9. Mr. Leaning was the manager of the office of the Independent Telegraph Company at 28 Nassau Street, New York, when it was seized by the Government, May 28, 1864, for alleged complicity with the bogus presidential proclamation calling for an additional 400,000 troops, the story of which has been frequently mentioned in these columns. Mr. Leaning was a native of Cherry Valley, N. Y., and the first of many telegraph graduates of the office opened in that place in December, 1851. He went to Utica in 1852, and in the following year to 2½ Wall street, New York, which was the great telegraph center in those days. Since leaving the telegraph service a

quarter of a century ago, he had practically lived in retirement at his native place.

Frederic G. Mason, an old time telegrapher, but for the past ten years assistant superintendent of the liability department of the Fidelity and Casualty Company of New York, died at his home at East Orange, N. J., on February 23, as a result of an operation for appendicitis. Mr. Mason was born at La Salle, Ill., October 29, 1860. He entered the telegraph service at Moberly, Mo., for the Western Union Telegraph Company, where his father, S. C. Mason, now living in retirement at Lockport, Ill., was a railroad telegraph superintendent. Mr. Mason was appointed manager of the Mexico, Mo., office in 1876. Later he accepted an appointment as operator in the general offices of the Union Pacific Railroad at Omaha, becoming chief operator a few months later. In 1881 he was transferred to the office of auditor of the Union Pacific, also at Omaha, and subsequently was promoted to a responsible position in the office of the general manager of the Wabash Railroad at Chicago. In October, 1883, he accepted a position as secretary to General Manager William Henry Smith, of the Associated Press at New York, remaining in the employ of the New York Associated Press and the Western Associated Press until the absorption of the former organization by the United Press in 1892, when he was made auditor of that company. When the United Press retired from business a few years later he was appointed its assignee and conducted the litigation and intricate adjustments connected with the settlement of its affairs. He was a prominent official in the Masonic order and was one of the most respected citizens in the community in which he had resided for so many years. He is survived by a daughter.

James E. Pettit, for twenty years, until about one year ago, chief operator of the Postal Telegraph-Cable Company, at Chicago, died on February 22nd. Mr. Pettit was a prominent figure in telegraph circles at Chicago for the past forty years, occupying many responsible positions in the service. He had a splendid military and military telegraph career to his credit, having been actively engaged in those branches of the service during the Civil War. For over twenty years he was secretary of the Society of the United States Military Corps. Mr. Pettit was born at Perry, N. Y., in 1842, and for the past fifteen months had practically lived in retirement because of ill-health.

Mr. E. J. Nally, vice-president and general manager of the Postal Telegraph-Cable Company, in the postal tariff sheet has this to say of Mr. Pettit:

He was honest in everything, just to those under him, zealous in his service to his employers, devoted as a husband, tender and loving as a father, and in friendship, loyal.

Could more be said of any man?

The Telegraph Service in the National City Bank.

BY J. T. GIBBONS.

[Mr. Gibbons has been in charge of the telegraph department of the National City Bank since the installation of the system and to him is due the credit for its present high efficiency.—Ed.]

On December 19, 1908, the National City Bank occupied its new home, which was formerly the old custom house, located on Wall street. The building had been completely overhauled in every particular, four stories being added to the original structure, and as it stands to-day it is the greatest bank building in the world, covering a much larger area than the Bank of England. While the reconstruction was going on those in charge were on the lookout for ideas, and as a result every modern labor-saving device of worth has been utilized in this strictly modern conception of what a complete banking structure should be.

The telegraph department is located in the southwest corner of the main banking room, and in planning this great financial interior this important section was not neglected, for the National City Bank, which was one of the first banks to recognize the value of maintaining such a department, naturally takes pride in the advantage it affords.

Between the hours of 9 A. M. and 5 P. M. all telegrams are received from and transmitted to the telegraph company direct from this bank department. The incoming code messages are received on long blanks, one code word to a line. This leaves ample room for the translation. For frequently-occurring words, rubber stamps conveniently arranged on racks are used in deciphering. As an illustration of how the system works, let us consider an instance of a message being received over the wire: A code clerk stamps with time clock and translates. If it is a payment for a bank, the balance bookkeepers on another floor are asked over the telautograph how much the bank making the payment has on deposit. The balance is endorsed at the bottom of the message, together with the clerk's initial. The message is then verified by another clerk, who endorses it. A check is issued and sent through the pneumatic tube to an officer, who endorses the telegram and signs the check; both are then returned for inspection, and if regular go through the tube to the messenger department for delivery. This is one example in a hundred. It makes little difference what the circumstances may be, the routine is the same. The code system used is indexed and cross indexed in such a manner that a message must be very badly mutilated in order to be unintelligible. One hundred and thirty different cipher codes are kept on file under lock and key in the department. The checking scheme is so perfect that an error in a code message is unknown. Messages sent and received are kept in filing drawers in paper holders, each date under separate cover, two months' business being kept in the department for quick reference; older

dates are just as easily obtained, but are kept in the general filing room.

The telegraph table of mahogany is a unique piece of furniture in many respects. The resonator bases are of brass nicked, with felt bottoms; the holes through which the silk cords slide are faced with gutta-percha bushing; cords have weights attached. Each wire has a small spring-jack, to be used in connection with sending machine, designed specially, and takes up very little room on the table, being only one inch long and half an inch wide. The method of cutting out the false resistance with the push-button when using the call bells was arranged by placing the push-buttons on the wooden base of relays. By placing the ground side of local to one side and line side to the other of the button, the false resistance is placed between line ground and relay, contrary to usual custom. This method reduces the amount of wiring under the table and makes a neater appearing desk. It may confidently be said that in substance and elegance of appointments this telegraph office of the National City Bank is without a superior.

In a general way readers may be interested to know something about the architecture of this latest addition to New York's great banking buildings.

The interior of the building sharply resembles the home of some mammoth savings bank. There is the same large clear space extending to the roof with a dome overhead, that is seen in the Bowery Savings Bank of New York, for instance. The plan of the architects keeps the older and lower building and the upper and more recent structure separate. The bank and its officers use the three stories and basement of the old building, which was built originally for the Merchants' Exchange and later and for many years occupied as the Custom House. The only space that the bank uses in the newer structure is the top floor, where purely supplemental rooms, such as the employes' dining-room and clubrooms, are placed. The rest of the newer portion is given over to the tenants.

The dome, which was a feature of the old building, remains. Above it to the side are the additional floors for rental. The main banking room under the dome has at its sides three mezzanine floors. The janitor's apartments occupy one corner of the roof floor, and consist of six rooms and a bath. The men's dining-room will seat one hundred and twenty-eight at a time. The kitchen arrangements include a refrigerating plant, an ice-cream room, a laundry, as well as the usual features in a modern hotel kitchen. There are also on the "roof floor" a dining-room for officers and another for guests. There are in addition two rooms which may be used as bedchambers in cases of emergency. Each of these has a private bath. On one side of the roof is a roof garden for the officers and their guests.

The central feature of the main floor is a 300-ton armor plate safe with its coils of steam pipes, into which steam may be thrown by the pressing

of concealed buttons located at different convenient stations. This precaution is made so that no bold hold-up may be attempted. The vicinity of the great strong box would have the atmosphere of a furnace were the steam to be sent into the coils.

BOSTON POSTAL.

On January 27, 2,958 messages were handled on the Rowland octoplex machine between Boston and New York between 8.30 A. M. and 5.30 P. M. The Boston sending operators were Miss Alice Connell, Miss Ethel Chadwick, Leo Marshall and Miss Grace Longley. When it is taken into consideration that long messages and press matter were sent in turn and that the machine failed frequently on account of wire trouble, the record is remarkable.

General Mention.

The bi-ennial meeting of the Order of Railroad Telegraphers will occur at Atlanta, Ga., in May.

William A. Bunting, aged fifty-seven years, a telegraph operator employed at Ann Arbor, Mich., died at that place on January 26.

John A. Anderson, aged sixty years, for thirty-one years manager of the Western Union Telegraph Company at Marion, Ind., died suddenly at that place on February 7.

Mr. James F. Gormley, the veteran telegrapher of Boston, who retired from active telegraph service several years since, states that on March 3 he will be seventy-three years "young," and not seventy-three years old, as some of the veterans of the key are wont to style themselves.

Albert E. Nance, aged fifty-eight years, a native of Vermont, and an old time telegrapher, died at Denver, Colo., on February 18. For many years he was an employee of the Western Union Telegraph Company at that point. He was state treasurer of Colorado during Governor Waite's term of office.

Mr. U. W. Boggess, manager of the Western Union Telegraph Company, Clarksburg, W. Va., in renewing his subscription recently, stated: "I frankly admit that Telegraph Age has been of great service to me in the past in different ways, and I desire to be counted among its staunchest friends."

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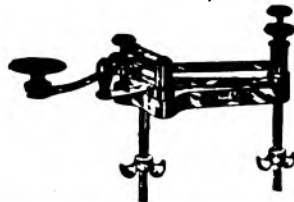
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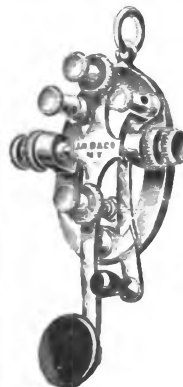
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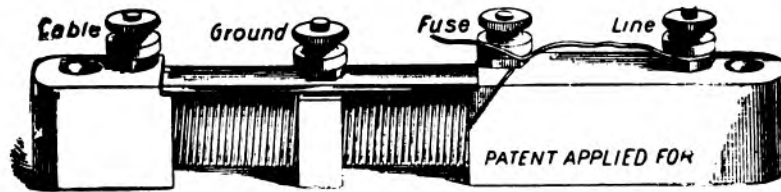
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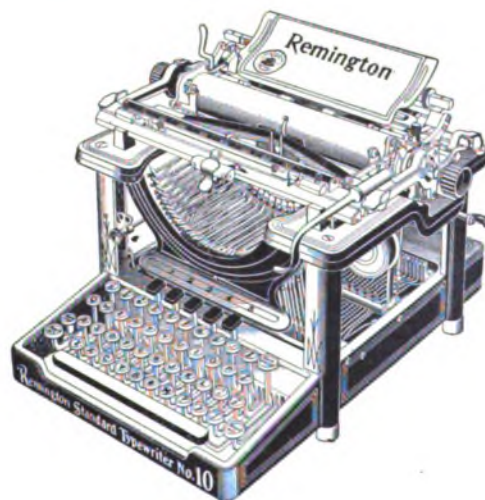
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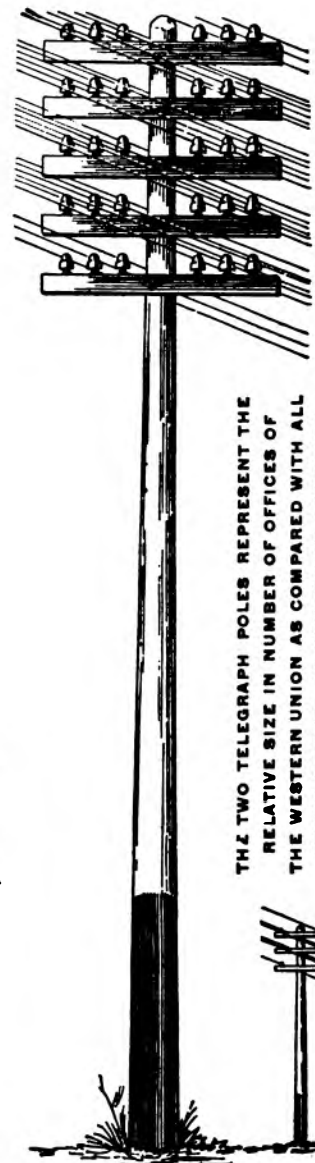
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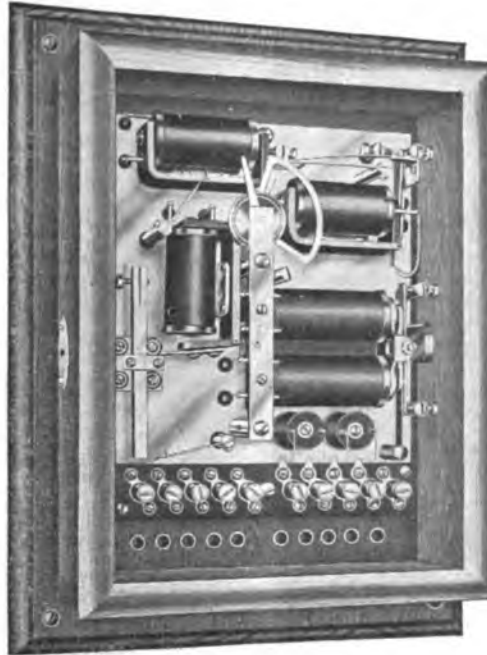
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The diagrams appearing in "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines" were made from the company's blueprints and are absolutely correct. This volume, which is published by Telegraph Age, under official sanction and supervision, is of especial value to operators and linemen. It will be sent to anyone, postpaid, on receipt of fifty cents.

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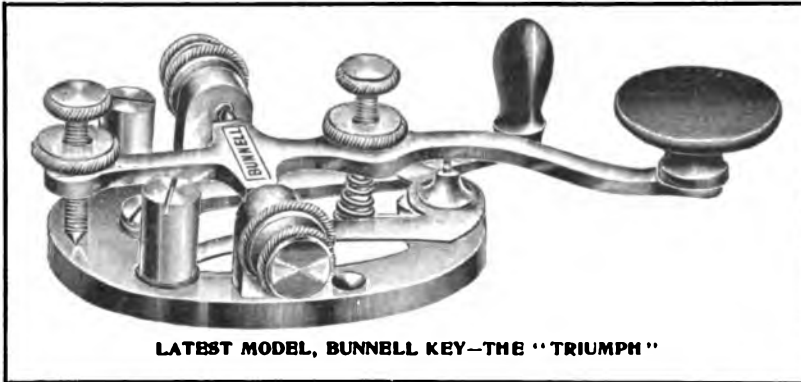
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TELEGRAPH AGE

No. 6.

NEW YORK, MARCH 16, 1909.

Twenty-sixth Year.

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SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

The Buzzer Telegraph Method.

Some time ago a young man who had served in the late Spanish War inquired how it was that the operators in the Signal Corps of the United States army were able to maintain Morse telegraphic communication between the field and base of operations in the Philippine Islands, where insulation was often so poor that the wire was practically grounded when it rained. He knew they could and did get their messages through without any particular difficulty even on lines nailed to the side of green trees, and which often touched the ground, yet in this country, he remarked, the best cedar poles and glass insulators often failed to maintain the conditions that are necessary to permit like communication during a severe downpour of rain.

As there may be others who have been similarly perplexed we will herewith repeat the substance of the explanation we gave the inquirer. First of all, let us clarify the situation by stating that the method of telegraphy employed in the Philippines and that used on regular Morse circuits in this country was not identical. The reason that the army method succeeded where or-

dinary Morse circuits failed, was because the former method was devised for the express purpose of being able to surmount the evils of unavoidable poor insulation. In order to do so, however, the inventor had to sacrifice many advantages our regular Morse system otherwise possesses over the buzzer method, as the former is termed.

Again, the two systems are unlike, inasmuch as the signals in one method are made by a direct current and in the other by a secondary or induced current, as will be seen as we describe the operation of the latter.

It is well known that a telephone receiver will pick up and respond to very minute alterations in the volume or character of a current when such take place in an electric circuit, and register the same in the way of a click which the ear can easily detect, while a relay must have a comparatively large volume of current in order to operate it properly. Hence, when a wire becomes badly water-soaked as to be partially grounded, a relay is often practically useless.

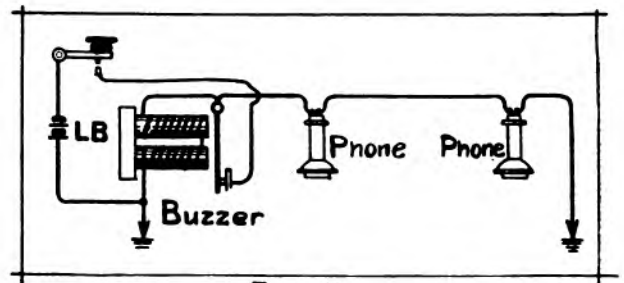


Fig. 1

If we connect a magnet in a circuit after the manner shown in Fig. 1, and close the key for an instant the moment the circuit is again opened, the discharge of the magnet coils immediately delivers to the line a secondary current of high electromotive force, thus creating a sharp click in the telephone. In order to utilize such currents for telegraphic purposes, it only remains to substitute an ordinary "buzzer" after the pattern of the conventional enunciator device, for the magnet mentioned, and then break up the noise in the telephone, which continues while the key is closed, into short buzzes for dots and long ones for dashes, by means of a regular Morse key. The operator thus hears the Morse letters and other characters in the telephone, instead of receiving them from a sounder.

It is said that six or eight dry batteries are sufficient to operate several miles of line wire in a satisfactory manner. In actual practice there is,

of course, much more to the buzzer system than our theoretical diagram discloses. Our purpose here is simply to describe the principle of operation. The complete outfit as furnished to the Signal Corps by the United States government, consists of such apparatus and methods of arrangements as is necessary in order that the circuit may be operated either as a speaking telephone proper, a Morse telegraph circuit, or both, as happens to be most suitable.

CONCERNING AMMETER READINGS.

Mr. D. B. Grandy, of St. Louis, writes as follows:

We have two milliammeters, one mounted on the test board and the other portable. On a long circuit the latter reads about five milliamperes higher than the former, but on a short artificial line circuit the difference in their readings is twenty-five. When both instruments are inserted in series in either circuit they read practically the same. Can you explain this?

The fact that practically identical readings are obtained when the same volume of current flows through each meter, as must necessarily be the case when connected in series, proves conclusively that the instruments themselves register correctly. It is obvious, therefore, that if the insertion of the meters separately in a given circuit causes different volumes of current to flow, the change must necessarily create a different value of resistance therein. As the meters themselves have proved innocent, the fault must lie in their connections.

If Mr. Grandy will measure the flexible cords attached to the meters he will probably find that one of them contains an abnormal amount of resistance, the ratio of which resistance to that of the resistance of the long circuit is so small that it creates an inaccuracy in the reading of but five milliamperes of current. On the short circuit this same cord will increase the original resistance of that wire in a much greater degree, hence the ratio of added resistance will be correspondingly increased.

Apparently, the ratio increases five-fold in the short circuit mentioned, which fact accounts for the twenty-five milliamperes of current difference in one wire and five in the other.

This explanation offers two points well worth remembering.

1. If two or more ammeters are in perfect condition they will each give practically the same reading when all are placed in series on the same circuit, regardless of the resistance of their cords.

2. If the same instruments inserted separately in a very low resistance circuit, say four or five ohms, give different readings, suspect the cord and other connections. It is always best to have the test circuit contain but a very few ohms and show a strong current with a low voltage. The shorter the circuit the more pronounced will be the discrepancy caused by a defective cord or other unlawful resistance.

Recent Telegraph Patents.

A patent, No. 912,351, for a process of charging lead-peroxide-zinc storage batteries has been granted to Rudolf Ziegenberg, of Berlin, Germany. The process consists in placing the plates, normally dischargeable in sulphuric acid, in a neutral solution of zinc sulphate and maintaining this bath in a neutral condition by inserting therein zinc.

A patent, No. 913,183, for a telegraph transmitting machine has been issued to J. C. J. Alderson, of El Casco, Cal. For sending messages at a high rate of speed by means of a vibrator forming one terminal of a circuit with a plate for regulating the vibration of the vibrator and a key to release the vibrator.

A patent, No. 913,264, for a cable terminal has been awarded to F. B. Cook, of Chicago, Ill. A cast box contains the terminal and is provided with a projecting end, which prevents rain or moisture from blowing through the passages through the end into the box. The box is divided into compartments for the aerial and cable conductors, respectively.

The following patents have expired:

Patent No. 469,273, for an electric telegraph apparatus, held by J. Robinson, of London, Eng.

Patent No. 469,856, for a telegraph apparatus for branch offices, held by J. B. Hurd, of Red Bank, N. J.

Personal.

Mr. J. E. Dunning, the well-known, old-time telegrapher, of Paterson, N. J., is sojourning at Newfoundland, N. J., for the benefit of his health.

Mr. William R. Driver, treasurer of the American Telephone and Telegraph Company, has been made a vice-president, in addition to holding the position of treasurer.

Mr. W. T. Gentry, an old-time telegrapher, for many years vice-president and general manager of the Southern Bell Telephone Company, at Atlanta, Ga., has been elected president of the same interests, succeeding E. J. Hall.

Mr. Frank Schanher, of Mount Clement, Mich., and a son of J. Schanher, manager of the Western Union Telegraph Company, and Mrs. Brant, wife of the late John Brant, secretary of the Old Time Telegraphers' and Historical Association, were passengers on the steamer Carmania which left New York on March 4 for Naples, Italy. They will spend several months in Europe, returning home via Germany, France and England.

Mr. W. P. Bowman has been elected treasurer of the John A. Roebing's Sons Company, the well-known wire manufacturing concern, to fill the vacancy caused by the resignation of Henry L. Shippy, who retires from active business on account of ill-health. Mr. Bowman was for many years the representative of the company at Cleveland, O., and is well and favorably known to the electrical profession. He comes to New York fully equipped to fill the duties of his new office.

The twenty-fifth annual dinner of the American Institute of Electrical Engineers took place at the Hotel Astor, New York, on the evening of March 11. Over 500 members and guests were present, and the occasion was enjoyable and memorable in many particulars. President Ferguson acted as toastmaster. Prof. Elihu Thomson spoke for "The Charter Members;" Mr. Frank J. Sprague for "The Past Presidents;" Dr. A. C. Humphreys spoke on "Electrical Engineering and Education," and Mr. John Bogart brought the "Greetings and Congratulations of Sister Societies," several of which were represented by their officials.

The Recent Severe Storm.

The telegraph service at Washington, D. C., was in a more or less demoralized condition on March 4. Inauguration day, caused by the severe snow and sleet storm which visited that section early in the morning of that date. An idea of the severity of the storm can be gathered from the fact that the inaugural ceremonies incident to President Taft's taking office had to be largely abandoned. Tens of thousands of persons on their way in special trains to the capital to take part in the presidential inauguration were delayed from twenty-four to forty-eight hours in reaching the city. Several thousand telegraph poles were broken off or blown down between Alexandria, Va., and the Susquehanna River.

One report received by Vice-President and General Manager Edward J. Nally of the Postal Telegraph-Cable Company, from Washington, stated that many of the poles were broken in two places, utterly destroying them; that the wires were so badly tangled that they were practically of no value except as junk, and that trees along the route were broken and in many cases crashed through the wires, carrying the telegraph poles with them.

The ice on the wires during the height of the storm was from three to eight inches thick. An official rode horseback from Washington to Baltimore, and found that 338 poles were down, 200 of them in the ten miles nearest Baltimore. The highways were almost impassable, even on Saturday and Sunday. The mud was knee deep in places and the snow was in huge drifts.

Vice-President Charles C. Adams, early realizing the severity of the storm, ordered large gangs of men in from the Eastern, Western and Southern divisions to Baltimore and Washington to assist in reopening telegraphic communication with these two cities. Many thousands of feet of aerial cables of various sizes, besides many miles of insulated twin wire, and many miles of copper and iron wire were shipped to Baltimore on the morning of March 4. The company had but recently completed considerable reconstruction work in the storm zone, consequently only about 600 poles were down. The most serious damage was caused by heavy snow breaking the copper wires, and for a distance of twenty miles north of Baltimore

and twenty miles south of Washington many thousands of spans of copper wire were lying tangled in the road, covered with deep snow and thick ice.

John C. Barclay, assistant general manager and electrical engineer of the Western Union Telegraph Company, made the following statement regarding the condition of the wires of his company in and around Washington:

"While it is true that there were a few minutes on the morning of March 4, just before our day force came on duty, when we were out of touch with Washington, that condition lasted but a short time. We reached Washington through Cincinnati before 9 o'clock, and soon after we began recovering wires. But because all other means of communication had broken down and there were 200,000 strangers in Washington, almost every one of whom was anxious to telegraph home, there was great congestion. By noon we had eighteen wires and by night we had twenty-five. On the morning of March 5 we had forty wires and at night we had eighty-seven, and had restored our accumulated business to its normal condition. On Saturday, March 6, we were doing business as usual."

"Modern Practice of the Electric Telegraph" maintains its value as an excellent technical handbook for electricians, for telegraph managers and for operators. The fact that numerous editions of the book have been issued proclaims its intrinsic worth. The author, the late Franklin Leonard Pope, was a former president of the American Institute of Electrical Engineers, a member of the Institution of Electrical Engineers of London, an old-time telegrapher, and a writer of marked ability. The volume embraces 234 pages, has 185 illustrations and is fully indexed. Price, \$1.50, postpaid. Address J. B. Taitavall, "TELEGRAPH AGE," 253 Broadway, New York.

Postal Telegraph-Cable Company.

Vice-president Charles C. Adams has returned to his office, after a brief visit to Atlanta, Ga., in the interest of the company.

Mr. E. B. Pillsbury, general superintendent of the Eastern division, New York, and Charles E. Bagley, superintendent at Philadelphia, were at Washington, D. C., during the inaugural ceremonies.

Among the recent executive office visitors was Charles E. Bagley, superintendent at Philadelphia.

This company, through the Postal Telegraph Employees' Association, paid to the late James E. Pettit, of Chicago, during his short illness \$787.50, and contributed \$200 towards his funeral expenses.

The Birmingham, Ala., office will be moved to new quarters March 27. The office will be one of the finest and most modern of any in the service, and will be described in detail in a later issue.

Western Union Telegraph Company.

EXECUTIVE OFFICES.

Mr. Charles H. Bristol, general superintendent of construction, who has recently been in Chicago

and other western points in the interest of reconstruction work, is now in Baltimore personally looking after the re-establishment of the company's plant in that vicinity.

Mr. Belvidere Brooks, general superintendent of the Eastern division, was in Washington during the presidential inauguration ceremonies to look after the interests of his company.

Mr. William Finn, of the electrical engineer's office, is in California, where he is making a study of the question of induction, which is interfering with telegraph working in various sections of the country, where the wires parallel high tension power circuits.

Mr. S. C. Mason, a forty-niner of the telegraph, now retired and living at Lockport, Ills., for many years storekeeper for this company at Chicago, was in town recently to attend the funeral services of his son, F. G. Mason, whose death was reported in our March 1 issue.

Mr. C. O. Blandin, who was reported in the previous issue as having resigned as chief clerk in the office of Superintendent S. E. Leonard, at Denver, Colo., has instead been granted leave of absence, to extend several months, on account of ill-health.

A Barclay printing telegraph equipment has been installed on the Atlanta and Cincinnati circuit, with beneficial results to the service.

The Cable.

Mr. S. S. Dickenson, general superintendent of the Commercial Cable Company, New York, is confined to his home suffering from ailments probably of malarial origin. He contemplates a rest and change of air before resuming complete charge of his department.

Cable communication is interrupted March 12, with:

Venezuela	Jan. 12, 1906
Madura Island (Dutch East Indies) ..	Feb. 3, 1908
Macao	Aug. 29, 1908

Messages can be mailed from Hongkong.

Mr. Stephen F. Austin, for many years assistant superintendent of the Commercial Cable Company, at 20 Broad street, New York, has been made superintendent of the same interests, to fill the vacancy caused by the retirement of Superintendent J. H. Smart on account of ill-health. Mr. Austin has been identified with the telegraph service since 1873, serving with the Anglo-American Telegraph Company in London and Valentia, the Western and Brazilian Telegraph Company in Brazil, the International Ocean Telegraph Company in Cuba, the Mexican Telegraph Company in Mexico, the Direct United States Cable Company in New York, in the cable and Wheatstone departments of the Western Union in New York, and in 1884 was appointed assistant superintendent of the Commercial Cable Company at New York. When the French Cable Company withdrew from the cable pool he was appointed superintendent and representative of

that company on March 23, 1887. He re-entered the Commercial Cable Company's service as assistant superintendent in 1896, which position he retained until his present advancement.

Mr. F. C. C. Nielsen, of the Great Northern Telegraph Company, London, England, than whom there is no better authority on cable rates, in a recent address stated that the question of penny-a-word telegrams was not new. It was not to be wondered that when a member of Parliament propounded such an idea it was thought that there must be something in it. Unfortunately, however, those who had to do with such things in their daily occupation did not see it quite in the same light, and he was afraid he must argue rather the impossibility than the possibility of the proposal. The suggestion for a low uniform rate for the whole of Europe was brought forward many years ago. In 1885 the question was before the International Telegraph Conference and had to be abandoned on account of the loss it would cause to the different administrations. At the Lisbon telegraph conference in May last proposals for moderate reductions met with general resistance, and eventually a proposal for reducing the fundamental rates by one centime for large states and one-half centime for small states was only carried by a majority, several governments objecting on account of anticipated loss.

Municipal Electricians.

Chief Croker's request for authority to award the contract for an extension of the underground fire alarm telegraph system in New York has been approved by the Board of Estimate.

William Hummel, a trusted lineman, of Reading, Pa., who frequently did work for Superintendent Matthias of the city fire alarm and police patrol telegraph systems, is in jail, having confessed that he stole about \$80 worth of copper wire from the city.

Savings and Loan Association Organized in Chicago.

The Postal Telegraph Employees Savings and Loan Bank Association of Chicago was organized recently. The object of this association shall be to encourage thrift and prudence in a financial way among its members by encouraging them to form the habit of systematic saving. The policy of this association shall be to fraternize its members and their fellow employes, and in all dealings to be liberal to the individual as possible, consistent with safe business methods. It shall recognize honesty, industry, sobriety and steadiness as assets worth consideration, even where unsupported by financial standing. Officers elected for present term: F. N. Roberts, president; S. D. Barger, vice-president; Mrs. Minnie Church, secretary and treasurer. Copies of constitution and by-laws will be furnished on application.

Commercial Cable Company.

Sir Robert Bond, Premier of Newfoundland, announces that his Government has agreed upon a contract with the Commercial Cable Company by which the latter will extend one of its cables into Newfoundland and thence direct to New York City.

Mr. Clarence H. Mackay, president of the Commercial Cable Company and of the Mackay Companies, said:

"The report is correct. We have agreed to cut one of our five transatlantic cables at a point in the Atlantic known as the Flemish Cap, which is about three hundred miles east of Newfoundland, and there attach to the European end of the cable an entirely new cable which will extend from the Flemish Cap into St. Johns, Newfoundland, and thence direct from St. Johns to New York City. That is the ideal route for a cable between Europe and America, because it divides into two sections more equally than any other route, the entire distance from Ireland to New York City. This will enable us to operate the cable direct between New York City and Ireland with much greater accuracy and speed, the speed alone being increased over thirty-five per cent. We shall then have the only cable in the Atlantic running from Europe to Newfoundland and thence direct to New York. We probably would have laid our cables by that route in the beginning if the Anglo-American Telegraph Company had not had exclusive landing rights in Newfoundland. These rights, which existed for fifty years, have expired, and so we are now making this change. It means the purchase and laying of seventeen hundred miles of new cable. After it is finished we shall then have lying unused on the bottom of the sea about nine hundred miles of cable running from the Flemish Cap direct to Canso, Canada, that being that portion of the cable now in use and which will be put out of use by this new plan. Our cable ship will pick up as much as it can of this nine hundred miles of cable, and it will then be resheathed and will be available for use elsewhere. For two years we have been studying this question and carefully considering the change from every point of view. It involves a large expenditure of money, but we shall expend it. The Commercial Cable Company is the premier company in the Atlantic Ocean, and we propose to keep it so. We shall spare no expense to give the fastest and best service that submarine cables are capable of, with all the advantages of the most direct routes. Never before in the history of cables has nine hundred miles of a regularly working cable been picked up from the bottom of the sea and the route changed simply for the sake of accelerating the speed and increasing the continuity and reliability of the service. But that is what we propose to do, and I wish to remark that I do not believe any government would ever make any such change at such an enormous expense simply for the purpose of giving the public an improved service."

Lincoln Heeded Sister's Appeal.

In January, 1865, Miss Margaret Hart, of Baltimore, Md., made several unsuccessful efforts to reach President Lincoln with an appeal for clemency for her brother, Joseph D. Hart, a telegrapher, in the Confederate States' service. Hart had been captured in a federal raid upon a Confederate rendezvous at Port Tobacco, Md., and was imprisoned in the military prison under the capitol building at Washington.

At every call Miss Hart had been referred to Secretary of War Stanton, who repeatedly sent her away with the stereotyped official "promise" to look into the matter. Despairing of ever alleviating her brother's condition—by any action of the officials of the War Department—the brave girl took up her station at the gate to the grounds of the executive mansion and the second morning of her vigil was rewarded by an opportunity to lay the matter before the President.

President Lincoln listened patiently to the sister's prayer that her brother might be allowed to visit his home and family, and promised to see what could be done, advising her to return to the protection of her home circle.

Four days later President Lincoln visited the capitol prison and in the course of the inspection remembered the sister's appeal. He summoned the prisoner, Hart, and after hearing his story (he had been in constant military service since 1861), Lincoln, seated at a rough table in the dingy guard room in the basement of the capitol, wrote and handed to the prisoner the following:

"If Joseph D. Hart shall pass through Baltimore as a prisoner allow him to be paroled and remain there with his sister two days.

"A. Lincoln.

"Feb. 17, 1865."

Ten days later Hart and a number of fellow prisoners were ordered transferred to Governor's Island, a military post in New York harbor. In those days passengers for New York and the north arrived in Baltimore at the old President street station and were conveyed across town to the Camden street depot.

Major Weigel, formerly of the Eighth Alabama, but acting deputy provost marshal, came across the president's personal order. Major Weigel accepted the parole of Hart and turned the President's order over to his superior officer, Colonel C. W. Raphun, in whose possession it has since remained, a valued memento. The order is now the property of Colonel Raphun's eldest son, C. M. Raphun, of Chicago.

Bunnell and Co. Election.

At the annual meeting of the J. H. Bunnell and Company, Incorporated, of New York, held at the office of the company March 9, John J. Ghegan was elected president and secretary, and Charles E. Graham was elected vice-president and treasurer.

Radio-Telegraphy.

Consul F. W. Goding, of Montevideo, advises that the government of Uruguay is about to construct a wireless telegraph station on Lobos Island. It includes a residence for the staff, installation of a siren, etc.

The United Wireless Telegraph Company, 42 Broadway, New York, maintained a bulletin service with Washington, D. C., all day long on March 4, wire communication with the capital being in a demoralized condition and for many hours entirely cut off.

The board of trade, says the London Electrical Review, is considering the advisability of introducing legislation requiring all British-owned ocean-going steamers to carry efficient wireless telegraph equipment. At present some seventy vessels are fitted with apparatus.

Some long-distance wireless feats were accomplished by the Adriatic on a recent trip. She had a special equipment in charge of W. R. Cross, of the English Marconi Company. For seven days she kept in touch with the shore, and in the middle of the Atlantic was in communication with both shores.

The Marconi Company has received an order from the Brazilian Government to equip four land stations in the neighborhood of Rio de Janeiro. The company has also received orders from the White Star Steamship Company to fit three more of their ships. The Norddeutscher Lloyd Steamship Company will soon have seventeen Marconi installations in operation on their Atlantic fleet.

A new record in the transmission of wireless messages from ship to shore was made by the United Wireless Telegraph Company's operator on board the Steamship Northwestern, of the Alaska Steamship Company, when he sent and received replies to several messages between the Northwestern's anchorage in Fitzhugh Sound and the wireless station at Honolulu, 2,500 miles away.

A new venture in aeronautics and wireless telegraphy is to be attempted by members of the Aero Club of New England in the fitting out of the new balloon Massachusetts, and the new dirigible of the Boston and New York Air Line with wireless apparatus at Hotel Somerset, in Boston, by Charles J. Glidden. Mr. Glidden is an old-time telegrapher and a retired telephone magnate. Since amassing a great fortune several years ago he has devoted much of his time to the development of aeronautics as well as long distance automobiling.

The principal steamship lines not already equipped with radio-telegraphic apparatus are hastening to install systems, and before congress acts on the bill to make such equipment compulsory will have their ships supplied. Nevertheless, the proposed legislation is advisable, as some owners may feel disinclined voluntarily to adopt

this safeguard, the utility of which was so powerfully demonstrated in the case of the Republic. And while congress is discussing the best means of making the installation obligatory, it may well consider the regulation of wireless telegraphy in general.

On February 27 the Marconi wireless telegraph was tried between a moving train of the Lake Shore and Michigan Southern Railroad and the Marconi office at Cleveland. A sending apparatus was installed on a special west-bound passenger train chartered by a theatrical combination, and messages were sent from a point eighty miles east of Cleveland, and also from Sandusky, sixty miles west of Cleveland; and while the train was moving between these places. Messages were sent while the train was running at the highest speed. The experiment was in the nature of an advertisement for the theatrical company, and no attempt was made to issue running orders to the train by the wireless system.

To insure against the possibility of the lighting dynamos becoming disabled during a sudden emergency and preventing the proper working of the wireless telegraph, the North German Lloyd Steamship Company has installed two additional dynamos in the Marconi house, on the boat deck of the express steamships, with direct connections not only with the two electric lighting dynamos in the engine-room, but with an auxiliary engine, located several decks higher than the engine room, which is designed to furnish not only power for the operation of the wireless system, but also to furnish light in the event of anything happening to the dynamos below. To make assurance doubly sure, every Marconi house on the steamships of the North German Lloyd is equipped with two complete sets of storage batteries, each capable of working continuously for twenty hours.

The log-book of the Siasconsett, Mass., Marconi wireless telegraph station contains the following entries recorded during the period covering the Republic-Florida disaster:

"January 23. 6:40 a. m.—Hear MKC calling CQD (MKC means the Republic). I sent back SC (Siasconsett). He said he had been run down and was sinking rapidly. 'Send help quickly,' he repeated three times.

"I (J. R. Irwin, the operator on duty at the time) got busy at once, raised operator at Wood's Hole, told her to rush revenue cutter; she did it. Then I began to call CQD, getting LC (La Lorraine); told him of disaster; said he would speed to rescue. Then got BC (Baltic); he is doing the same.

"8:04 a. m.—Received MSG (captain's message) from MKC (Republic), saying he was rammed by unknown ship and was sinking 25 miles south of Nantucket. No lives lost and not in danger.

"8:30 a. m.—Hear MKC answer BC, but RCG (revenue cutter Gresham), using stronger current, drowns out everybody.

"8:45 a. m.—Had MKC; tell MKC that BC and LC are rushing to her aid.

"Binns answered: 'Good! Tell them to hurry!'

"9:15 a. m.—LC (La Lorraine) says our boilers are nearly bursting.

"9:15 a. m.—MKC reports passengers O. K. on board steamship Florida.

"9:15 a. m.—Revenue cutters and navy stations are 'jamming thick.'

"9:47 a. m.—MKC says to listen for rockets.

"10:12 a. m.—Can't make out jammed messages.

"10:50 a. m.—Navy won't keep out.

"11:05 a. m.—Tell revenue cutters to cut out and lay by.

"11:30 a. m.—Portsmouth and RCG talking and jamming us right and left.

"11:40 a. m.—Navy insists on jamming. I gave them BY again (meaning keep quiet).

"1:32 p. m.—Have found the LA (Lucania).

"2:05 p. m.—BC, LC and LA scouting for signs of MKC. Florida has no wireless.

"2:30 p. m.—BC asks CQ (all stations) to keep out for God's sake."

A series of important experiments of an encouraging character have been made by the Lake Shore Railway in the application of wireless telegraphy to moving trains.

These bring back to the minds of Montreal railway men the interesting experiments conducted some years ago by four professors of McGill University on the Grand Trunk double-track line between Montreal and Toronto.

The investigators were: Dr. Ernest Rutherford, now professor of physics, University of Manchester, Eng.; Dr. H. S. Barnes, who holds a similar seat in McGill; Mr. Frederic Soddy, of McGill, and Dr. H. S. Bovey, formerly of McGill but now rector of the Imperial Institute, South Kensington, England.

Mr. George T. Bell, general manager and ticket agent of the Grand Trunk Railway system, consented to the experiment being tried for the entertainment of the delegates to the forty-seventh annual convention of the American Association of General Passenger and Ticket Agents, held at Portland, Me. The general passenger agents were, of course, the guests of the Grand Trunk in transit. Up to that time no attempt had ever been made to establish and maintain telegraphic communication between stations and a moving train.

Some of the officials were a little skeptical, but the scientific men from McGill were optimistic, though not sufficiently so to guarantee success.

However, on October 13, 1902, the splendid special train left Toronto for Montreal equipped with wireless outfit, and between that city and Montreal it was demonstrated without a shadow of doubt that communication could be maintained between a station and a fast moving train by means of electric waves.

No attempt was made to cover distances comparable with those attained by Marconi and

others, but with comparatively simple laboratory outfits it was possible to keep the train in touch with a station distant from eight to ten miles. St. Dominique was selected as the transmitting station, where two large metal-plate vibrators ten by twelve feet connected with an induction coil of the usual pattern, were situated.

On the train itself the waves were received by collecting wires connected to a coherer of nickel and silver powder. The relay operated electric bells in three cars. The collecting wires were run through the guides for the train signal cord, and extended on both sides of the coherer for about one car length.

To obtain the maximum effect it would have been better to have had a long vertical wire, but since such was impossible the horizontal wire was used.

In speaking of the difficulties to be overcome in this first experiment, Professor Barnes says: "Although these wires were placed inside the steel-framed cars, strong and definite signals were obtained over the distance named.

"Another difficulty militated against obtaining the maximum sensitiveness as, owing to the natural vibration of the train resulting from its great speed, it was impossible to have the relay adjusted to its most sensitive point. In spite of these difficulties the distance over which signals could be sent to the train was eminently satisfactory, and with more refined apparatus great distances could, without doubt, be attained. The success of this form of wireless telegraphy, of which this was but a pioneer experiment, opens up yet another method of providing for the safety of the travelling public."

The speed recorded on this special train showed that the train was moving at the rate of a mile a minute.

The Yankton a Wireless Relay Station.

An interesting demonstration of the possibility of extending the distance that a wireless telegraph message may be sent took place on February 11, when the United States Government wireless station on Fire Island picked up a message from the tender Yankton that had left Gibraltar on February 1, five days before the departure there of the battleship fleet headed for Newport News. The Yankton reported her position as about 1100 miles from the American coast, and also stated the position of the main fleet, with which she had kept in communication, although 1,200 miles ahead of it. The Yankton relayed a despatch for Admiral Sperry which was picked up by several government stations along the coast, including that at Portsmouth, N. H. The fleet was proceeding leisurely along latitude 33° north. After establishing communication from shore to the fleet through the Yankton, continuous communication was maintained between them. The purpose of sending the Yankton ahead of the fleet was largely to have her act as a conveyor of wireless messages; this object was carried out

in an entirely successful manner. The Yankton has a Telefunken wireless telegraph equipment rated at 2.5 kilowatts. The equipment at Fire Island is similar, but of double the power. The latter station has kept in regular communication with battleships leaving Hampton Roads until they were over 1,100 miles away.

Contracts were let on March 10 by the United States Government for the construction of what is expected to be, when completed, the most powerful wireless station in the world. The station will be erected at Washington, D. C., and when it is in working order it will be able to communicate with naval vessels 3,000 miles away. A Pittsburgh concern will do the work, which is to cost \$182,600, including the erection of a tower in Washington and the equipping of one or two naval vessels with apparatus strong enough to reciprocate the powerful currents flung through the air from this station.

The tower is to be 600 feet high, and it will be fitted with instruments so powerful that when they are searching out the vessels with which they are attuned no commercial wireless stations will be able to interfere. It is expected that this station will play havoc with the commercial companies.

The vessels to be equipped with reciprocating apparatus are to be able to communicate with the Washington station over 1,000 miles of sea and land.

The steamers Horatio Hall and H. F. Dimock met in collision off Boston Harbor on the morning of March 10. The Hall was equipped with wireless apparatus and the operator on board at once sent out his C. Q. D. signals, but failed to give the position of the vessel. In fact he had not time to do this, as the Hall did not carry an auxiliary storage battery, and was so badly injured by the collision that her engine room filled with water in a few minutes, and she sank within half an hour. The steamer Dimock, although a passenger-carrying craft, did not have a wireless equipment, and was consequently unable to telegraph for assistance. The accident occurred during a thick fog. Many vessels and shore stations picked up the signals of distress, but on account of the location of the vessels not being given the relief boats sent out could not find them. Fortunately no lives were lost, but two lessons have been taught by this disaster. The first is that vessels carrying wireless equipment should, at all times, have a storage battery in good working order, in reserve for emergencies. The second lesson is that all steam sea-going craft should by law be compelled to have a wireless equipment.

There are fourteen building and loan associations in New York State with assets of more than \$500,000 each, among which is the Serial Building Loan and Savings Institution, and the work of which can best be described by the words "beneficial" and "humanitarian."

Western Union's Quarterly Report.

The following statement submitted to the Board of Directors, March 10, exhibits the condition of the Western Union Telegraph Company at the close of the quarter ended December 31, 1908:

Surplus October 1, 1908, as per last quarterly report	\$15,327,928.41
Net revenues, quarter ended December 31, 1908	1,930,063.84
	<u>\$17,257,992.25</u>

From which appropriating for—

Dividend of $\frac{3}{4}$ per cent., paid January 15, 1909	\$747,024.75
Interest on bonded debt	433,062.50
	<u>1,180,087.25</u>

Left surplus December 31, 1908 . . . \$16,077,905.00

The following statement exhibits the estimated condition of the Company at the close of the quarter ending March 31, 1909:

Surplus December 31, 1908, as above . . .	\$16,077,905.00
The net revenues of the quarter ending March 31, based upon nearly completed returns for January, partial returns for February, and estimating the business for March, will be about . . .	\$1,700,000.00
Less interest on bonded debt	433,062.50

Leaves estimated net earnings for the quarter, less interest on bonded debt.	<u>\$1,266,937.50</u>
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\$17,344,842.50

It requires for a dividend of three-fourths of one per cent. on capital stock issued about	<u>\$747,160.50</u>
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Deducting which, leaves a surplus, after paying dividend, of	\$16,597,682.00
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In view of the preceding statements, the Committee recommends the adoption by the Board of the following:

Resolved, That a dividend of three-fourths of one per cent. on the capital stock of this Company be hereby declared payable on and after the 15th day of April next, to stockholders of record at the close of business on the 20th day of March, instant.

It is stated that the Order of Railroad Telegraphers has purchased the property located at the southwest corner of Eighth and Walnut streets, St. Louis, Mo., upon which site will be erected a \$50,000 clubhouse and school, presumably for the benefit of the members of that organization.

"The Practical Management of Dynamos and Motors," by F. B. Crocker and S. S. Wheeler, as indicated by its title, affords a clear understanding of the use, care and operation of these important adjuncts of the well equipped modern telegraph office. There is a constant demand for this book, for telegraphers find it an invaluable addition to their working library. There are 206 pages, and 99 illustrations; price, \$1.

Employment, Training and Advancement of Men.*

BY J. S. PYEATT,

Superintendent, Pere Marquette Railroad Company,
Detroit, Mich., and formerly Superintendent
of Telegraph of that System.

Of the manifold problems met by the operating officer none can concern him more than the selection of his men, their education and proper training, to insure the highest possible development of good character, loyalty and competency so necessary in his organization; and I believe a majority are ready to admit that some assistance is needed beyond that of immediate subordinates to investigate, in a more thorough and systematic manner, the record, habits and general fitness of each individual taken into the service, to whom responsibility in its varied degrees must ultimately gravitate. For this purpose, a number of roads have established separate departments—notably the Erie, Great Northern and Burlington—that carefully collect and preserve information as to the record, experience, physical condition, etc., of their employes, and I am informed very satisfactory results are produced. While it is true that most of the roads conduct a sort of perfunctory investigation of the record of men employed on certain work, it is too indifferently handled to be of much value, and often not concluded until the defects of the applicant have been demonstrated by experience, and frequently at considerable loss to the company in money and reputation. Even the most careful employer, possessing unusual ability to judge men quickly, will be mistaken and employ men who would not be considered, if their past records were known, which, perhaps, are not fully divulged until months later.

I suggest that the superintendent and trainmaster should, so far as practicable, encourage the employment of young men with homes at or near their work—sons of station agents, conductors, engineers, section foremen, etc., old in the service, who will, by their associations, have gained at least an elementary knowledge of the work when they begin, and enter the service with a feeling of loyalty and interest in the company, and a determination to succeed, accentuated by the encouraging influence of their family connections, that should be very valuable. By placing them with old, experienced men, they soon master the details of their duties and can be depended upon in emergencies with greater reliance than others more or less indifferent as to where they reside or work. The correspondence school has assisted materially, when adequately encouraged and supported, in educating all classes of railroad men, especially for work requiring the application of a technical knowledge that the employe has not had the opportunity of gaining in schools before beginning his work.

Until recently, the employer had not been free to exercise a very critical attitude toward applicants by reason of the scarcity of all kinds of labor; but

now that conditions are reversed—the supply so far exceeding the demand—and opportune time is afforded to gradually dispense with the services of men lacking in efficiency, loyalty, and interest in their work; who encumber rather than assist, and exercise a degrading influence over their fellow workers. By so doing, your company is not only benefited by being relieved of an objectionable class, but the example to those remaining may impress upon them the idea that a day's work, instead of a day's time, shall be given for a day's pay, and that their interests are best served by devoting unreserved energy and thought to their work rather than the superficial article with which we have had to deal during the past few years of unrivaled prosperity. It is not contended that labor organizations and their purposes are totally bad—on the contrary, they have done much good, both to their members and employers, by specializing work, condemning irregular conduct and encouraging education, when properly and conservatively advised by the leaders; but during the late prosperous period, immoderate demands have been made, not alone for advanced pay, but for various privileges and concessions far more vital to the roads, since their tendency has in many cases been toward a less regard for discipline, and a growing indifference to rules and orders, the effect of which—reflected by the Interstate Commerce Commission bulletins—is appalling to the public and to the railroad managers as well, who have been hampered beyond measure in their efforts to check it.

Public opinion, which has contributed so conspicuously toward the difficulty experienced in dealing with the men and the organizations representing them, it is cheerful to note, is beginning to realize the fallacy of its prejudice against railroads, and its too liberal sympathy for the rank and file of men working for them, regardless of the question at issue, and will, I hope, assist toward bettering conditions by substituting for the present lawmaker, who has gained pre-eminence by agitating the "sins of the trusts" and the "woes of labor" (with never a thought or impulse higher than his own selfish interests), real men, who will see not only the misdeeds of corporations, but the abusive power of labor trusts, and regulate both with the conviction that all have rights, and each can commit a wrong. To enforce the law of seniority for promoting men, popularly urged by professional labor leaders, is as unfair as to assume that all men are created mental and physical equals, and if followed must inevitably put men into positions of responsibility to which they can never well adapt themselves: while others capable of doing the work are restrained from accepting it, and their spirit and ambition is thus hampered and practically destroyed.

The primary purpose of every employer should be to create and preserve harmony between the men and their immediate superiors, and to develop and promote enthusiasm in their work. To insure this, fair and reasonable treatment is always the first essential, augmented by firm, consistent discipline,

*A paper read at the annual meeting of the Central Association of Railroad Officers, Peoria.

an aggressive policy, and the same disposition to commend good conduct and good work as to condemn misconduct and poor work. No man will do his best who is unfailingly criticised for his mistakes with never a praise for his successes. In my opinion we will eventually accomplish the greatest good toward educating and training men, harmonizing the differences between capital and labor, employers and employes, and reuniting all, so far as may be, upon one common ground, by adopting a co-operative plan in some practical form, not based on any of the many intangible theories conveniently classed under Socialism, but one similar perhaps to that worked out by the United States Steel Corporation, whereby the fruits of good work and good organization can, in a measure, be shared by all, and conspicuous effort, ability, and loyalty recognized in a substantial way; thus defining broadly the difference between excellence and mediocrity, thrift and idleness, industry and indifference, and generating a spirit of competition that will develop the full capacity of men and give the greatest benefit and gain to both company and individual.—*Railroad Age Gazette.*

The Military Telegrapher in the Civil War.

PART XV.

Frank Benner was a military telegrapher during the Civil War, and during the last year of the great conflict was superintendent of military lines in Mississippi. In a series of letters written to Colonel William R. Plum, historian of the Society of the United States Military Telegraph Corps, he describes minutely the part he played in the great military drama. Mr. Benner died many years ago, but his excellent work in the service of his adopted country during those rebellious times are properly recorded on the pages of military telegraph history. We extract from one of his letters the following, which has heretofore not been made public, and which will add another chapter to this interesting subject:

"I entered the service of the United States Military Telegraph Corps in the early part of April, 1862, and was at once sent to London, Ky., where nothing of special interest occurred until the morning of Sunday, August 17, when the town was captured by a cavalry force of 1,800 strong, after a brief engagement with the small Union force guarding the place. The command being some distance from the office, I was compelled to escape as best I could, which I did with my instruments; and after traveling some eight or nine miles, tapped the wire and advised General George W. Morgan, who was in command at Cumberland Gap, that some two thousand cavalry had taken possession of the town. I learned afterwards that I had barely gotten away from the line, before a squad of the enemy passed the very spot where I tapped the wire. From London I made my way to Lexington in company with my lineman and some others, reaching there a few minutes before Kirby Smith's command. I was then compelled, owing to the close proximity

of the Confederates, to continue on to Frankfort the same night. I afterwards went to Louisville, where I remained six weeks at headquarters. I returned to London, thence to Stanford and from Stanford to Danville. In March or thereabouts, of the following year, General Carter's command was driven back from Somerset by a force of two or three thousand (reported at the time as numbering six or seven thousand) under General Pegram, Danville was then evacuated. I was operator there and remained up to the last moment, and came near being captured, and for the first and last time was actually under fire. I returned to Danville soon afterwards, where nothing of interest transpired except a raid by some seventy-five rebel cavalry, which took possession of the town early one morning, tearing down the office wires; but, strange to say, leaving the instruments intact, and although the main battery wires ran through the partition to the battery room, immediately in the rear, they did not visit the battery room nor my bedroom, which adjoined it, where they would have found me dressing with some trepidation. The invaders left within an hour or two, much to my relief. In the spring of 1864 I was placed in charge of the line between Knoxville and Cumberland Gap, with headquarters at Knoxville, where I remained until May, 1865, when I resigned and returned to Canada.

"In September of the same year I re-entered the military telegraph service, and was appointed superintendent of telegraph, covering the lines, Vicksburg to Meridian, Osyka to Memphis, and Grenada to Grand Junction, with headquarters at Jackson, Miss. On December 1, I was appointed cipher clerk, the lines and property mentioned having been turned over to the commercial telegraph companies on that date. This position I held until April 1, following, so that, with the exception of a few weeks in the summer of 1865, I was some four years in the government service in the capacities designated.

"I was in the employ of Colonel Gross from September, 1863. Previous to that date, however, I served under Captain Samuel Bruch, who had at that time charge of the lines in Kentucky, and whose headquarters were at Louisville."

Colonel Gross penned this tribute to Frank Benner in his military telegraph memoirs:

"Mr. F. Benner has been in my employ continuously for three years in the capacity of operator, manager, chief operator, and finally superintendent of military telegraph lines. I can and do cheerfully bear testimony to Mr. Benner's efficiency as an operator, manager and superintendent."

The Madrid Mundo says that the telephone, the telegraph, the post-card, motoring and other modern things are rapidly doing away with long phrases and pretty speeches. Terseness is the general rule nowadays. At this rate men will speak in telegraphic style a century hence.

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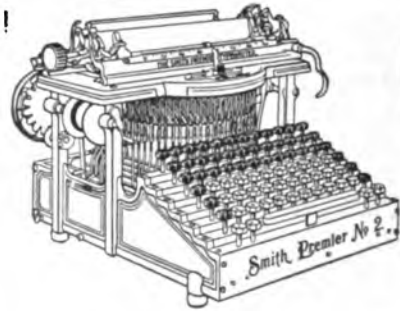
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- Association of Railway Telegraph Superintendents meets at Detroit, Mich., June 23, 24, 25, 1909.
- Commercial Cable Company meets the first Monday in March, at New York.
- Gold and Stock Life Insurance Association meets the third Monday in January, 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, 1909, at a date to be named later.
- Old Time Telegraphers' and Historical Association, will meet at Pittsburg, Pa., at a date to be named later.
- Postal Telegraph-Cable Company meets the fourth Tuesday in February, at New York.
- Telegraphers' Mutual Benefit Association meets the third Wednesday in November, at New York.
- Train Despatchers Association meets in 1909 at Columbus, O., at a date to be determined upon.
- The stockholders of the Western Union Telegraph Company meet the second Wednesday in October, at New York; election of officers occurs on the third Wednesday in October.

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MARCH 16, 1909.

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The Wireless Telegraph Situation.

The passage of a bill in the House having in view the adoption of a law making it compulsory that practically all ocean-going vessels engaged in the passenger service shall be equipped with a wireless telegraph outfit, as well as the public utterances of the President on the subject, who demands the employment of competent operators on ships and at wireless stations, indicates the interest of the government in the subject, notwithstanding the fact that the Senate decided against reporting the measure favorably, because of the insistence of friends of the wireless telephone that it should be included in the measure. The time is opportune to pass a few criticisms on the status of the personnel employed in the government wireless telegraph service, and to offer a few suggestions in regard thereto.

In the first place, it may be stated that as a rule the wireless operators holding positions on the transatlantic and coastwise steamers are competent telegraphers. They are in the employ of

private interests, and have been selected because of their fitness for the places occupied, no appointments to this responsible post being made without the personal qualifications of the individual first having been carefully considered. This is as it should be. The result has been, and very naturally and properly so where a stringent rule is followed, to make the standard of service on the passenger liners, wherever wireless telegraphy has been adopted, exceptionally high and of a satisfactory character. On the other hand, the government has not been so successful in reaching that excellence of practice among its wireless telegraph operators as that to which we have referred to as existent elsewhere. It cannot be said that the operators on board of all naval vessels or at all government land stations equal in efficiency their brother operators in similar service outside of the government environment. It is difficult to determine why this should be so, when the very best element should be at the disposition of the United States government, unless it be that methods prevail controlling appointment that are more lax than those dominating private interests. For it is evident that the government is drawing to itself the least competent telegraphers, perhaps, owing to the fact that naval reserves are detailed to master the art of telegraphy in from three to six months, which is impossible, and are then placed on shipboard to manage delicate wireless apparatus with which they are not thoroughly familiar.

There is a very glaring need of reform in this respect. A more strict examination as to a practical knowledge of telegraphy in general and of wireless telegraphy in particular, is requisite to determine the qualifications of applicants to admission in the wireless telegraph service of the United States.

It may be confidently remarked that were the government to adopt a standard of ability as a measure of individual worth in its wireless department, on a parity with that maintained elsewhere, it is altogether probable that a large share of operators now employed would be disqualified and their services as operators be discontinued.

It is the incompetent operator that is causing so much confusion in wireless telegraph practice today, and in this respect the government appears to have a limited monopoly. No person should be allowed to operate a wireless outfit unless he has first qualified himself as to his ability.

Automatic Telegraphy.

The introduction of machine telegraphy by both telegraph companies in this country is causing a little unnecessary uncasiness in the minds of a few members of the telegraph profession, who imagine that they see in the rapid development of this class of telegraphic service at least a curtailment of the old Morse system. They overlook the fact that economic conditions are pressing upon the telegraph companies with such force that they

must resort more extensively to machine telegraphy as their only salvation. The introduction of automatic telegraphy, however, is not likely to be wholly accomplished at one bound. It has been talked about, off and on, for many years and excellent results have been accomplished, but as yet the extent of its use is comparatively limited, when the telegraph service of the entire country is taken into consideration.

The history of the introduction of machinery in different lines of activity is the same. Innovations always meet with opposition, more or less violent, on the part of the operatives concerned, but history also shows that the results have always been beneficial to those who raised the opposition, in spite of themselves. Take for instance the case of typesetting machines in printing. Practically all hand compositors fancied they saw in these machines the loss of employment. But what was the result? Instead of losing their positions they retained them on a much more satisfactory basis. Their earning capacity was increased and the business expanded to such a degree by reason of the greater output capacity of the machines that employment was secured to all. The benefits were not only material, but moral and intellectual as well. If such results were realized in the printing business, it is certainly reasonable to suppose that telegraphers would at least experience like benefits by the introduction of machine telegraphy.

Many operators argue that if machine telegraphy were adopted extensively they would be thrown out of employment because the telegraph companies would employ cheap labor to operate the machines. But is this true? Of course it cannot be denied that the companies are in business to make money for the stockholders, but they can carry their economies only to a certain degree. To go beyond this point the interests of the companies, as well as the public, would be placed in jeopardy. It is not likely that either company will impair the efficiency of its service by the employment of incompetent help. On the other hand, we recognize that the more extensive adoption of automatic telegraphy would result in a gradual rearrangement of present conditions, but we believe that when things settle down to a smooth running basis that operators will find themselves more strongly entrenched than they were before. The expansion of telegraph business which must necessarily follow increased facilities for handling it will tend to place the profession on a higher plane. Work will be plentiful and the physical and moral status of operators will certainly be improved. They will not be subject to the long-continued physical and mental strain under which they now labor, and relief in these respects will naturally redound to their well-being. In a recent report issued by the head of the English telegraph service, comparing the various systems, that official declared that "the strain on the operator is very great" in working quadruplex circuits, compared with that experienced

by the operators of automatic systems. We refer to this merely to show what will be the physical effect under the new dispensation. We do not agree with those who look into the future of telegraphy through pessimistic eyes. Their fears, we are sure, will be found to be groundless. There is no question that a wider use of machine telegraphy must come, sooner or later. It is a necessity that cannot be ignored and its adoption cannot be thwarted by selfishness. Telegraphers, therefore, should take a broad view of the situation and be prepared to welcome the new era.

For the benefit of those who pin their faith in the old Morse system, and who are willing to live and die for it, it may be said that on account of certain inherent advantages hand telegraphy will probably hold the fort against all new comers in certain lines of work. Machine telegraphy will find its best field on circuits carrying dense business, between populous centres, for press business and for other classes of service that is not of particularly urgent nature. But for brokerage business, where the service must be direct and immediate, and on circuits and in offices where comparatively few messages are handled, the old reliable Morse system will prevail. Therefore, there need be no fear that the Morse system is doomed to extinction.

Captain Ranson, of the Baltic, Honored.

Capt. Ranson, Royal Navy Reserve, commanding the White Star liner *Baltic*, which brought the Republic's passengers into port, was the guest of honor at a dinner given at the Union League Club, New York, February 25, by admiring friends. Among the telegraph and railroad officials present were: George G. Ward, Col. Robert C. Clowry, H. D. Estabrook, Hon. Morgan J. O'Brien, F. D. Underwood and W. H. Truesdale. Among the speakers who eulogized Captain Ranson was George Gray Ward, who, in concluding his remarks, said he had seen a letter from one who, although not on board of either the *Baltic*, *Republic* or *Florida*, was an observer of everything that was going on. This letter was written by H. G. Haddon, president and general manager of the Martha's Vineyard Telegraph Company, at Wood's Hole, Mass., and Mr. Ward said he felt it was a fitting opportunity to divulge the contents of that letter, and would therefore read the portion of it referring to Captain Ranson. He said:

"You saw the story in the papers, but there are many things untold and which will never be known unless given out by Mr. P. A. S. Franklin, manager of the White Star Line, or his captains. We were active but silent actors in this drama. We, of course, saw the contents of the messages exchanged between Captains Ranson and Sealby and Mr. Franklin, and no words of mine can convey to you the situation as we saw it from the hundreds of messages that passed through our hands. There are but two men who brought this disaster to a successful finish, which was accom-

plished by their cool heads and the majestic manner in which they dealt with the difficulties and dangers. These men—born to command—are Captains Ranson and Sealby. If you ever meet these gentlemen you will shake the hands of two heroes, whose only thought was to save the lives of those in their hands.”

The Budapest Convention.

The first meeting of the International Convention of Telegraph Engineers, which was held at Budapest, Hungary, last September, was composed of twenty-five representatives of Hungary, twelve of Austria, twelve of Germany, four of Roumania, three of Great Britain, three of Italy, three of Serbia, two of Netherlands, two of Sweden, two of Turkey and one each of Bulgaria, Denmark and Russia, making a total of seventy-one delegates. Abstracts of the papers read and discussed during the daily proceedings which lasted ten days, have already appeared in these columns. It is very likely that the next meeting of this international body will be attended by delegates from America. Telegraph engineers in this country have been greatly interested in the scope and importance of the subjects discussed at Budapest. The question of inductive disturbances to telegraph and telephone lines from high tension power circuits is one that is seriously engaging the attention of telegraph engineers in all countries. Those who have studied the subject in America are keenly alive to the importance of similar work and investigation carried on in foreign countries, which at several of the daily meetings at Budapest were the topics of considerable discussion. The final outcome of the investigation of this matter by the committees appointed to look into the subject further will be watched with interest by electrical engineers in this country.

Book Review.

We acknowledge receipt, with the compliments of the American Bell Telephone Company, of Boston, a book of 469 pages, entitled "The Bell Telephone." This valuable work contains an excellent engraving of Professor Alexander Graham Bell, the inventor of the telephone, taken in 1876, at the time he made his valuable invention public. The first chapter of the book starts out with a deposition of Professor Bell, which gives a detailed history of his valuable experiments leading to the discovery and invention of the telephone. Chapters on the following subjects, many of which are illustrated, give full details of the work of this wonderful man who has created an industry the magnitude of which the world has never before comprehended: Early history and studies; arrival in United States in 1871; teaching physical speech in Boston; work on multiple telegraph, 1872; knowledge of the manometric capsule and phonautograph, winter of 1873-74; the human-ear phonautograph; study of the vibration of reeds; description of method for transmitting speech, 1874; experiment of June 2, 1875; description of early membrane instruments; the

variable-resistance method; the exhibition at the Centennial; experiments on commercial lines, July, 1876; the Brantford, Canada, experiments, August, 1876; Centennial certificate of award; test, Boston to Cambridgeport, on Walworth Manufacturing Co., line, October 9, 1876; test, Boston to Cambridge, November, 1876; test between Boston and Salem, November 10, 1876; test between Boston and North Conway, December, 1876; Centennial award; exhibition at Washington, D. C., January, 1877; first use of the telephone in newspaper reporting, February, 1877; public exhibitions, Providence, Boston and New York, spring of 1877; the London lecture, October, 1877; the Speaking Telephone Interferences; correspondence with Elisha Gray; Professor Dolbear's claims; first knowledge of Drawbaugh; invention of the photophone; Elisha Gray's caveat; first commercial line, April 4, 1877; the Volta prize; first knowledge of "Lover's Telegraph"; the harmonic telegraph apparatus; the instruments of July, 1875; what the first Bell patent discloses; the "Undulatory Current" paragraph; experiments without a battery; first use of permanent-magnet instruments; first reciprocal use of telephone; experiments with induction coils; the second Bell patent and how the application was prepared; first exhibition of telephone instruments in Washington, D. C.; Mr. Bell's early permanent magnets; discussion of the claims of the different patents and their meanings; the meaning of "undulation"; exhibit First Bell patent, March 7, 1876; exhibit Second Bell patent, January 30, 1877, etc., etc.

The Telegraph in Spain.

The telegraph system of Spain during 1906 comprised 35,141 kilometers of line and 75,524 kilometers of wire, these figures showing an increase over the previous year of 835 and 1,311, respectively; submarine lines accounted for 3,290 kilometers. During the year there were 5,087 interruptions. Inland traffic decreased by 164,330 telegrams to 3,708,664 as compared with 1905. The international traffic consisted of 628,634 telegrams sent, 689,574 received, and 143,737 in transit, making a total of 1,461,945, or an increase of 91,671 over 1905. The total number of all kinds of telegrams handled by Spain was, therefore, 5,170,609. The receipts for inland messages were less than those of the previous year by 206,068 pesetas, totalling 5,506,124 pesetas, while receipts on account of international telegrams amounted to 2,008,581 francs, an increase over 1905 of 220,770 francs. Dealing jointly with the telegraph and telephone service, the total receipts were 8,943,815 pesetas, while the expenses were estimated in the budget at 9,115,941 pesetas.—*Journal Telegraphique.*

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The Morse Electric Club Dinner.

The second annual dinner of the Morse Electric Club was held on the evening of Saturday, February 27, at the Hotel Savoy, New York. There were two hundred railroad and telegraph people present, the diners being seated at numerous round tables accommodating ten each, the table of the president occupying a position at one end of the beautifully decorated banquet hall. The president of the club, John B. Van Every, also acted as toastmaster. On either side of him sat the following named gentlemen: W. C. Brown, Col. Robert C. Clowry, Hon. Morgan J. O'Brien, Hon. P. H. Dugro, H. D. Estabrook, E. T. Jeffery, C. F. Daly, W. J. Dealy and C. S. Clarke.

A very enjoyable menu was served, after which President Van Every made a few interesting remarks and introduced the guest of the club, William C. Brown, the newly-elected president of the New York Central Lines, who began his business career at the telegraph key.

Mr. Brown said:

"I want to preface the little I shall say this evening by expressing the profound sense of appreciation I feel for the high compliment your society has paid me in making me your guest of honor on this occasion. In the pressure of work I was very strongly inclined to feel that I could not be with you to-night, but, thanks to the persistence of your president, and I am glad he was persistent, I changed my mind.

"I would very much prefer sitting out there at one of the tables than to be occupying the rather conspicuous position that, through the courtesy of your association, has been assigned to me. I feel a good deal as the bereaved husband, who was informed by the master of ceremonies that he would be expected to ride in the carriage with his mother-in-law. The mourning husband protested very earnestly, but was told that it was the proper thing, and that there was nothing for him to do but to gracefully submit. When convinced that it was an actual necessity, he accepted the situation, saying that if he had to ride with the old lady of course he must; but he wanted it distinctly understood that it was going to entirely spoil the pleasure of the occasion for him. I feel a good deal that way to-night. My position reminds me a little of the Irishman, who, for some offense or other, was ridden out of town on a rail. When asked afterwards how he enjoyed it, he replied that if it was not for the distinction of the thing he would just as soon have walked.

"Forty years ago this coming summer I was working on a section of the old Racine and Mississippi Railroad, in western Illinois. I was not working on a section for my health; I was not looking for open air, or for local atmosphere or color. I was then sixteen years old, and about all I ever had in real generous quantity were open air, an almost unlimited and generally unsatisfied appetite and most excellent health. My father and mother settled in the territory of Iowa sixty-seven years ago, when it was a trackless wilderness, schoolless, churchless, but rapidly filling up with that race of hardy pioneers that has swept from the Atlantic seaboard over the prairies, the deserts, and the mountains, to the shores of the Pacific Ocean. My father went from the state of New York to the distant wilderness as a Home Missionary, to preach the gospel, to minister to the sick and the dying, and to speak words of hope, comfort and consolation to those that mourned. With the exception of four years spent in New York state, recovering health broken by the hardship and exposure of frontier life.

he lived in Iowa nearly sixty years, seeing the state grow from a wilderness to a very queen among the great states of the Union. Poor in this world's goods, sometimes suffering for the ordinary comforts of life, unable to give his sons the advantage of more than a brief education in the public schools of a new country, he was rich in those sterling qualities that constitute the highest flower and fruitage of Christian American manhood; and I would not exchange this heritage of honorable achievement, of loving, unselfish devotion to duty, of cheerful, uncomplaining acceptance of the trials, the hardships, the privations of the pioneer preacher in the frontier cabin, for every dollar of wealth concentrated and piled up on Manhattan Island to-night.

"While working on the section in 1869, occasionally, after coming from work in the evening, I would pitch in and help the agent wheel freight into the freight house and in other ways make myself useful. One evening he told me if I wanted to take the job of wheeling out wood in a wheelbarrow from the large pile where it had been thrown from the sawing machine, and cord it up alongside the tracks so it could be thrown onto the engines (which in those days all burned wood), he would undertake to teach me telegraphy. I was permitted to stay in the office and practice evenings, as well as during such rare intervals during the day as I was not engaged in my first study



WILLIAM C. BROWN.
President, New York Central Lines, New York.

of the "long and short haul" proposition at the wood pile; but I remember distinctly that I did most of my practicing in the evening. Under the circumstances, I learned fairly rapidly, and in the spring of 1870 I very proudly took my first position as a telegraph operator. From that time until the present I have never lost close sympathetic touch with the business of telegraphy and with telegraph operators.

"I have frequently heard President Clowry state that the business or profession of telegraphy is in itself a fairly liberal education, and I want to endorse this statement. The telegrapher is continually sending and receiving messages, and while there are, of course, some exceptions, a very large majority of these telegrams are written by people who spell correctly, for the most part use good English, and almost invariably attempt to express themselves in as clear and at the same time as terse and condensed a manner as possible; and a telegrapher handling these telegrams day after day, month after month, and perhaps year after year, unconsciously acquires the ability to spell correctly and to speak and write grammatically. More than this, a telegrapher who is observing in taking press reports, which include the great state papers of the President, governors of the states, debates in Congress and in the legislatures, as well as telegrams that refer to

and are frequently the very core of transactions of great public interest or connected with the important current affairs, comes in touch with and must become more or less familiar with all of these subjects, and thus has an opportunity to secure a breadth of general, useful information denied young men in almost every other line of business. If this were not true, many of us would be sadly deficient in education of any kind, for in my case, and I think in the case of a majority of the telegraphers of the country, regular educational advantages did not extend beyond our fifteenth or sixteenth year.

"The three score and five years since the birth of telegraphy have shown more marvellous strides in development of every kind, moral and material, in the world, than any five centuries since the dawn of creation; and much of it would have been utterly impossible without the distance-annihilating possibilities of the telegraph. In war and in peace, in adversity and in prosperity, from that first reverent and marvellously significant and prophetic message, 'What hath God wrought,' sent by Professor Morse in 1844, to Binns, flashing from the wireless station on the stricken 'Republic,' through the gloom and fog of that fateful night, his weirdly mysterious, pathetic appeal for help, the story of telegraphy and telegraphers has been an unbroken record of honorable achievement, and I am glad to meet this splendid, representative gathering of a profession of which I am proud to be counted a member."

Mr. Brown concluded his remarks by making a motion that the name of William C. Brown be added to the list of members of the club and that the secretary be instructed to send Mr. Brown a bill for dues, etc. The motion was carried unanimously, amid general laughter.

The next speaker introduced by Mr. Van Every was Colonel Robert C. Clowry, president and general manager of the Western Union Telegraph Company. Colonel Clowry related his boyhood struggles and stated that the present generation regarded the successful men who had began life as messenger boys or operators as having endured great hardships. Such was not the case, at least so far as he was concerned. As a boy he had to work hard on a farm and devote long hours in the service as a messenger without compensation while learning telegraphy. He, nevertheless, well remembered that he was the most envied of all the boys in Joliet, Ill., while performing the task of delivering telegrams. Colonel Clowry then paid a glowing tribute to the loyalty and fidelity of the present staff of his company, declaring that he had the most loyal body of men employed by any corporation of the same size in the world.

Mr. William J. Dealy was the next speaker introduced. Mr. Dealy said in part:

"High places are not reached through bowered pathways—and beyond what may appear to be the level of success, telegraphers always find other peaks to climb. They know, as our honored guest, Mr. William C. Brown knew, that it is only through the wires, and the rails, and by strain of muscle and mind and nerve, in well-directed effort, that the fires of industry and commerce can be kept aglow. Whence can more exhilarating and more heroic impulses be drawn than from the experiences of men who have hewn their way

from the bottom up. The telegraph unfolds the demands and the resources of every locality; it uplifts, it builds, it broadens, it extends, it checks, it holds, it drives. There is no force so uncontrollable nor any that so instantaneously responds to every call. It is teeming and vibrating with power and energy. It seeks, it finds, it creates, it leads; and among the stars that have expanded in magnitude from its ranks we find the name of the President of the New York Central Lines, Mr. William C. Brown, with forceful, practical and brilliant achievements, electrifying and multiplying to the credit of his fame, to the glory of his Alma Mater, and to the benefit of every interest in the best and most progressive country on the globe."

Mr. Henry D. Estabrook, on being called upon, made an eloquent address, characteristic of the trained lawyer. He drew a picture showing the difference between men and why it was that in many cases certain individuals were promoted over the heads of others. He illustrated by an apt story the difference between eminence and pre-eminence, and closed his remarks by paying a glowing tribute to the guest of honor.

Judge Morgan J. O'Brien was the next speaker. He, too, made a splendid address, which was in the line of a defense of corporations which were worthy of public confidence. He illustrated in a graphic manner the duty of corporations to the people and stated that they should not be hampered by adverse legislation and the acts of commissions which exercised the powers of congressional and legislative bodies.

President Van Every then introduced the last speaker of the evening, Mr. E. T. Jeffery, of New York, president of the Denver and Rio Grande Railroad Company. Mr. Jeffery, like many of those who had spoken before him, eulogized the guest of honor, Mr. W. C. Brown. The remarks of Mr. Jeffery brought the festivities to a close. During the delivery of the speeches Mrs. W. C. Brown and her daughter occupied seats in the gallery and were attentive listeners to the words of praise bestowed upon her husband, who was the distinguished guest of the club.

The railroad, as well as the telegraph, interests were well represented by many prominent executive officials, notably among those representing the former, in addition to those already mentioned, were: C. F. Daly, vice-president of the New York Central Lines, New York; J. C. Stuart, general manager of the Erie Railroad, New York; C. S. Clarke, vice-president of the Missouri Pacific Railroad, St. Louis, Mo.

Among the prominent telegraph executive officials present, besides those already named, were: George W. E. Atkins, vice-president; J. C. Will-ever, secretary; F. J. Scherrer, assistant secretary; A. R. Brewer, treasurer; L. Dresdner, assistant treasurer; John C. Barclay, assistant general manager and electrical engineer; Belvidere Brooks, general superintendent of the Eastern division;

William Holmes, superintendent of tariffs; H. E. Roberts, superintendent of supplies; D. Roth, superintendent of construction; E. M. Mulford, superintendent, all of the Western Union Telegraph Company, New York. Superintendents from out of town were C. F. Ames, Boston, and F. E. Clary, New Haven.

William H. Baker, formerly vice-president and general manager of the Postal Telegraph-Cable Company; Charles Trippe, superintendent of the Anglo-American Telegraph Company; W. H. Hurst, president of the Stock Quotation Telegraph Company; D. Skelton, superintendent of the American District Telegraph Company; B. H. Reynolds, superintendent Central and South American Telegraph Company, and James Kempster, president James Kempster Printing Company, all of New York.

Among the railroad telegraph superintendents whose presence was observed were: Charles Selden and E. W. Day, of the Baltimore and Ohio Railroad, Baltimore; W. P. Cline, of the Atlantic Coast Line, Wilmington, N. C.; E. P. Griffith, of the Erie, and L. B. Foley, of the Lackawanna, New York.

The electrical press was represented by T. Comerford Martin, editor *Electrical World*; J. M. Wakeman, *Electric Railway Journal*, and J. B. Tallavall, editor *Telegraph Age*, New York.

The electrical manufacturing interests were also in evidence, and were represented by J. J. Ghegan, president of J. H. Bunnell and Company; W. P. Bowman, treasurer, and M. R. Cockey, sales manager, of the John A. Roebing's Sons Company; B. M. Downs, vice-president of the Brookfield Glass Company; William Marshall, manufacturer of condensers; R. D. Brixey, president of the Kerite Insulated Wire and Cable Company; C. C. D. Gott, general manager Self Winding Clock Company, and Benjamin Nachmann, president of the International Cable Directory Company; M. J. O'Leary, secretary Telegraphers' Mutual Benefit Association, all of New York.

Among those present, besides those already mentioned, were:

Albany, N. Y.—T. J. Meade.
 Boston, Mass.—E. Boening, A. Woodle.
 Brooklyn, N. Y.—M. J. Hayden.
 Buffalo, N. Y.—W. A. Sawyer.
 Hartford, Conn.—E. Ryder.
 Jersey City, N. J.—J. B. Bertholf.
 Newark, N. J.—W. H. Spry.
 New Haven, Conn.—T. E. Russell.
 New York.—W. J. Austin, H. Ayres.
 H. C. Brewer, Lawrence Barnum, H. E. Brown, E. T. Burrill, E. E. Brannin, W. C. Bower, J. A. Berry, J. W. Behre, C. A. Bauer, C. J. Bresnan, G. R. Benjamin, T. M. Brennan, W. J. Bagby, F. W. Brouwer-Ancher, B. Bernstein.

R. W. Chapman, J. W. Connolly, C. W. Conklin, P. J. Casey, J. T. Carberry, A. R. Carmichael, F. E. Coyle, J. E. Coan, J. T. Delaney, J. A. Dierks, M. Durivan, J. Dana.

F. E. Fitzgibbon, E. H. Falls, Eugene Fay, J. J. Flaherty, H. S. Finney, W. N. Fashbaugh.

C. H. Gaffney, D. J. Gallagher, F. M. Gallagher, F. D. Giles, W. A. Graham.

Wentworth Holmes, J. A. Hill, G. A. Holle, W. J. Hackett, J. F. E. Hopkins, H. M. Heffner, R. M. Hopkins.

Gardner Irving.

C. Jacobson, W. H. Jackson, C. C. Johnson.

C. A. Kilfoyle, M. H. Kerner, A. F. Kelley, Frank Kitton, Alex. Kline, J. H. Kelley, J. R. Kearns.

A. M. Lewis, J. T. Laidlaw, F. W. Lienau.

R. J. Murphy, F. M. McClintic, J. T. Mulhall, C. H. Mulford, R. W. Minthorne, T. A. McCammon, W. A. McAllister, C. A. Meyer, E. Mesler, J. F. McGuire, R. F. Murphy, A. L. Miller, Col. W. A. Murray, C. H. Murphy, George Messner, George Moore, W. J. McGivern, J. Maxwell, W. C. Merly, T. F. Martin, Frank Maier, F. A. Mombert.

J. F. Nathan.

M. J. O'Brien.

M. E. Pierce, C. L. Pullen, J. M. Phelan, Robert Parkinson, R. L. Potter.

W. J. Quinn.

A. J. Roberts, J. J. Riley, W. E. Rath, C. E. Rafford, G. Roehm, G. L. Rose.

J. Simmonds, George Schreiner, G. F. Stainton, P. J. Sullivan, W. A. Schudt, H. V. Shelley, T. G. Singleton, D. C. Sullivan, W. D. Schram, J. W. Schmults.

P. J. Tierney, S. M. Taylor.

H. F. Van Every, E. B. Van Every, J. Veitch, F. S. Vickery.

H. C. Worthen, A. G. Waring, A. O. Wallis.

Niagara Falls, N. Y.—F. S. Lewis.

Oswego, N. Y.—J. P. Doyle.

Philadelphia, Pa.—W. H. Butler.

Schenectady, N. Y.—A. E. Reynolds.

Syracuse, N. Y.—J. E. Bierhardt.

Troy, N. Y.—I. W. Copeland.

Utica, N. Y.—F. E. Howell.

Cost of Pole Supplies.

The chief consumers of poles for the construction of wire lines are electric light, railway and power companies. Next in order are telegraph and telephone companies, while railroads are the third in rank. The forest service of the United States has compiled figures of expenses of these various classes of companies for two years covering this item. In the table appended to the report are given the total costs for each class of companies and the average cost per pole. The aggregate outlay in 1907 was \$10,229,642, or an average of \$2.92 a pole.

Mr. A. E. Tomlinson has been appointed manager of The United Press office at Seattle, Wash., which covers the extreme northwest section of the country.

Inductance Coils Used In Wireless Telegraphy.

BY JOHN L. HOGAN, JR.

One of the most interesting developments of wireless apparatus is that of the inductances used in both the sending and the receiving circuits. Over eleven companies build instruments which are used in the United States for radio-communication, and all of the systems depend for selective transmission upon adjusting the sending and the receiving apparatus to wave frequency by varying the constants of their oscillating circuits. The actual connections for the elements of the circuits differ considerably, but the methods of tuning are almost identical and in every case involve the use of variable capacities, self-inductances or mutual inductances. The convenient adjustable condenser is coming into wide use, but until recently it has been neglected, for very nearly all the companies utilized fixed capacities and depended upon variable inductances to change the electrical periods of their circuits. This long use of the coils has brought forth large number of designs for inductances, and many of these are very ingenious.

The condenser used in a transmitting circuit usually has a fixed capacity, so that any change in emitted wave length must be made by changing the amount of inductance in circuit. Since, however, a commercial wireless station rarely transmits more than one length of wave—intentionally, that is—the methods of varying the contact on the coils, and the coils themselves, are rather crude. Sending helices are in almost every case, roughly, eighteen inches in diameter, and contain from five to ten turns of nicked copper tubing about three-eighths inch in diameter. Coils of this general type, with spring clips for cutting in or out parts of the tubing, have satisfied the designers of nearly all the systems now in use. The only noteworthy variations are the Shoemaker helix of metallic ribbon and the old Fessenden coils made from several strands of rather small copper wire in parallel, though the "scare" spiral of one of the commercial companies is of some interest as an indication of the condition of the wireless telegraph field. This inductance, wound in a plane spiral of about twenty inches final radius, from the usual copper tubing, was made in fear of an anticipated injunction prohibiting the use of the single-diameter coil.

Transmitting through inductive coupling is not very much used in the United States, and this has naturally delayed the construction of novel oscillation transformers. In Europe highly ingenious methods of operation, involving mutual inductance, have been brought forward; the directive system of Pellini and Tosi is perhaps a worthy example. In America the greatest advance so far disclosed is the simultaneous use of a number of simple air-core transformers. The neglect of loose coupling shows itself in the fact that no known home inventor has produced an exceptional oscillation transformer for wireless telegraph senders. The few couplings in use are merely pairs of simple cylindrical

helices, often so mounted that their relative positions, and hence their coefficients of coupling, are fixed.

When, however, receiving apparatus is considered it is found that much originality has been shown by the designers in their efforts to devise inductances which are different from those in common use. These deviations from the standard types are often improvements, but sometimes are not. Receivers and receiving circuits have nearly everywhere been given more attention than they deserve, proportionately, and as a result there are many forms of low-voltage variable inductance coils.

Some six or seven companies use cylindrical helices of insulated copper wire, wound on wood or fiber in a single close layer, and having one or two sliding contacts which make connection at any desired points on a bare end-to-end path. These coils vary in length only from ten inches to fourteen inches or so, but the diameters run from one and five-tenth inches to eight times that, according to the amount of wire required on a single core. The sliding contact coils are useful because they are fairly compact and very easy to make. However, to get much inductance with low resistance, and still keep the helices of moderate length, the diameters must be increased; this means loss of close adjustment, since the turn-to-turn steps grow large rapidly. So, therefore, great disadvantages of this type are the impossibility of making small variations in the inductance—with reasonably short coils of considerable inductive value—and the existence of a sliding contact, because of its irregularly changing, and often high, resistance. The first of these points is constantly making itself felt more strongly, and a number of workers have endeavored, more or less effectively, to overcome it. Massie has made an odd form of coil, in which the wire is wound on a block of rectangular cross-section and the resulting oblong turn affair so bent that its former longitudinal axis becomes a long arc of a circle about eight inches in diameter. The contacts are placed on levers which revolve as radii about the center of this circle. This tuner has not the nuisance of contacts running on rods, but the element of uncertain resistance is still there.

The necessity for close variation has been met by Dr. Fleming with a coil of bare wire, wound on a grooved wooden cylinder and so arranged that the entire winding may be rotated about its axis. A spring contact presses against it at any desired point, and so both the number of whole turns and the fraction of a turn in circuit between the spring and an end of the helix may be changed. Shoemaker, in this country, has manufactured a similar apparatus for his outfits. The coil will give a very close adjustment between two points in a circuit, but few modern methods of syntony can use a coil having only one variable contact. If a second spring is added to this rotatable helix it is clear that, while small changes in the length of wire between either contact and either terminal of the coil may be made, the length between the springs must vary in jumps of entire turns.

Fessenden used for some time standard roller inductances, in which bare wire was reeled from a metal to an insulating cylinder in any desired amounts. This gave close adjustment, since the wire on the apparatus could be divided in any ratio between the metal reel, where it was short-circuited, and the insulating carrier, where it was effective inductively. The only defects seem to be that it is impossible to make large changes of inductance rapidly, and that, if either the wire or the metal cylinder becomes covered with an oxide, microphonic contacts are likely to appear. This latter difficulty has been overcome very ingeniously, for the machines are now so arranged that the wire is always insulated from both reels; this arrangement eliminates poor contacts and makes the resistance uniform. The inductance of the constant length of wire varies with the amount on either spool, because one carrier is made to act as a short-circuited secondary to a primary formed by the wire it supports, while the other reel—either an insulating substance or a metal cylinder with a longitudinal slit in its surface—allows the wire coiled about it to take its normal inductance. However, even with the new type, large changes of inductance are difficult to make rapidly. Also the question of loss of energy in the short-circuited secondary arises.

A variable coil consisting of a spiral spring whose length of extension might be varied was suggested by the writer and used some years ago, but it was found that Dr. Fleming had tried such a helix previously. This method gives an opportunity of making very small changes of inductance, with fixed resistance, since as the turns of the spring approach each other the inductance of the coil increases. The range of moderate-sized spring is not large, but series coils variable in larger steps make it possible to get any value.

Another form of inductance which the writer has brought forward for use in wireless telegraphy, and which has been independently adopted by a European scientist, is that involving the principle of the Ayrton-Perry standard. It is possible to construct small coils which allow a considerable variation and still have low resistance. This apparatus, which changes the sum of the effective inductances of two windings in series by varying the mutual inductance between them, would seem to be as nearly an ideal for syntonic communication as has been proposed. It may be made compact, there are no points of variable resistance and the change in ductive value is absolutely continuous, and may readily be made to cover wide limits.

In reading the criticisms regarding close and even variation it should be remembered that they are made on inductance coils simply as inductance coils, and not as elements of oscillating circuits. In these circuits there are many cases where inductance may be changed in large steps, and small differences in the period of the system may be made by the use of delicately adjustable condensers; however, these instances do not prove the turn-to-turn helices to be of good design.

There now remain to be considered oscillation transformers used where inductive coupling at the receiving apparatus is preferred. These have been brought out in a number of forms, of which one of the most interesting is Marconi's "jigger." This appliance has gone through a number of changes in its development, but the one aim throughout seems to have been to build a pair of coils of high mutual inductance, yet having low electrostatic capacity between primary and secondary. Marconi wound the secondaries of his transformers in camel-back-like humps, sometimes divided into two sections connected by small condensers. These "jiggers," used about the year 1900, are reported to have increased coherer efficiencies—when compared to direct antenna-to-ground connection—but just how much the uneven windings helped matters would be hard to determine. The problem was to apply the voltage-operated coherer at a loop of potential in the antenna system; since the foot of an aerial vibrating at its fundamental is an antinode of current and a node of voltage, some form of transformer seemed necessary. Whether Marconi's "jigger," designed after much painstaking labor, would be more effective than a properly adjusted simple two-helix air-core arrangement is not known.

The simplest inductive coupling in use at present is that consisting of two independent cylindrical coils, each of variable self-inductance, and often so mounted that their relative positions, and, therefore, their mutual inductance, may be changed. In some cases the primary and secondary are concentric, sometimes they are placed with ends abutting, again they are built side by side. Tuners of this kind have found some little favor, perhaps because of the many claims of extreme selectivity made for them, and so one finds the unexpected number of slightly differing designs of the apparatus.

A departure from the usual transformer has a primary wound in a flat spiral on a stiff insulating plate, and a similar secondary, each being fitted with a sliding contact on a lever arm. The coils are mounted with their faces parallel and so arranged that the distance between them can be varied. Since the primary and secondary may be brought close together a very high value of mutual inductance may be had; this, together with the ease of adjustment of the coupling, is the only marked advantage the type possesses. The transformer action is somewhat veiled by a considerable condenser effect between the primary and the secondary, and sliding contacts add to the uncertainty of the device. Perhaps the worst feature of the apparatus is that the turn-to-turn variation is not constant; clearly the disconnection of a single turn near the outer end of the spiral will cause a change of inductance many times that brought about by cutting out a turn near the center, since the length of the turns increases very nearly in proportion to the radius. This "pancake" coupling was probably first applied to wireless by Ducretet in 1903 or before (United States patent application filed August, 1903). A patent on an identical apparatus, using two primaries opposing each other's effects on a secondary placed

between them, was granted in 1907 to an American exponent of radio-telephony; in practice, however, he seldom uses the secondary primary.

The short-circuited secondary roller type of coil, described herewith, has been modeled by Fessenden into a transformer by placing two complete self-inductances end to end. This form of coupling is perhaps as nearly perfect as any so far produced since there is no opportunity for uneven resistance variation, because the self-inductance of either primary or secondary may be changed very minutely, and as the mutual inductance between the coils is adjustable; nevertheless a bad point is that it is impossible to obtain high values of this mutual action.

In all of the couplings mentioned mutual inductance is varied by a translation of one or both coils. To get a very weak inductive effect it is sometimes necessary to separate primary and secondary quite widely. In order to save space by doing away with bulky sliding appliances, Stone has constructed his small transformers with one coil fixed and the other, which is mounted at the end of a short lever arm, arranged to swing through a ninety-degree arc. By building the windings in a semi-pancake form it is possible to get high mutual inductance when their faces are close together and parallel, yet when the fields of the coils are placed in quadrature there is no energy transferred; therefore this type gives a very complex range of coupling coefficients and still is not cumbersome.

In reviewing the designs of self-inductance coils and oscillation transformers only a few really worthy of use are found. Sliding-contact helices of the usual form are valueless for accurate work, not alone because of the uncertain and frequently excessive resistance but because the slider is always likely to be found shunting one or more turns of the coil. This is of the greatest importance, since that part of the helix adjacent to the short-circuited section will have an inductance very different from normal, and the rapid change as the contact piece touches, say, first one turn and then two, will be enough to upset the most careful calculations. Moreover, it is probable that the shunted turn absorbs a considerable amount of wave-energy and so prevents a maximum effect on the detecting apparatus.

It would seem, therefore, that the inductances of the future, or at least those used in wireless communication, will have no loose contacts. The exact type of coil to be finally adopted depends absolutely upon the method of syntonization ultimately accepted as thoroughly satisfactory.—The Electrical World.

The Quadruplex.

"The Quadruplex," by Maver and Davis, is doubtless the most thoroughly practical low-priced work treating on this subject ever published.

It is clear and lucid in its style, a text-book free of all technicalities and easily comprehended. It contains 128 large pages, is copiously illustrated,

bound in cloth and well printed on heavy paper.

It embraces just the ideas that should find a place in every telegraph office, and no telegrapher who desires to acquire a complete knowledge of multiplex telegraphy, the perfect understanding of which is so essential in these days, should fail to promptly obtain a copy of this important book.

Its chapters include: Development of the Quadruplex; Introduction and Explanation; The Transmitter, Rheostat and Condenser; Stearns Duplex; Instruments of the Polar Duplex; The Polar Duplex; The Quadruplex; The Dynamo-Electric Machine in Relation to the Quadruplex; The Practical Working of the Quadruplex; Telegraph Repeaters; The Wheatstone Automatic Telegraph.

It will be seen at a glance that such chapters as these fully cover the modern apparatus found in the telegraph offices of to-day. Copies of this book can be obtained from us at \$1.50 each, express charges paid. Address J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

As there are only a few copies of this important work on hand and as a new edition of the book is not contemplated, it will be well to secure a copy before the supply is exhausted.

Messages from Mars.

The wireless telegraph operators at Mount Wilson, Cal., state that they have recently been receiving signals in some curious code that is neither Morse nor Continental nor anything else legible. These signals are quite strong, and the operators have been conjecturing that they may come from Mars. Mr. Nikola Tesla writes us on this surmise: "I do not believe that the operators are observing the same disturbances which I have already noted in Colorado, because I had to use a device of wonderful sensitiveness, which I had reason to believe is not yet known to the wireless people. I rather think it is likely that a plant somewhere is producing stationary waves; and I have an idea that it must be located in Japan, as the Japanese experts saw me during 1900 and adopted my system at that time. Should the reports continue, I shall make an investigation. It will not be difficult if such is the case to locate the transmitting plant very closely."—Electrical World.

[The mysterious signals mentioned received at the wireless telegraph station on Mount Wilson, Cal., do not come from Mars, Japan or any other distant point or planet. An investigation has proven that the signals are the characters composing the Myers' alphabet, which is in use by the United States Signal Corps in some sections of the country, including California. These signals originate in a nearby wireless telegraph station located within a few miles of Mount Wilson.—Editor.]

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

The Telegraph in Peru.

BY OTTO HOLSTEIN.

Chief Train Dispatcher and General Foreman of Telegraph, Cerro de Pasco Railway Company.

Owing to its remoteness altitude and other peculiar features, a few notes from this part of the world may be of interest to some of the readers of "Telegraph Age."

First of all, I will try to describe, briefly, this section of Perú, then to give a description of our telegraph service, which is unique in its being probably the highest telegraph line in the world throughout its entire length.

The town of Cerro de Pasco is said to be the highest town of any size in the world, and is the terminus of a modern and in every way up-to-date railroad known as the Cerro de Pasco Railway, which serves the rich copper mines belonging to the Cerro de Pasco Company. The other terminus of the road is La Oroya, a station on the Ferrocarril Central del Perú. The "Central" is our only outlet to the Coast, and our supplies are shipped from New York to Callao via Cape Horn (in urgent cases via the Isthmus of Panamá) and thence via rail to La Oroya. La Oroya is but one hundred and thirty-eight miles from the Pacific Coast, but in the first one hundred and six miles the road has crossed the cordillera of the Andes (at an altitude of 15,665 feet above the sea) and begins its descent on the Atlantic watershed of the cordillera until Oroya is reached.

We have 175.3 kilometers of telegraph line (about 109 miles) 132.3 kilometers along the main line of the railway and 43 kilometers on the Branch. Galvanized iron poles are used between Oroya and La Fundición (the smelter) where but one wire is supported, but a substantial wooden pole line has been built between Cerro de Pasco and La Fundición where we have a number of wires.

At no place does the line descend below an altitude of 12,272 feet above the level of the sea, and the altitudes at the various stations along the line are as follows: Oroya, 12,272 feet; Tingo, 12,945 feet; La Cima, 13,822 feet; Junin, 13,555 feet; Carhuamayo, 13,568 feet; La Fundición, 14,011 feet; Vista Alegre, 14,199 feet; Cerro de Pasco, 14,208 feet.

The altitudes on the Goyllarisquisga branch are: Vista Alegre, 14,199 feet; Vinchuscancha, 13,822 feet; Alcacocho, 14,386 feet; Goyllarisquisga, 13,722 feet.

Our line wire is No. 8 G. I., and we use standard American instruments, 150-ohm relays and 4-ohm sounders, etc.; gravity battery is used and requires remarkably little attention, due, probably, to the decreased chemical action of the battery due to generally cold weather.

All of our operators are natives of the country, and we at one time used American Morse the same as in the United States, but the Government now requires that all telegraphs in the republic use the alphabet known as "International."

This alphabet was published in the January issue of Telegraph Age. The Peruvian Government requires the addition of the following to that which appeared at the date mentioned:

á . — . —

ch — — — —

é . . — . .

ll — . . . —

ñ — — . — —

ó — — — .

ú . . — —

"sig" . — . — . —

Commencement of body of message: . — . —

"G.A." — .

"All copy" . . — — .

Naturally, this alphabet is slower than Morse, and to a Morse operator it is at first puzzling, to say the least. Spanish is, of course, the language all communication between the dispatcher and the operators is carried on in, and but two of our operators understand any English at all, and their knowledge of that language is limited.

The latitude is but some six degrees below the equator, but owing to the altitude the weather is almost always cold and snow storms are frequent, although the snow does not remain on the ground long, and the line of perpetual snow in this latitude is something like 16,000 feet. We are surrounded by high peaks—some of them 20,000 feet and more high, and they are always covered with snow. The snow storms are almost invariably accompanied by violent electrical storms. Many animals (llamas, sheep, cattle and horses) as well as people, are killed on the pampa that extends for miles on each side and bears the name of Junin, and the electrical storms are no less severe in the mountains, but fewer people lose their lives from that source in the mountains than on the pampa, probably from the fact that the mineral in the adjacent peaks acts as a sort of conductor for the lightning.

Lightning is a continual source of trouble on the line, and nearly every storm blows out fuses and destroys arresters in several of the stations. We use Argus lightning arresters and they have given good results as we have not suffered any damage to the instruments, although the helix of wire that is a part of this arrester has, in several instances, been fused by the discharge.

We have a telegraph installation in connection with our telegraph line, and it has done good work, but the lightning played havoc with the delicate tin-foil paper condensers that are bridged around the telegraph instruments in every office, and that are used between the telegraphones and the ground, until finally we installed single-throw double-pole in the telegraphone circuits, which the operators open at the first appearance of electrical disturbances, and in this way we are now protecting these instruments.

A system of electric train staff has been recently installed between Cerro de Pasco and La Fundición. There are two blocks or sections, the

first between Cerro de Pasco and Vista Alegre—nine kilometers—and the second between Vista Alegre and La Fundición—five kilometers—and the same means of protecting these machines (the switches) has been adopted as that used for the telegraphones, although I do not believe as much protection is needed, the switches merely having been installed to reduce the likelihood of damage to a minimum. The "staff" has been doing fine work since its installation.

How Washington is Reported.

Robert Lincoln O'Brien, editor-in-chief of the Boston Transcript and for eleven years Washington correspondent of that paper, in a very interesting article in the Youth's Companion tells "How Washington is Reported." Mr. O'Brien, besides being a newspaper man of distinction, was the personal secretary of the late President Cleveland, and is in a position to give fully the various ins and outs in collecting news in and around the capitol.

In regard to the telegraph, Mr. O'Brien says in part: The substitution of the telegraph wire for the mail, in conveying Washington information, has also had its effects. The old style editorial correspondence, or the discussion of events, with a good measure of opinion and comment thrown in, seems less adapted to wire transmission than articles which have the flavor of news from end to end.

Many times it happens that the correspondents put their heads together, with the result that their imaginations outrun their discretion. One day in hot weather, when developments were few, a correspondent remarked to some friends that he thought the name Philippine Islands should be changed to McKinley Islands as a tribute to the president who had just died. The idea met instant acceptance, and it was declared that on the morrow an investigation would be made to see what public men would support the proposal.

One of the party declared that he could not wait, since he needed just such a story that night, and suggested that the scheme should go forth to their papers at once, and that it should be followed up the next day with interviews supporting it.

This was agreed to. Some important newspapers came out Monday morning with a front-page headline on the McKinley Islands. The enterprising promoters of the plan started forth a few hours later to seek interviews on it. The only man whom they could find in town of sufficient importance to quote, General Henry C. Corbin, was usually accommodating. But when the request for his indorsement of the idea was made, he threw up his hands, saying, "Do you mean to tell me that any one has been foolish enough to propose that thing?"

At least one of the newspapers that had floated this idea announced a few days after that those

public men in Washington who were thinking about it had better think again, since the practical difficulties in the way were almost insurmountable.

The correspondents as a body seldom stay in Washington many years. A decade of experience will put its possessor into a very small senior class in the gallery. The corps is constantly recruited from many sources. Home newspapers send on to Washington the young man who apparently possesses a special aptitude for political work and the handling of national questions. And the Washington bureaus themselves are self-feeding. The telegrapher, the stenographer and even the messenger boy have often worked to the head of the bureau.

Robert J. Wynne, who was a telegraph operator, became an assistant to the late and well-known General H. V. Boynton and finally the head of a bureau of his own. He left newspaper work to become first assistant postmaster-general, and on Henry C. Payne's death was made a member of the cabinet and is now our consul general at London. Business and official life are well recruited from the Washington corps, as well as other positions in the newspaper world.

Men who have been in Washington as correspondents frequently return as members of Congress. A fair percentage of the newspaper men of the country have been at some time in their lives through the Washington "mill."

The present commissioner of the Indian office and the head of the bureau of manufactures are old correspondents.

It is a commonplace that public men trust the correspondents with some of their greatest secrets, and their invariable testimony is that the confidence is well reposed. It is a newspaper man's capital in life to know how to keep a secret.

The story is told, however, of a breezy young correspondent in Washington who went into the office of a friend one day and told with considerable gusto of the greatness of a secret which had been entrusted to him, and the far-reaching effects for evil which would follow if it should ever by any chance get out. The possibilities of such a thing were too terrible to contemplate.

"Well, will it ever get out?" sympathetically asked his friend.

"Not if those to whom I have told it keep faith with me," was the naive response. But this is the unusual case.

Mr. O'Brien might have added to his list the name of P. V. De Graw, the present fourth assistant postmaster general, who was for some twenty years one of the leading newspaper men of Washington, as well as being one of the brilliant telegraphers of his day. Mr. De Graw was general southern manager of The United Press from 1885 to 1897. Previous to 1885 and for several years he occupied an important position with The Associated Press.

Business Notice.

The distinctive features of the Sandwich Selective Telephone Train Despatching System are the selector and the step-by-step principle upon which it operates. The elements of the system are the selector, the despatcher's automatic calling device, and the pole changer. The system is designed in such a manner that it works without interference with voice currents. It meets all the conditions of service, as it is installed upon metallic circuits and single-wire lines with equal facility. The operation required of a despatcher to call a station operator is very simple. The calling device is a mechanism which makes the call automatically. This device is encased in a small oak box about six by eight inches in size with a six-inch dial upon the top. The dial has holes corresponding to the station numbers and a handle with a plug. To call number ten, for instance, the despatcher plugs the handle in hole number ten, turns the dial by means of this handle until it reaches the stop. When released the machine makes the call. Besides being simple in operation, the instrument is small, neat, and compact, and not an unsightly object upon the despatcher's table. No changes or additions to it are necessary when new stations are added to the line. The mechanism is such that it will make the calls for any required number of stations.

The device is constructed upon a brass plate about six by eight inches in size, which in turn is mounted in an oak box with bevel glass top. All the working parts are visible at all times and are easy of access. The selector is mounted upon the station wall with the bell in close proximity. It is the belief of this company that a bell at a sub-station when designed to ring until shut off by the operation is always a source of trouble from the fact that if the operator is not present it will ring until the batteries are worn out, leaving the selector device without power for another call. To overcome this objectionable feature the Sandwich was built upon the theory that the despatcher should have complete control of the entire line at all times. This theory was found to be correct in practice, and the present Sandwich system allows the despatcher to give as long a ring as is necessary. While the bell at the sub-station rings, the answer back returns to the despatcher a slight buzzing, advising him positively that the bell is ringing.

When the telephone was first talked of for train despatching it was foreseen that if the telegraph operator was displaced by a telephone operator at small stations it would follow that a telephone message circuit would be needed. With a second telephone circuit or message circuit it was thought a second selector and bell would be needed at each station, but such is not the case with the Sandwich system. With the Sandwich system a second bell is needed, but not a second selector, as either of two bells may be operated at a station at the pleasure of the chief operator or despatcher. With this double bell system two calling devices are used, one by the despatcher to ring the bells on his cir-

cuit and the other by the chief operator to call the operator to his circuit. The calling for both bells is done on one wire, which leaves the other free for the despatcher's telephone and to be simplexed for additional Morse circuits which are always valuable. It is seen then from this that the Sandwich selector is a "selective" selector, and is able to choose either of two bells. This means a big saving in cost to the railroads when they wish to install the message circuits, as many roads are now arranging to do. The advantages gained by the use of the Sandwich selector, in a few words, are: least first cost, simplicity due to the step-by-step operation, simple and positive answer back, interchangeability of selectors and parts, and the double selective call for despatcher and message circuits.

Many of the leading railroads after having tried other makes of selectors, and giving them a thorough trial, have decided to equip their additional circuits with the Sandwich selector, which has been found to be reliable and in which a case of trouble seldom, if ever, develops.

The many years of experience of the Sandwich company in the telegraph business have developed their standard of telephone equipment until now for long-distance transmission they are not excelled, and their selector is but a natural growth of previous experience and knowledge of the needs of the railroad. See display advertisement on another page.

Telegraphed By Kite.

One of the worst floods that has ever visited the country swept through Oklahoma a few weeks ago, says the Kansas City Star, and the problem of keeping up telegraphic service with the outside world was a difficult one. Telegraph poles and wires were swept away like so much chaff, and in many sections of the state outside communication was off for several weeks.

When the span of the railroad bridge across the Red River at Dennison went out, tracks, poles and wires went before the force of the swiftly moving current. It was necessary to establish telegraphic communication on the line immediately, but the torrent of water rushing through the break in the bridge made it impossible to get a boat across the river to repair the break. It was then that the possibilities of a kite flashed through the mind of W. H. Hall, superintendent of the railroad's telegraph service.

The kite was made, a strong fish line attached to it, and the miniature aeroplane was started off from the south bank of the river. When the useful toy reached a point over the bridge on the opposite side of the bank, the line was slackened by unreeling and the kite dropped to the girders of the bridge, where a workman stood waiting to grab it. The fish line was then attached to a heavier cord, this in turn to a small rope, and then a telegraph wire was hauled across the gap. In a short time messages were flashing over the wires as if nothing had happened, and the efforts of the elements were defeated.

Dominion Government Telegraph System.

The total number of miles of telegraph lines under the control of the Dominion Department of Public Works, according to the report for the year ended March 31, 1908, just presented to Parliament, says the Railway and Marine World of Toronto, was 7,225, comprising 393 offices, which transmitted during the year a total of 105,000 messages. All the lines were maintained in good order and worked fairly satisfactorily. No new lines of any considerable length were constructed during the year, but a number of extensions were made to existing lines in the Maritime Provinces, in the province of Quebec, particularly in the Chicoutimi district, and in Saskatchewan and Alberta. The cost of maintenance exceeded the revenue, but the advantages accruing to the portions of the country served by these lines more than compensate for the expense borne by the Dominion. The greater portion of the government telegraph lines is constructed through very sparsely inhabited districts and along the Gulf of St. Lawrence, where private companies would not obtain sufficient revenue to justify the building and operation of a service. As the country is opened up and railways built many of the government telegraph lines will necessarily be abandoned or perhaps transferred to the control of railway and other companies. In several instances it has been found that the public interest is best served by transforming lines originally constructed as telegraph into telephone lines, the operation of which are more simple and fulfil to a greater degree the needs of the community. In some cases the dual operation of the line for both telegraph and telephone was attempted, but the results can hardly be said to be satisfactory.

The total revenue from the lines was \$122,432.53, and the expenditures \$386,567.34. Signal service messages, meteorological service messages, and reports, and fisheries bulletins are handled free of toll.

The latest figures to hand showing the extent of the telegraph lines in operation in the Dominion, says the Railway and Marine World of Toronto, are:

	Miles of line	Miles of conductors	Offices
G. N. W. Tel. Co.	11,775	48,652	1,360
C. P. R.	10,294	51,009	1,150
Western Union.	2,638	9,849	219
Government Lines.	6,929	6,929	393

Magnetic Club of Philadelphia Election.

At the annual meeting of the Magnetic Club, of Philadelphia, held February 26, the following officers were elected: President, J. F. McLaughlin, Chief of the Electrical Bureau; vice-president, J. D. Israel; secretary, C. B. Wood; treasurer, H. W. Hetzel. The governing committee consists of J. W. Meyer, A. S. Weir, W. Devereaux, S. S. Garwood, G. J. Wells and F. E. Maize.

A meeting of Pennsylvania Railroad division operators, linemen and others was held Saturday, February 27, in the assembly room, Broad street station annex, Philadelphia, Pa. In the absence of Mr. J. B. Fisher, superintendent of telegraph, Mr. J. C. Johnson, chief clerk, made an opening address, introducing the speakers, Dr. Paul R. Heyl, professor of physics, Boys' High School, Philadelphia; Mr. William D. Lindsey, of New York, and Mr. E. Parsons, of Sandwich, Ills. Dr. Heyl gave a talk on the theory of "Transpositions," which was supplemental to the lecture of Mr. Lindsey of February 6, and explained in detail why it was necessary to make "transpositions," illustrating by diagrams on the blackboard the proper method of making them.

Mr. Lindsey lectured on the "Metallic Composite," explaining the principles of the composite circuit and the functions of the telegraph and telephone ringing apparatus used in the metallic composite. His remarks were also illustrated by blackboard diagrams.

Mr. Parsons gave a demonstration of the selector for telephone train despatching, explaining in

William Maver, Jr., electrical engineer and author, is busily engaged in revising his book, entitled "Maver's Wireless Telegraphy." The name will be changed to read "Maver's Wireless Telegraphy and Telephony," the author having decided to revise the work to embrace the subject of wireless telephony. While the book will be considerably enlarged, the price will probably remain at \$2.00 per copy. The new edition, which will be the most comprehensive work on this important subject, which is attracting so much attention at the present time, will be ready for delivery in about one month.

A Chicago newspaper states that not one person in 10,000 ever stops to realize what a marvelous organization must be necessary to lay before the readers of a newspaper each day an accurate account of the happenings of the day before in Europe, Asia, Africa, South America, Australia, the islands of the sea and the whole expanse of our own continent, all in a single newspaper. The intricate net-work of cables and telegraph lines, the complicated chain of news-gathering agencies stretching across continents and oceans—make this possible.

One of the temporary aerial cables of the Western Union Telegraph Company connecting Baltimore with the North was, after working for several days, cut by the hatchet of a twelve-year-old boy, who evidently regarded it as an interesting subject for investigation. The damage was soon repaired, but if the same spirit of investigation should become prevalent among the younger generation the telegraph officials might find that they have more destructive agents than blizzards to contend with.

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Initial tests determine if an insulated wire will do the work for which it is intended; *but* initial tests can *not* determine if it will do that work years hence. Kerite has back of it an unequalled record of half a century of successful service under the most adverse conditions.

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KERITE wires and cables installed half a century ago are in service to-day. The wonderful durability of Kerite insures the highest efficiency, safety and economy, and is a guarantee of the best and most successful results.

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The Railroad.

A reorganization of the Pacific Electric Railway Company at Los Angeles, Cali., has been effected. A. E. Roome, formerly superintendent of telegraph of the Southern Pacific Railway Company, has been appointed superintendent of telephones, telegraphs and signals, and S. H. Anderson electrical engineer.

Mr. E. Parsons, representing the Sandwich Electric Company, Sandwich, Ills., spent a few days in New York last week, interviewing the railroad interests in behalf of his product. An exhibition of selectors was made at the Hoffman House, which was visited by many of the railroad telegraph superintendents located in the East.

The Southern Pacific Railway System has issued circulars to its employes on the subject of courtesy, part of which is as follows:

"Courtesy costs nothing and yields large returns. Cordial relations with customers are an asset. You increase this property's value to owners and patrons, as well as the value of your service, by making friends.

"Rules necessary in a business so complex cause less dissatisfaction than unfortunate methods of enforcement. Your training renders familiar to you matters not understood by the public, and inquiries are entitled to prompt, courteous and complete replies. If something seems at fault beyond your power to correct, explain how and through whom to seek the remedy. Manner outweighs words."

The March meeting of the Railway Signal Association will be held at the Auditorium Hotel, Chicago, March 15. At the morning session beginning at 10 a. m., E. E. F. Creighton, of the General Electric Company, will present a paper on "Lightning Phenomena," with special reference to signal circuits. At the afternoon session beginning at 2 p. m., there will be a debate on the subject, "Resolved, that the scheme of signaling presented at the Washington meeting is the best scheme of signaling devised to date." Two speakers will appear for the affirmative and two for the negative, for a period of twenty minutes each, after which the discussion will become general. At the close of the general discussion each side will be allowed ten minutes in which to close the debate, after which a vote of all those present will be taken to reach a decision.

The Delaware, Lackawanna and Western Railroad Company, L. B. Foley, superintendent of telegraph, have just finished a telephonic train despatching installation on the Binghamton-Oswego branch of the system. The distance between these two points is 115 miles. Seventy-five per cent. of the entire Lackawanna system is now equipped with telephonic train despatching installations. The remaining twenty-five per cent. will be completed within the next few months. The Lackawanna Railroad system will probably be the first in the country to equip its entire length of road with telephone train des-

patching circuits. These circuits and the station equipments are of the very best material, with the result that an excellent service is being rendered. The selectors used are of the Gill pattern, and the superintendent of telegraph reports that there have been no failures recorded against this new method of calling offices. Some inductive disturbance was experienced on the telephone circuit west of Binghamton for a short time, but experts eliminated the trouble. The telephone service throughout the system is now both uniform and satisfactory.

DEATH OF HENRY C. HOPE.

Henry C. Hope, superintendent of telegraph and signals of the Chicago, St. Paul, Minneapolis and Omaha Railroad, St. Paul, Minn., died of heart failure on February 26. Mr. Hope was one of the most widely and favorably known superintendents of telegraph in the United States. He had been honored by being elected president of various telegraph and railroad associations. At various times he had been president of the Association of Railway Telegraph Superintendents, Old Time Telegraphers' and Historical Association, the Railway Signal Association, and at the time of his death was president of the Railroad Club of St. Paul. Mr. Hope was born in Rockford, Ills., in 1850. He began his telegraph career in 1868 as operator and manager for the Western Union, later serving the Pacific and Atlantic, and Northwestern Telegraph Companies. His railroad career began at Milwaukee in 1873 when he entered the service of the Chicago, Milwaukee and St. Paul Railroad. He held various positions of responsibility until 1880, when he received the appointment of superintendent of telegraph of the Chicago, St. Paul, Minneapolis and Omaha Railroad, and in 1886 he was further advanced to be superintendent of telegraph and signals of the same system, which position he retained until the time of his death. Mr. Hope was a 32nd degree Mason, Knight Templar and an Elk, besides being identified with various railroad and kindred organizations. He is survived by a daughter, Miss Nellie Hope, who is well known to the associates and friends of her father throughout the country.

In the Daily Consular Reports of March 2 several interesting items relating to foreign railroad statistics are printed. Consul H. Albert Johnson, of Liege, Belgium, furnishes information concerning the receipts from passenger traffic and the proposed construction of new railways in Belgium.

Consul Thomas H. Norton, of Chemnitz, Germany, furnishes an account of a new organization to economize the system of the inter-railroad handling of freight cars in Germany. The great majority of railway lines in Germany are the property of the different states composing the empire. Hitherto the supervision and control over movements of freight cars have been exceedingly cumbersome and expensive. Each car,

on passing from the territory of the line owning it, or on crossing later the boundary between two states, has required an exchange of receipts.

A recent report by the director-general of the Italian state railways contains some interesting details relative to the operations of the lines during the last six months of 1907, which Consul-General James A. Smith, of Genoa, summarizes in detail.

Consul Hunter Sharp, of Moscow, Russia, reports that during the last ten years the Russian Government has spent \$944,510,000 on increasing the efficiency of the railways and constructing new lines.

Consul-General Robert J. Wynne, of London, furnishes information concerning the street railways of the United Kingdom, as given in a recent report of the British board of trade. Since 1878 the length of lines open for traffic has grown from 269 to 2,464 miles. He gives some interesting figures regarding the expenditures for capital, receipts, etc.

Telephones for Canadian Pacific Railway Despatching.

Mr. B. S. Jenkins, general superintendent of Canadian Pacific telegraphs, in reply to an inquiry regarding the report that the company intended to build a telephone line from Winnipeg to Brandon for the operating of trains, made the following statement:

"During the last few years great improvements have been made in telephone apparatus, with the result that uses can be made of it which were not possible in earlier years. During the last three years the Canadian Pacific, with other roads, has been making experiments in the use of the telephone for train despatching. Early last season telephone equipment was supplied to the line from Montreal to Farnham, a very busy section, and the success of the test was so marked that the equipment was continued to Newport. Early in the year Mr. Whyte, who keeps in the closest touch with all new developments, requested from me estimates for certain sections of western lines. As a result, appropriations were secured for the immediate installation of telephone equipment on two important sections, namely, from Winnipeg to Brandon, 133 miles, and from Swift Current to Medicine Hat, 150 miles. Heavy copper metallic circuits will be provided, two heavy copper wires being strung on each section. These circuits will be entirely self-contained, the signaling and talking all being done on the same pair of wires. Semi-automatic selectors will be used for signaling, which will enable dispatchers to ring at will vibrating bells in one or more offices on the line. This has been found to be a less laborious method of calling an operator than the use of the telegraph and the saving in time has been very great. In each of the local offices a four-inch vibrating bell, large enough to be heard at a considerable distance, is installed, and when this bell is rung without warning, the one thought of the operator

is to shut it off and the call is answered immediately. In practice it has been found that, in order to forestall the dispatcher in the ringing of the bell, the operator will report the train the instant it has passed.

"In handling train orders by telephone the same method is used as with the telegraph. The use of the telephone is very quick and flexible, and the dispatcher is able to get much more detailed information with reference to what each train is doing. He can talk personally to the conductor and the engineer, and is brought much nearer to the train movement.

"An obvious advantage of the telephone train operation is found in the fact that any person can use the system, while only the trained telegrapher can use the key. I have no doubt that for train operation the telephone will supersede the telegraph, but for the transmission of commercial or business telegrams where a record is required, the telegraph will continue to hold the field. As an illustration of this fact, the telegraph company is called on daily to transmit telegrams confirming agreements and contracts which have been arranged by telephone."

On being asked why the railway company was installing the telephone wire west of Winnipeg on the single track, rather than east of the city on the double track, Mr. Jenkins made the interesting statement that although, in theory, it had been supposed that a telephone would be of much greater use on a double track than a single track, it had been found by actual experiment that while the telephone was of great value on a double track, it was of still greater value when the traffic was confined to a single track. In addition to the two circuits mentioned by Mr. Jenkins there is another authorized between White River and Fort William, Ont., 251 miles on the north shore of Lake Superior, says Mr. Wm. J. Camp, of Montreal, electrical engineer of the Canadian Pacific system. This, he says, is no doubt the longest telephone despatching circuit yet undertaken.

Boston Aid Association Election.

The twenty-fourth annual meeting of the Telegraphers' Mutual Aid Association of Boston was held March 7, at Young's Hotel. The yearly reports of the officers were received, and the annual election took place, resulting as follows: R. E. Tobin, president; J. B. Gatins, vice-president; W. H. Sullivan, secretary-treasurer; W. J. Mahoney, recording secretary; F. M. Kelliher, sergeant-at-arms; A. V. Losea, T. F. Clark, J. J. McGarty, P. T. Haggerty and D. Carter, executive committee; W. E. Conry, H. W. Gillespie and J. J. Hannon, auditing committee; C. A. Mooney, chairman of relief committee.

At the close of the meeting, E. J. Smullen presented T. F. Clark, the retiring president, with a pair of gold link cuff buttons as a token of esteem.

Subscribe for Telegraph Age, \$2.00 per year.

Railroad Depot Wiring.

Mr. J. H. Jacoby, for many years previous to five years ago, superintendent of telegraph of the Lehigh Valley Railroad Company, in a paper read before the Montreal convention of the Association of Railway Telegraph Superintendents on the subject of "Depot Wiring from the Contractors' Standpoint," had this to say regarding the actual wiring of a station, which is at the present time being largely followed by those engaged in such equipment. Mr. Jacoby said in part:

In wiring a depot, I presume, all will agree that the first and foremost consideration is that of safety. Yet with all the frightful disregard of the simplest electrical law, noted in the wiring of many buildings it must be said that very few fires have resulted from this source, and I would here remark that if the most ordinary precautions are taken and the underwriters' rules fairly well complied with, there is hardly a possibility of fire, and from a number of years of experience in this particular field I am persuaded that electricity is the safest illuminant known.

The underwriters' rules differ somewhat in the various districts, in some details, but generally they are a unit on essentials and it may be said that these rules having been compiled from all the varied experiences and mishaps of the past, are as near perfection as any body of men specializing along certain lines, can make them.

One of the differences it might be well to note at this point, is the adoption of certain insulated wire for concealed work. Some districts require rubber covering, others fire and weather proof. My preference would be the latter for the reason that the insulation is more durable. After a few years the rubber covering becomes in a manner soft and flimsy, while insulation of the fire and weather proof wire hardens and becomes more tenacious with age. In rewiring buildings this fact has been particularly noted by the writer as well as by others who confirm the statement. Yet it cannot be said there is any particular element of danger in the use of rubber covered wire, for were it not for the fact that through some misplacement of a wire by a wireman touching some metal or other substance thereby forming an arc, the bare copper wire might be strung concealed throughout a building with perfect safety—the porcelain insulators affording all the necessary protection.

The safest system, without doubt, is the iron conduit, either flexible or rigid, with probably a slight advantage in the latter, from the fact that it is almost impossible for any workman in locating steam or water pipes, or any other changes or alterations made after wiring, to injure the wires secured within, besides in case of any future trouble the defective conductor may be withdrawn and a new one inserted at short notice without any inconvenience and at very slight cost. However, it is contended that no potentials higher than two hundred and fifty volts should be carried concealed into a building; until re-

cently the popular five hundred volt D. C. for motor service was permitted, when each of the two wires of the circuit was placed in a separate pipe and when wires were lead encased; but this was found to be bad practice leading to various troubles and dangerous to property. The placing of both wires in one pipe and securely grounding all the pipes throughout the building is considered much better, but even this is not recommended. I should say that if it is found absolutely necessary to take them in concealed, secure a high grade insulated, duplex, lead encased, and place in iron conduit, grounding the latter, securely.

It might be of interest to note here that an attempt at securing this result was made some few years ago, in the use of what was then termed paper conduit, which was constructed of a paper fibre coated inside and out with a pitch or tar preparation, answering the purpose of withdrawing the old and inserting new wire, very well as long as no nails were driven into it, but with this feature thrown in, the wire could only not be pulled out, but an electric arc developed, setting fire to the building. This has actually occurred, and it was not long in use before it was placed under the ban by the Board of Fire Underwriters. Several cases of this kind came within my personal experience. When this paper conduit was first placed on the market, two large depots in cities along the line of the Lehigh Valley Railroad, were under construction, and a gang of men were placed in my charge for piping and wiring them. This conduit was placed with great care and precision and all the wires afterwards pulled in. It was pronounced to be an up-to-date job and all went well for the space of twelve years or more, when suddenly through some alterations made by a carpenter on one of the floors of one of the stations, a short circuit developed and a fire started. Luckily it was discovered and put out before much damage was done.

The twin conductor, flexible steel armored wire, while approved and doubtless safe, has the unfavorable feature of difficulty in removing, should a short circuit or ground develop—such trouble is quite possible, in fact, has several times occurred recently, to the writer's knowledge.

Ordinarily, what is known as knob and tube work whereby the wires are secured along timbers by means of porcelain knobs and through timbers by porcelain tubes or bushings a safe distance apart so that no wires of opposite polarity can possibly get together, may be regarded as entirely safe so long as no grounds or crosses are produced by workmen on the building afterwards; the wires being entirely concealed there is no means for locating them when holes are drilled for gas, water or other pipes. In the average depot building there are numerous outlets in or near brick walls, where it is not considered proper to use other than iron or steel armored protection, so that it would appear far preferable to have a complete and uniform conduit job.

Obituary.

J. Edward Jennings, aged forty-eight years, an attache of the Chicago Bureau of the Associated Press, died in that city, March 1.

W. H. Wells, aged sixty-one years, manager of the Western Union Telegraph Company at Brasher Falls, N. Y., died on March 1.

Frank E. Cass, for eighteen years chief clerk in the office of the Western Union Telegraph Company in Denver, and one of the best known telegraphers in the West, died February 18, from the effects of appendicitis.

J. Wesley Stanley, an old-time operator, died at Philadelphia on February 21, after an illness extending over two years. He had been connected with the banking house of Drexel and Company for a number of years.

E. D. Coats, manager of the Postal Telegraph-Cable Company at Ogdensburgh, N. Y., died on March 2. Mr. Coats was an unusually enterprising member of the managerial staff of the company, and during the summer months assisted the superintendent of his district in the management of the various summer offices located in the St. Lawrence river section of the state.

Joseph W. Wood, aged fifty-three years, for several years past in the insurance business at Boston, but for the previous quarter of a century one of the most expert telegraphers in the country, died at Boston on March 8. Mr. Wood had worked in telegraph offices throughout the country, including cities in California. His greatest achievement at the key was earned when he worked the New York quadruplex in the Boston Western Union office in the early eighties.

Lyman Dwight, brother of H. P. Dwight, president of the Great Northwestern Telegraph Company, and one of the oldest and most experienced operators in the country, died at Detroit, Mich., March 5. Mr. Dwight, as a young lad, was an operator in the Toronto office in the early fifties, and was among the first to learn to read by sound. From Toronto he was transferred to Buffalo, where he had charge of the old Montreal Telegraph Company's office until 1868. A vacancy occurring at Detroit at this time, Mr. Dwight was placed in charge of the Montreal Telegraph Company's office at that place. Here he remained as manager until a few years ago, when he retired from the business.

Rev. Dr. Theodore L. Cuyler, aged eighty-seven, pastor emeritus of the Lafayette Avenue Presbyterian Church, Brooklyn, N. Y., and father of Theodore L. Cuyler, Jr., assistant treasurer of the Postal Telegraph-Cable Company, died February 26. For nearly half a century Dr. Cuyler had been a conspicuous figure not only in the religious life of Brooklyn, but among the pulpit orators of this country. He was one of the Great Four among Brooklyn clergymen, which was composed many years ago, of Beecher, Buding-

ton, Storrs and Cuyler. He retired from active ministerial work in 1890. The esteem in which Dr. Cuyler was held by telegraph officials is evidenced by the large number who attended the funeral services, among them being George Gray Ward, E. C. Platt, E. B. Pillsbury, Charles Shirley, T. E. Fleming, E. S. Butterfield, Col. A. B. Chandler and J. J. Cardona.

George A. Burnett, the prominent old-time telegrapher, of Buffalo, N. Y., died on March 4, after an illness of several months. For the past two years Mr. Burnett had practically retired from the telegraph service, although he was a daily visitor at the office of the Western Union Telegraph Company. He had been for over forty years in the employ of the company named and of the Great North Western Telegraph Company, acting as manager of the latter for over twenty years. Mr. Burnett was born in Louisville, Ky., in 1838. In his boyhood he became infatuated with a desire to go to sea, which he gratified, to the extent of circumnavigating the globe, returning in 1854. In 1855 he learned telegraphy in Paris, Ontario, and was placed in charge of that office. Shortly afterward he was transferred to the Montreal telegraph office, Buffalo, thence to Toronto. He next secured a position with the Western Union Telegraph Company in Milwaukee, Wis., at which time, 1856-7, he was the only operator, and one wire carried all commercial and railroad business. Mr. Burnett went to Chicago in 1857, where he remained for several years, occupying the positions of manager of the Pacific telegraph office, and chief operator and manager of the Western Union telegraph office. In 1862 he joined the 45th Illinois Infantry, and was detailed for military telegraphic service. He was in charge of the Cairo, Ills., office during the campaign of Fort Henry, Fort Donelson and Pittsburg Landing. These campaigns were planned in his office by General Grant and Commodore Foote, in consultation with the war department at Washington. The correspondence between Generals Grant and Halleck, after the battle of Pittsburg Landing, was transcribed into cipher by Mr. Burnett, and was very interesting from the fact that Halleck criticised Grant's action at this battle, which Grant answered by repeatedly forwarding his resignation, which Halleck refused to accept. In 1866 Mr. Burnett returned to the Montreal Telegraph Company, and in 1867 was appointed its manager in Buffalo, which office he had continuously occupied until his retirement, as before mentioned. Mr. Burnett was well known to the telegraphic profession throughout the country. He was a vice-president of the Old Time Telegraphers' and Historical Association last year and was chairman of the reception committee at the Niagara Falls convention, the duties of which position he discharged with conspicuous ability.

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LETTERS FROM OUR AGENTS.

PHILADELPHIA, POSTAL.

Mr. Daniel Hoffman, manager of the office in the wholesale dry goods district, is laid up with an attack of typhoid fever, and his friends hope for his early recovery.

The wife of J. A. Maguire, wire chief of the Philadelphia, Reading and Pottsville Telegraph Company, died on February 23.

SAN FRANCISCO, WESTERN UNION.

The Barclay printing system was inaugurated on February 15 between here and Los Angeles, and is a great success.

W. G. Geraghty, Misses Corinne Brown and Claire Russell have been transferred from the operating room to the Barclay department.

Excellent service is being afforded the patrons of the company at branch offices. Manager J. V. O'Brien, controlling the same, is vigorously demonstrating the value of prompt attention to this class of trade. Judging from indications, by the steady increase in business from these offices, his efforts are not unavailing.

Several new branch offices are being opened, which is more evidence of the eventual return of San Francisco to her commercial prestige.

Mr. P. E. Sullivan, formerly of this office, who for several months past has been employed at Goldfield, Nev., has returned here.

Mr. H. C. Sherrill has resigned and returned to the south, being located with the Postal at some point in Texas.

Mr. E. L. Rector, an "old-timer" and for several years representative for the United Press Association in Colorado, is again among his friends in the operating room. The return to the telegraph service of those who have been engaged in other lines of work should convince the most skeptical that telegraphy has not lost all its attractions.

Mr. C. M. Fisher, another of the "old guard," who left the service to accept employment with the wireless people here, and later entered into poultry raising in the southern part of the state, is again welcomed to the operating room.

Mr. C. S. Haglund, formerly of this office, who for the past year has been employed in the rate bureau of the Wells, Fargo and Company's Express, in this city, has returned to this office.

Among other recent additions to the force are: W. H. Miles, C. W. Henry, R. L. Keys, A. T. Scott and W. G. Marine.

NEW YORK, WESTERN UNION.

Mr. F. E. Wellington, a member of the force, has prepared from the list of names of employes of the operating department the following, which embraces a large percentage of those engaged at the key in this office. It bears the title, "Some of the Peculiarities of Our Office at 195."

We have "Brooks," "Woods" and "Groves,"

"Salmon" and "Pike," a "Fisher" and "Freyer," but no line or hook. Some "Bakers" but no flour; "Smiths" but no forge. A "Lane" with "Gates" and "Stiles," but no fence, a "Marsh" where we find "Oakes" and a "Berryman," a "Herron" and one other "Byrd," "Martins," "Hart," and even a "Campbell," but he has no hump.

There is a "Sleigh" and two "Ottos" to set the "Pace" for our "Walker," and "Lightfoot" on the way to his "Tepe." We have a "Starr," but no sky. "Mead" and "Porter" to drink and a "Barto" serve it over. There are "Millers," but no grain. A "Piccolo" for use at our "Ball," but no player. Then there's our "Uncles," but no nephews. A "Coldewe" that became "Rainey."

We can "Wark" "Day" or "Knight," and have "Banks," but no money. Then there's a "Bishop" and a "Cross," but no church and but one "Christian."

Two "Hurds" but no cattle, and we hope no hogs (except the hog wires). One "Gross," yet not a dozen. We can "Cross" "Jordan" when we flee from "Rath."

In politics we have "Grant" and "Wilson" (1872), "Hayes" and "Wheeler" (1876), "Harrison" and "Morton" (1888). In history we have "Alexander," "Wellington," "Grant," "Sheridan," "Scott," "Lawrence," "Adams," "Evans."

We are familiar with the "Crafts;" we have the "Goodwill" of the "Kings" of which, by the way, we have a good hand. Four of them. Can you beat it?

We have a "Davenport" and "Pillow," with a "Lass" waiting for her laddie, when there will be a "Jolly" time if "Cooley," the yellow peril, doesn't butt in.

For parades we had a "Marshall," but now we have only one "Bannerman" and one "Saylor." Our colors are "Brown" and "Green."

And now just "Liston," we have "Moore" than the "Price" and "May" make some "Gaines." We have a "Keefer" our "Locke," but no door for our "Halls," a "Garrett" and "Schadc," but no house.

With our "Knight," "Castleman" and "Bridge-man" we can "Parry" so that none can "Pearce" our "Shields." We have "Space" for a "Paddock," but no race track on our "Hills" and "Plain."

If any of our former railroaders want a locomotive we can furnish a "Brooks," "Rogers," "Baldwin," "Richmond" or "Danforth." In typewriters we have the "Remington," "Smith," "Hammond" and "Wellington."

In the great national game "Casey" the "Batterman" can "Rapp" the "Ball" with "Power" "Close" to the fence in the "Newfields," but "Kelly" can "Fitchett" back to the "Diamond" and "Muddell" "Markey," the scorer.

If any Missourian thinks there are no negro operators, we can show "Coons" at the key and a "Barbour" also, we would be "Failing" if we forgot our Mista "Johnsons;" our "Guest" and "Reader" have to put up their "Nichols" and sleep outside.

Some of our names smack of old Ireland and

some of Jerusalem, while others suggest Teutonic origin, but, honestly, we have only one "Irish," and while others are "Goodenough," two are "Dutcher" than "Holland."

And at last we have "Dunn."

The sympathy of the force is extended to Mr. Hugh J. Moody, Gallery Chief, whose wife died on March 10th, after a short illness. Mrs. Moody nee Miss Annie Nolan, was formerly city wire chief in this office, and her genial disposition is remembered by those who were fortunate enough to enjoy her acquaintance.

OTHER NEW YORK NEWS.

One of the New York papers, in a lengthy article, describes the humanitarian work performed daily by a New York telegraph operator, who out of a salary of thirteen dollars a week feeds from thirty to forty men with bread and hot coffee every morning at 6.30 o'clock. His name is David R. Reid, and he is employed in a Greenwich street Western Union branch office.

The election of officers of the New York Telegraphers' Aid Society will occur on Tuesday, March 30, at the office of the society, fifth floor, 195 Broadway, New York. The annual meeting will take place the day following.

Mr. E. P. Porter, one of the best known New York telegraphers, and a forty-niner of the telegraph, who has been spending the winter at Geneva, N. Y., has returned to the city. He expects to locate for the summer, as has been his custom for several years, at Asbury Park, N. J.

Sarah Ingram Jones, wife of Walter C. Burton, the well-known, old-time telegrapher, and an ex-state senator, died at her home in Brooklyn, March 4.

Assessment No. 489 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Walter Z. Moon, at Atlanta, Ga.; Emer H. Parker, at Evanston, Ills.; Charles J. Kaveny, at Albany, N. Y.; Thomas E. Yates, at Whitney, Ala., and Howell Sigler, at Fort Worth, Tex.

According to a consular report from Burmah, since January 1, 1909, the rates for inland telegrams are as follows: (1) Class ordinary not ex-

ceeding 12 words for 6 annas (12½ cents) and one-half anna (1 cent) for each additional word; (2) class express, 12 words 1 rupee (32.4 cents) and 2 annas (4 cents) for each additional word; (3) fixed charge for confirmation of delivery telegrams reduced from 1 rupee to 6 annas.

The Serial Building Loan and Savings Institution, 195 Broadway, New York, has accomplished more in the direction of providing a safe place of deposit for the earnings of telegraphers, and aiding them in the subsequent purchase of homes, more than a thousand persons now owning homesteads free and clear, than any other organization of the kind. Why don't you seek to enjoy its benefits? Write for information.

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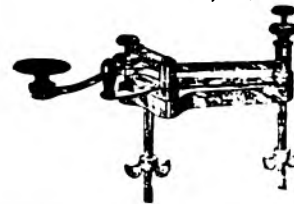
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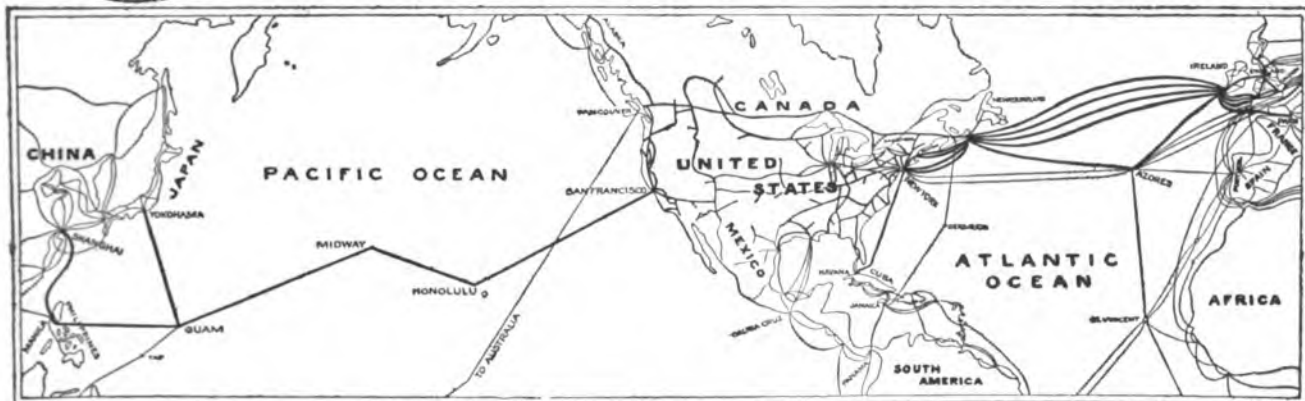
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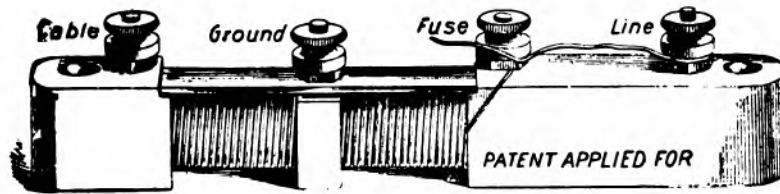
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