

# TELEGRAPH AGE

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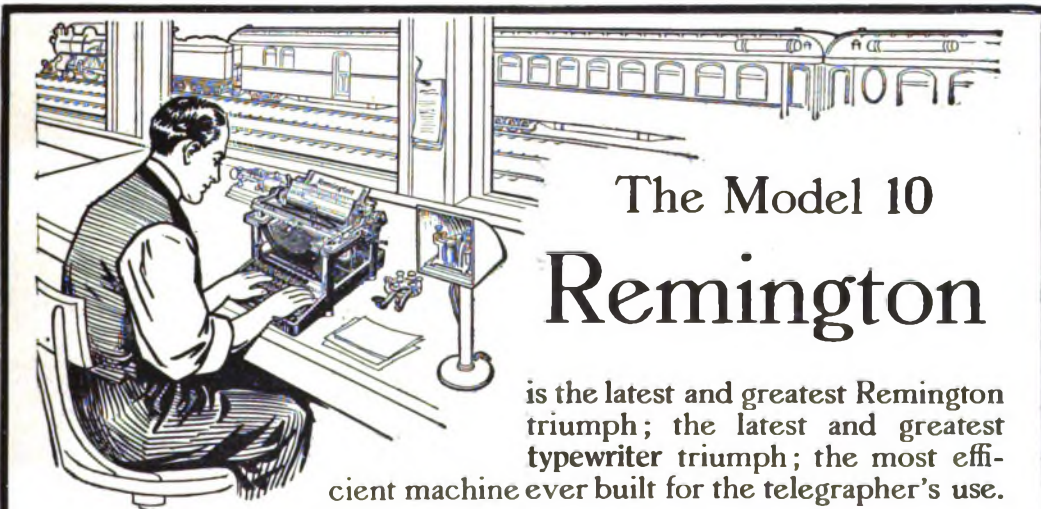
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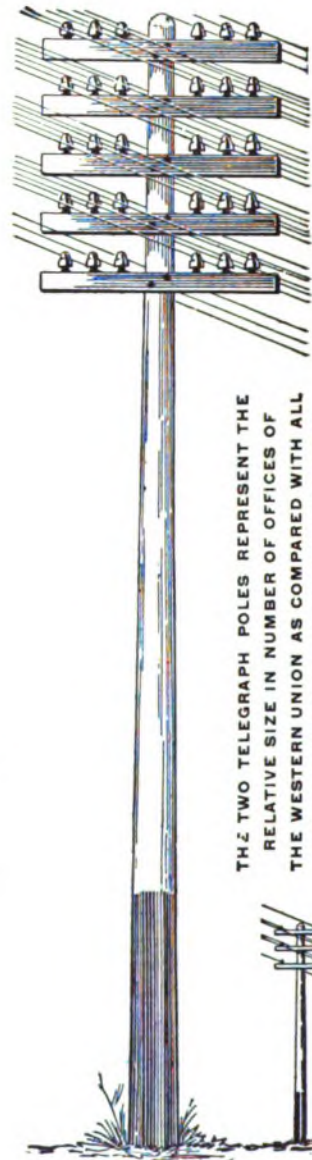
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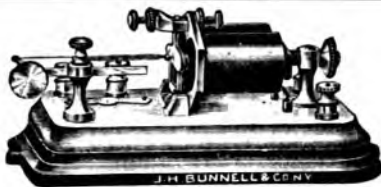
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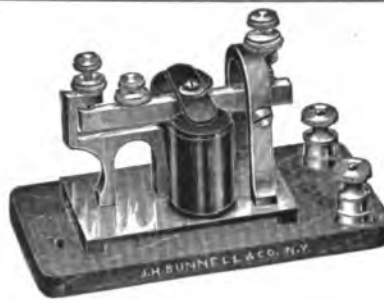
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No. 21.

NEW YORK, NOVEMBER 1, 1909.

Twenty-Sixth Year.

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## SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

### Finishing Touches in the Adjustment and Care of Telegraph Apparatus.

In works of art it is the finishing touches, or attention given to minute details, that enhance their value. In the operation of mechanical apparatus the degree of efficiency any given type possesses in like manner depends greatly upon the final adjustment and care of the moving parts, and in no class of apparatus are such attentions more necessary than in transmitting instruments used in the telegraph service.

For an example let us take the operation of an ordinary walkingbeam pattern polechanger. Now the writer has always contended that the adjustment of this apparatus is decidedly the most important part of the work done in getting a quadruplex circuit in good order, as well as the most difficult; yet in recent years comparatively few attendants seem to fully realize the truth of this assertion. This is probably due to the fact that there are not so many quadruplex circuits operated now as formerly, and to the knowledge that a duplex circuit will not disclose an improper adjustment as quickly as the former.

The consequence is that the usual play given to the leverbar is generally entirely too great for

best results. If one will observe the general adjustment of polehangers in almost any large telegraph office to-day he will find that in many cases they are allowed almost as much play as that of the lever of the sounder the operator receives from.

This is entirely wrong. For best results the play should be as little as possible, both from an electrical and mechanical standpoint. Any deviation from this course lowers the capacity of the polechanger to meet the maximum demand to which it may be put, and under modern conditions where loops are being constantly changed about from one set to another the polechanger is called upon to respond to a great many different conditions of current and speed of sending operators. It is obvious, therefore, that it should be adjusted for maximum instead of minimum demands.

Probably the best place to note the importance of a uniform close adjustment of transmitting apparatus is at the loopswitch.

When a fast circuit "fails," and it becomes necessary to shift a loop from that wire to another temporarily it is very frequently found that before operation can begin it is first necessary to readjust the polechanger on the substituted set, although it had been giving satisfaction with the original loop and rate of transmission to which it had been subjected. If this polechanger had been very closely adjusted in the first place there would have been no delay in starting the new assignment. It is customary to attribute the necessity of readjustment to alterations in the volume of current flowing, but while this may be true in some cases it is not so in the majority of cases. The adjustment should invariably be such that the mechanical inertia is very small in order to provide for and take care of wider ranges in the rate of transmissions.

Theoretically all loops worked on multiplex apparatus are supposed to be so uniformly built up with artificial resistance that each will carry practically the same volume of current, but in practice it cannot always be maintained, owing to the habit of temporarily combining loops by means of repeaters and the addition of office legs. Furthermore even when identical current volume is maintained different operators have different speed as well as varying peculiarities in their style of sending. The first operator may be sending by hand while his relief may use an automatic transmitting device, thus creating varying conditions, all of which should be anticipated during the first adjustment of the transmitting apparatus.



## A FEW HINTS TO OPERATORS.

One of the most common sources of delay to branch office traffic is due to the habit many operators in the main office have of turning the switches to "ground" the moment a loop opens temporarily and not reporting the same promptly. In most cases the openings are legitimate and unavoidable, such as those which occur when a newspaper loop is cut in or out. In such cases the operator should try the normal position again every few words in order to ascertain whether the loop has been closed, restored, or permanently shifted, and after a reasonable wait notify his chief. Should he fail to take this precaution the facts in the case may not be discovered until much harm has been done.

Another frequent source of openings in the local circuit is due to the rough treatment the circuit closers of the keys are subjected to by operators using automatic transmitters. If proper precaution is not taken the wedges inserted in the circuit closer of the key soon bend the thin disks out of shape with the result that when the lever is replaced it does not always make a firm contact. In some cases it will not close the local circuit at all until again bent to its normal position. If operators will bear this fact in mind a great deal of unnecessary trouble may be avoided.

Operators should also avoid spilling ink on the disks of the switch lever. Dry ink is a very poor conductor of electricity and creates a very high resistance in the local circuit when the disk is partially covered in this manner. Hence if operators wish to have strong "locals" they must see that the current is not weakened by ink marks due to their own carelessness. If in addition to following these suggestions one will also get into the habit of examining all the binding post and other connections on his desk he will leave but few avenues of annoyance open to interfere with continuous good service.

**Recent Telegraph and Telephone Patents.**

A patent, No. 936,009, for telephone stand, has been secured by E. A. Metcalf, of Forbes, Mo.

A patent, No. 936,140, for a telegraph system, has been granted to W. Leivesley, of Springsure, Queensland, Australia. A telegraph system having a main circuit, a key and a principal relay therein, a repeater and a battery.

A patent, No. 936,304, for the transmission of electrical power, has been taken out by C. L. Chisholm, of Marysville, N. B., Can. Electro-harmonic printing telegraph with keyboard at sending end and a receiving typewriter or the like at the receiving end. Tuning forks control the generation of electrical currents.

Patents Nos. 936,373, for a selective ringing key; and 936,374, for a telephone trunking system, have been awarded to C. A. Simpson, of Chicago, Ill.

A patent, No. 936,432, for a telephone, has been granted to H. Eccles, of Laeclde, Mo.

A patent, No. 936,495, for a telephone system, has been secured by F. C. Unger, of St. Louis, Mo.

A patent, No. 936,538, for a circuit for propagating wave forms, has been taken out by D. C. Jackson, of Madison, Wis. Avoids the condenser effect on telegraph lines by providing inductance continuously throughout the cable by winding the conductor about a magnetic core, the core being in circuit.

Patents Nos. 936,849 and 937,032, for a printing telegraph, has been granted to J. C. Barclay, of New York. See description in another column.

**Personal.**

Mr. H. B. Perham, president of the Order of Railroad Telegraphers, was a New York visitor October 16.

Mr. George S. Chapman, formerly manager of the Martha's Vineyard Telegraph Company, at Martha's Vineyard, but now engaged in other business at Provincetown, Mass., was a recent New York visitor, the guest of Mr. George C. Golart of the electrical department of the Merritt and Chapman Wrecking Company.

Mr. P. V. DeGraw, the well-known old time telegrapher, now fourth assistant postmaster-general, was one of the principal speakers at the convention of the National Rural Letter Carrier's Association held recently at Rochester, N. Y. Mr. De Graw has under his supervision the operation and extension of rural free delivery.

Mr. James P. Bradt, the well-known old time telegrapher, who for the past ten years has been connected with the Columbia Phonograph Company as manager at Baltimore, Berlin and London, has returned to this country to remain here permanently. He has business propositions under consideration from New York, Washington and Canadian houses.

At the monthly meeting of the Technical Publicity Association at New York, October 14, Mr. H. M. Post, advertising manager of the Western Electric Company, told of plans for a systematic, analytical study of effectually tracing results from trade paper advertising. The keying method, he said, has proved inadequate. There should be some way of determining the effect of such advertising, declared Mr. Post. At the conclusion of a discussion of this subject in which every point of view was presented, Mr. Post was made chairman of a committee to outline this study work for the association.

Mr. Walter P. Phillips, of Bridgeport, who, in addition to his connection with the Columbia Phonograph Company, has organized a subsidiary company of his own, the Electric Novelty and Talking Machine Company, has associated with him as consulting physicist, Patrick B. Delany, whose entrance into the talking machine field is certain to result in his placing his imprint on the art. Mr. Phillips has been at Nantucket considerably

this summer, and it is reported that Mr. Delany and he have worked out some quite important things in sound recording and sound reproduction, of which more will be heard hereafter, and for which Mr. Phillips disclaims all credit, saying simply that "Delany is surely a wonder."

### Western Union Telegraph Company.

#### EXECUTIVE OFFICES.

At the meeting of the board of directors held October 20 the old officers were re-elected as follows: Robert C. Clowry, president; George J. Gould, J. B. Van Every, Thomas F. Clark, and G. W. E. Atkins, vice presidents; J. C. Willever, secretary; F. J. Scherrer, assistant secretary; A. R. Brewer, treasurer; Lewis Dresdner, assistant treasurer; John F. Dillon, general counsel, and G. H. Fearons, general attorney.

Executive Committee: Robert C. Clowry, Jacob H. Schiff, John T. Terry, Frank J. Gould, George J. Gould, William L. Bull, Edwin Gould, Joseph J. Slocum, and Thomas H. Hubbard.

Mr. J. E. Jenkins, inspector at New Haven, has recently installed a new switchboard in the Montpelier, Vt., office.

Mr. S. R. Crowder, of Atlanta, Ga., electrician of the southern division, was a recent executive office visitor.

Messrs. Wm. Finn and Stephen D. Field, who have recently been in Havana installing Mr. Fields' latest type of quadruplex there, and at Key West, on the Key West-Havana cable, returned to New York, via Key West and Tampa, October 19.

#### RESIGNATIONS AND APPOINTMENTS.

Mr. W. J. Higgins, chief operator of the Buffalo office, has been promoted to the managership to succeed Mr. W. A. Sawyer, who was appointed to the superintendency at Philadelphia. Mr. H. F. Whetzle, assistant chief operator, has been appointed chief operator vice Mr. Higgins.

Miss P. A. Cairns has been appointed manager at Newburgh, N. Y., vice Mr. C. J. Diehl, resigned.

### Postal Telegraph-Cable Company.

#### EXECUTIVE OFFICES.

President Clarence H. Mackay and Vice-President C. C. Adams left October 18 on a tour of inspection of the company's properties. The territory to be gone over will extend as far as the Pacific Coast, and the itinerary embraces about 10,000 miles of line.

President Clarence H. Mackay was at Reno, Nevada, Saturday, October 23, to dedicate the athletic field which he has given to the University of Nevada. While at dinner with the president of the college a body of the students entered and, carrying Mr. Mackay out on their shoulders, drove away with him, taking him to a lonely place in the hills, where they entertained him at a barbecue in true western style, Saturday afternoon, dressed

in a cowboy suit which was presented to him by the students, Mr. Mackay started the football game between the college team and an eleven from San Francisco. The Nevada boys won, and Mr. Mackay gave the team \$5,000, besides adding a good sum to the large amount which he has already contributed toward the general athletic expenses of the college.

Mr. E. B. Pillsbury, general superintendent, has been enjoying a vacation, which included a trip to Virginia.

Under the supervision of the electrical engineers the work of placing a new main switchboard in the New York operating room is going rapidly forward. An entirely new fireproof angle iron and slate switchboard is gradually taking the place of the wood and slate switchboard without disturbance to the traffic. It is probable that angle-iron switchboard frames will become standard and that few wooden frames will be used in future.

#### RESIGNATIONS AND APPOINTMENTS.

Mr. L. L. Apperson, chief operator at Vicksburg, Miss., has been transferred to the chief operatorship of the Mobile, Ala., office.

### The Results of Rowland Operation.

The letter signed by Mr. C. P. Bruch, vice-president of the Postal Telegraph-Cable Company, which we printed in our October 16 issue upon the subject of "The Results of Rowland Operation," appeared also in the *Electrical World*, together with the following editorial footnote:

"Until our telegraph systems are radically reorganized from top to bottom on the basis of machine telegraphy, and manual telegraphy is finally consigned to the tomb that has been yawning for it for the past thirty years or more, the telegraph industry will continue to lag far behind all other electrical development. Almost necessarily machine telegraphy cannot be conclusively advantageous under present traffic-handling methods."

In his reply to these editorial utterances Mr. Bruch says:

"These remarks evince comprehensive ignorance of telegraph requirements and methods. It is hard to believe that the responsible editor of any electrical paper would be willing to acknowledge authorship of them. I do not desire to make them the basis of a controversy.

"But if, by any possibility, any of your readers should be disposed to take them seriously, I trust that they will not be accepted as conclusive. It is a fact that machine telegraphy is not now adaptable generally to the requirements of telegraph systems in the United States; it is a fact that the telegraph industry does not lag far behind all other electrical development; and it is a fact that the present traffic-handling methods in this country are efficient and the best that have so far been devised."

### Vancouver, B. C., Notes.

Mr. E. Patterson, cashier of the Vancouver office of the Canadian Pacific Railway's Telegraph, is acting as manager, vice M. T. Quigley, deceased.

Mr. M. T. Quigley, who had been manager of the Canadian Pacific Railway's Telegraph office here for the past ten years, as announced briefly in the October 16 issue, died at his home, on October 4, after a month's serious illness. He had not been in good health for many years, and had undergone several operations. Mr. Quigley was an old timer in the business and was well known to a large number of the telegraph fraternity. In the early eighties he was a member of the Great North Western force at Winnipeg, Man., but for the past twenty years has been connected with the Canadian Pacific Railway's Telegraph at this place.

Mr. Frank Dowling, an old timer on the coast, has been appointed manager of the Dominion Government telegraph office at Prince Rupert, B. C.

Mr. T. W. Goulding, European general manager of the Western Union Telegraph Company at London, England, is in Vancouver, visiting old friends. He was formerly manager of the Western Union office in this place.

Mr. J. G. Davies, for four years manager for the Great North Western Telegraph Company at Ottawa, Ont., is now manager for the same company at Vancouver, B. C., vice T. P. Masters, who has resigned and accepted a position with the Canadian Pacific Railway's Telegraph. Mr. Davies was formerly manager of one of the Western Union branch office districts in New York City.

### The Cable.

It is reported that the Central and South American Telegraph Company will shortly distribute to stockholders a twenty per cent. stock dividend on its \$9,070,100 outstanding capital stock. This dividend represents the Central and South American Company's proportionate cost of the cable laid two years ago from New York to Colon via Cuba, the expense being borne jointly by the Central and South American Company and the Mexican Telegraph Company. The declaration will, therefore, call for the issuance of about \$2,000,000 new stock.

It is reported that the Western Telegraph Company will immediately begin the laying of the new cable connecting Argentina directly with Europe, via Ascension Island. The cable will cost about \$5,000,000, and it is expected that it will be in working order by October, 1910.

Cable communication is interrupted October 28 with:

Costa Rica	October 18, 1909
Mogador	October 18, 1909
Canton	October 19, 1909
Macao	October 22, 1909

For the third time within a month the magnetic disturbances made themselves felt on October 23, causing considerable trouble to submarine cable operation.

### Municipal Electricians.

The police and fire alarm telegraph systems of South Bethlehem, Pa., will be improved at a cost of \$5,000.

City Electrician Babcock, of Oakland, Cal., has prepared an estimate for a new fire alarm and police telegraph system for that city. The estimated cost, including a building, is \$80,000.

The Newark, N. J., city council has passed an ordinance authorizing the issuance of \$50,000 in bonds to provide for burying the wires of the fire alarm telegraph system in that city. Mr. Adam Bosch is the superintendent.

City Electrician Warren E. Fastnacht of York, Pa., has installed a combination gong and indicator at police headquarters in that city. The gong is on one circuit and the indicator on another so that in case either circuit is out of service the police headquarters will still have notice of any alarm.

Mr. J. B. Yeakle of Baltimore, president of the International Association of Municipal Electricians, appreciating the good work of Telegraph Age in behalf of the association, has this to say:

"I would be glad if I could invent a scheme to bring your paper to the attention of every member of the association. In our present condition, with only annual meetings, there ought to be some valuable aid secured through Telegraph Age if proper means were adopted to promote it. I am giving it some thought and may suggest something later. We are under obligations for your splendid notice of the recent convention and its work."

### The Magnetic Club.

The annual fall dinner of the Magnetic Club of New York will occur at the St. Denis Hotel, Wednesday, November 17. The annual meeting of the Telegraphers' Mutual Benefit Association occurring on the same day, the delegates to that gathering will be the guests of the club at the dinner. Mr. Theodore L. Cuyler, Jr., chairman of the committee of arrangements, is hard at work completing the preparations and providing an interesting program of entertainment for those who attend.

The Continental Telegraph and Telephone Company has been incorporated in New Jersey with an authorized capitalization of \$50,000,000. It is understood that the new company has been formed for the purpose of taking over independent telephone lines and it has also been intimated that it has connection with one of the independent companies which have been endeavoring to secure entrance to New York City. Its functions will be that of a holding company.



**The Code Situation.**

Since the announcement made by the telegraph companies that after December 1 new rules governing the sending of domestic telegrams in code language would be enforced, the interpretation of these rules has been widely discussed in all their aspects, but, from the many communications received by Telegraph Age, and no doubt by many others who are able to throw light on the subject, it is evident that the telegraphing public is still very much in the dark as to the meaning of the new regulations. To help clear up the situation in the minds of those who desire light on this subject, it may be well to reprint circular letters recently issued by the two telegraph companies.

The Western Union Telegraph Company's circular dated October 27, reads as follows:

The attention of all offices is again drawn to the fact that commencing December 1, 1909, all combinations of letters contrary to the usages of the various languages, that is to say, all artificial words and all combinations of misspelled or abbreviated dictionary words, will be counted, in land-line messages, at the rate of five letters, or fractions of five letters, to a word. Figures, decimal points and bars of division will be counted, each separately, as one word. In combinations of dictionary words such as "canbe," "dothe," etc., each word so combined will be counted. Words taken from the dictionaries of the various languages and used as code words will be taken each as one word.

The amended rule (No. 4) reads as follows:

**RULE 4.—WORDS TO BE COUNTED AND CHARGED FOR.**

In counting a message as directed in Rule 3, dictionary words (i. e., words taken from one of the following languages, namely, English, German, French, Italian, Dutch, Portuguese, Spanish and Latin), initial letters, surnames of persons, names of cities, towns, villages, States or Territories, or names of the Canadian Provinces, will be counted and charged for each as one word. Abbreviations of the names of cities, towns, villages, States, Territories and Provinces will be counted and charged for the same as if written in full. In names of countries or counties all the words will be counted and charged for. Abbreviations of weights and measures in common use will be counted each as a word.

Figures, decimal points and bars of division will be counted—each separately—as one word.\* In groups consisting of letters and figures each letter and figure will be counted as one word.

In ordinal numbers the affixes st., d., nd., rd. and th. will each be counted as one word.

All groups of letters, when such groups are not dictionary words or combinations of dictionary words, will be counted at the rate of five letters or fraction of five letters to a word. When such groups are made up of combinations of dictionary words, each dictionary word so used will be counted as one word.

The following examples illustrate the application of this rule:

Excursion (English dictionary)	1 word
Herzlichen Glueckwunsch (German dictionary)	2 words
Nous arriverons dimanche (French dictionary)	3 "
Dolce far niente (Italian dictionary)	3 "
Mijne groete aan mevrouw (Dutch dictionary)	4 "
Tudo esta perdido (Portuguese dictionary)	3 "
Un cabello haze sombra (Spanish dictionary)	4 "

\* To prevent liability to error, numbers and amounts should be written in words, and, when not so written, the receiving clerk will request that it be done. If the customer refuses to write the amounts in words, the message will be accepted as written and counted accordingly.

Errare est humanum (Latin dictionary)	3 words
G. W. E. A. (initials)	4 "
Van Dorne (surname)	1 word
McGregor (surname)	1 "
O'Connor (surname)	1 "
De Witt (surname)	1 "
W. H. Brown, Jr.	4 words
St. Louis (city)	1 word
East St. Louis (city)	1 "
Red Bud (town)	1 "
South Orange (village)	1 "
New York—or N. Y. (State)	1 "
New Mexico—or N. M. (Territory)	1 "
Nova Scotia—or N. S. (Canadian Province)	1 "
District of Columbia—or D. C.	1 "
Lbs. (abbreviation of weight)	1 "
Cwt. (abbreviation of weight)	1 "
Hhds. (abbreviation of measure)	1 "
1000000 (figures)	8 words
Ten millions, amount expressed in dictionary words	2 "
4442 (figures)	4 "
44.42 (figures and decimal point)	5 "
74 3/4 (figures and bar of division)	5 "
A I (letters and figures)	2 "
42B618 (letters and figures)	6 "
1st (ordinary number and affix)	2 "
10th (ordinary number and affix)	3 "
No. 185 West 22nd St.	9 "
Ababa (artificial group of 5 letters)	1 word
Hhggga (artificial group of 5 letters)	1 "
Egadol (artificial group of 6 letters)	2 words
Ceghxo (artificial group of 6 letters)	2 "
Dutimerodal (artificial group of 11 letters)	3 "
Gghrccexqdr (artificial group of 11 letters)	3 "
Dothe (improperly combined)	2 "
Itis (improperly combined)	2 "
Allright—or alright (improperly combined)	2 "
Havyu (2 dictionary words purposely mutilated and improperly combined)	2 "
<b>Exceptions—</b>	
A. M.	1 word
P. M.	1 "
F. O. B. (or fob)	1 "
C. O. D. (or cod)	1 "
C. I. F. or C. F. I. (or cif or cfi)	1 "
C. A. F. (or caf)	1 "
O. K.	1 "
Per cent (or percent)	1 "

Ample notice has been given of the change in the count of artificial words, and it is believed that code words of more than five letters offered in domestic messages on and after December 1 will be good dictionary words. Nevertheless, code messages should be closely scrutinized for infractions of the amended rule, and all evasions carefully checked up in accordance therewith. As a general proposition it may be stated that words taken from the Official Vocabulary will be passed at the single count, and code users should know or should ascertain from the publishers of their codes that the words of more than five letters therein are "vocabulary," that is to say, good dictionary words.

In cases of uncertainty or dispute the doubtful words will be referred, after transmission of the message, to the superintendent for a ruling. If offered by a responsible patron who insists that the questioned words of more than five letters are good dictionary words, the words will be checked and charged for at the single count, with the understanding that an additional charge will be made if the ruling is against the customer. If offered by transient or irresponsible patrons such words will be checked and charged for at the five-letter count, subject to refund of any overcharge shown by the ruling. Superintendents will be supplied with copies of the Official Vocabulary and will be governed thereby in settling disputed points. All appeals from their rulings on the ground that the words are good dictionary words, although they may not appear in the Official Vocabulary will be referred to this office for decision. When repeated rulings have shown that words of

doubtful character offered by certain customers are inadmissible at the single count, further reference of the question is unnecessary and such words will thereafter be counted and charged for on the five-letter basis.

Senders of code messages should be encouraged, in their own interest, to select for code arbitraries as far as possible, simple English dictionary words of not exceeding ten letters, rather than five-letter artificial words or dictionary words of foreign languages.

In the questions which are bound to arise respecting the status of certain words employes are cautioned not to indulge in acrimonious dispute with the senders of messages but to explain the new rule patiently and fully and to endeavor by courtesy and politeness to avoid giving offense in the necessary enforcement of the rule.

Advantage is taken of this circular to call attention to the fact that code addresses for domestic messages are inadmissible and that such messages offered with code addresses are to be declined.

Robert C. Clowry,  
President and General Manager.

The circular issued by the Postal Telegraph-Cable Company reads as follows:

On and after December 1, 1909, all groups that do not form words from one of the following languages—namely—English, German, French, Italian, Dutch, Portuguese, Spanish and Latin, and that are not combinations of words from these languages, will be counted, in land-line telegrams, at the rate of five letters, or fraction of five letters, to a word; and figures, decimal points and bars of division will be counted, each separately, as one word.

The rules relative to the count of cablegrams are not changed.

The changes mentioned do away with the rule that each letter in an arbitrary, unpronounceable combination must be counted as one word; but do not affect words taken from the eight languages named, and used as code words, which will continue to be counted as one word each.

The five-letter count applies to groups of letters forming artificial words and also applies to groups of letters made up of combination of misspelled or abbreviated words. In short, all combinations of letters contrary to the usages of the specified languages are made subject to the five-letter count. When such groups are made up by combining words, each word so used will be counted.

These amendments of the rule in regard to count have been made necessary because, under the rule heretofore in force four or five artificial words have been arbitrarily combined to make one ten-letter group, the result being that the Telegraph Company has been called upon to transmit, at the price of one word, such combinations as—

bacizafyih	bobekansli	chazabacha
beconalinf	bilantovre	ilpoſkapay
benewamvay	chasadacha	papdeomjay
bobilaljek	chanovabac	tovsitovto
bilefamusp	chavabacha	towastunka

It must be obvious, even to laymen, that the correct transmission of such combinations of letters is extremely difficult and expensive, because it necessitates very slow sending on the part of the sending operator and extreme care in transcribing legibly and slow counting of checks by the receiving operator, notwithstanding which, the liability of error (due to imperfect signals resulting from weather conditions, etc.) remains great, the text being absolutely unintelligible to the operators and other employes and there being no rules of spelling, grammar or construction that can be applied to guide them.

Therefore, the delay to other telegrams and the cost to the company of handling such combinations is very heavy, and telegrams containing such combinations are unprofitable, when handled at the present count.

The Official Vocabulary, compiled by the International Telegraph Bureau at Berne, is composed of words taken from the languages named. Therefore, codes made up of words taken from the Official Vocabulary will not be affected by the amendment of the rule.

A number of patrons have sent us copies of their codes, with request that we check them to determine whether the code words contained therein are to be found in any of the specified languages. It is impracticable for us to comply with this request. This is work that should properly be done by the code users or by code makers.

Other patrons have urged us to still further postpone the date on which the amended rule is to go into effect. We cannot consistently comply with this request. Everything considered, we deem the extension of time already granted, to be reasonable and think it should be sufficient, and we must, in justice to ourselves, put the changes into effect on December 1 next, as announced.

The full text of the rule as amended is printed herewith.

Edward J. Nally,  
Vice-President and General Manager.

#### RULE 4.

In counting a message, "dictionary" words (i. e., words taken from one of the following languages—namely: English, German, French, Italian, Dutch, Portuguese, Spanish and Latin), initial letters, surnames of persons, names of cities, towns, villages, States or Territories, or names of the Canadian Provinces, will be counted and charged for each as one word. The abbreviations for the names of towns, villages, States, Territories and Provinces will be counted and charged for the same as if written in full. Abbreviations of weights and measures in common use will be counted each as one word.

Examples—

Signatory (English)	1 word
Auf wiedersehen (German)	2 words
A bon marché (French)	3 "
Erba mala presto cresce (Italian)	4 "
El corazón menda las carnes (Spanish)	5 "
Errare humanum est (Latin)	3 "
J G M Jones, Jr.	5 "
Van Dorne	1 word
McGregor	1 "
O'Connor	1 "
District of Columbia (or D. C.)	1 "
New York (or N. Y.)	1 "
New York State	2 words
St. Louis	1 word
East St. Louis	1 "
New Mexico (or N. M.)	1 "
Nova Scotia (or N. S.)	1 "
Lbs.	1 "
Hhds.	1 "
Cwt.	1 "

In names of countries or counties all the words will be counted and charged for.

Examples—

United States of Columbia	4 words
U. S. A.	3 "
North America	2 "
Queen Anne County	3 "

All groups of letters, when such groups do not form dictionary words and are not combinations of dictionary words, will be counted at the rate of five letters, or fraction of five letters, to a word. When such groups are made up of combinations of dictionary words, each dictionary word so used will be counted.

Examples—

Ukugu (artificial)	1 word
Rabelu (artificial)	2 words
Bacyzafyih (artificial)	2 "
Abycazyibgk (artificial)	3 "
Hhgga (artificial)	1 word

Doyou (improperly combined) . . . . .	2 words
Canhe (improperly combined) . . . . .	2 "
Allright (or alright) (improperly combined). . . . .	2 "
Housemate (dictionary word) . . . . .	1 word

Figures, decimal points and bars of division will be counted, each separately, as one word. In groups consisting of letters and figures, each letter and figure will be counted as one word. (See note.)

Examples—

A 1 . . . . .	2 words
x9n8σ . . . . .	5 "
3/4 . . . . .	3 "
74 3/4 . . . . .	5 "
4442 . . . . .	4 "
44.42 . . . . .	8 "
165 East 22nd St. . . . .	8 "

Exceptions—

A. M. . . . .	1 word
P. M. . . . .	1 "
F. O. B. (or fob) . . . . .	1 "
C. O. D. (or cod) . . . . .	1 "
C. I. F. or C. F. I. (or cif or cfi) . . . . .	1 "
C. A. F. (or caf) . . . . .	1 "
O. K. . . . .	1 "
Per cent (or percent) . . . . .	1 "

In ordinal numbers the affixes st, nd, rd and th will each be counted as one word.

Examples—

1st . . . . .	2 words
2nd . . . . .	2 "
3rd . . . . .	2 "
4th . . . . .	2 "

Note.—To prevent liability to error, numbers and amounts should be written in words, and when not so written, the receiving clerk will request that it be done. If the customer refuses to write the amount in words, the message will be accepted as written, and counted accordingly.

As these circulars give explicit examples of the method of counting words to be followed under the new rules and state definitely that all code words found in the official vocabulary will be accepted as one word, the careful perusal of these should do much to straighten out the matter. As most of the public codes in use in this country are perhaps made up of words taken from the Official Vocabulary, they will not be affected by this change. Among these may be mentioned the Western Union Telegraph Code, which contains over 175,000 words and phrases, the Postal Telegraph-Cable code, A B C code, fifth edition, Lieber's Telegraphic Cipher code, the Commerce code, etc. The managers of telegraph offices would do well to study this subject so that they may be in a position to post their customers when any question arises. Unfortunately in several cases which have been brought to our attention managers have complicated the situation by telling customers who use standard codes that these also would have to be revised before they could be used. Practically the only code users upon whom this rule will work any hardship are those who employ private codes, which have been made up without any regard to confining themselves to words contained in the Official Vocabulary and whose words are made up of a conglomeration of letters unpronounceable and difficult of telegraphic transmission.

Telegraph Happenings Here and There.

A Kansas City telegrapher was held up one night recently by a highwayman and relieved of his money and also of his hat. The craft in general ought to feel encouraged when one of their brothers has become so prosperous as to attract the attention of highway robbers.

President Taft received recently a gold-plated telegraph key with which to open the National Dairy Show at Milwaukee. It has been suggested that the President be provided with a specially designed key which he could carry with him and use at all times when called upon to perform similar duties. It must be inconvenient for him to have to use a strange key whenever he has to do any sending.

It is reported that the Maya Indians in Mexico who have been giving the government of that country considerable trouble, stole many miles of telegraph wire and melted it up for making bullets.

An Elgin, Ill., dentist coming home from his vacation recently found that the telegraph companies had without his permission strung some wires across a building which he owned. He accordingly climbed the pole and cut the wires, which fell across the trolley wires and city electric light mains, producing a brilliant electrical display and interrupting all service on the three systems.

That the small boys of England are not unlike their American cousins is shown by the report that in the Sheffield district over one thousand telegraph insulators were broken by them in one year. This statement was made by the government when four boys were brought into court for their mischief.

Telegraph managers throughout the country should be cautioned not to use deadly voltages on their lines. The widow of a New Castle, Pa., man who was killed last spring by coming in contact with a live wire, has brought suit against the telegraph company, alleging that the wire which caused his death belonged to them. Damage is claimed because of the negligence of the company in not providing a wire strong enough to withstand the severe sleet storm which affected this part of the country last spring.

A Springfield, Ill., messenger boy moved quickly for once at least when in taking hold of an electric light bulb he received a severe shock and was unable for some time to release his grip upon the source of current. In describing the accident a local paper said that he stood on his head, his feet and his hands all at the same time and, in fact, looked like a Ferris wheel going round.

In Maine a telegraph lineman seems to be a person of no small importance. A train on one of the railroads of that State was stopped recently in order to give a Western Union lineman who was on the train an opportunity to shoot a deer which was feeding along the track.

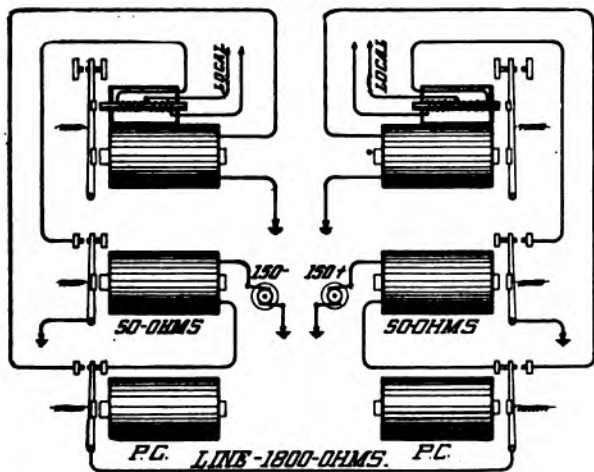


### A Simple Duplex.

BY W. W. HOSKINS, ATLANTA, GA.

The sketch herewith shows only the main connection of this novel and surprisingly simple duplex arrangement which I have devised and tried out, and omits battery resistances, which are supposed to be understood. Either Weiny-Phillips repeater relays or Athearn repeater relays may be used. All contacts should be adjusted to work as close as possible.

In balancing, the operator at the distant end opens his key, adjusted his Weiny-Phillips relay while the home-station operator is dotting, and at the same time the home-station operator increases the tension of the spring on his fifty-ohm relay until it stands against the back stop without being affected by his own battery. This operation is then reversed and the equipment is ready for service.



THE W. W. HOSKINS DUPLEX.

The sketch shows the pole-changers at each end closed, in which position the batteries of opposite polarity being to the line through the coils of both fifty-ohm relays the double quantity of current pulls the armatures of the fifty-ohm relays from their back stops. This operates the third coil on the Weiny-Phillips relay, making the "closed" signal at each end; in this position the main line coils of the Weiny-Phillips relay are entirely out of service.

Next open the key at the home station. The distant battery then finds ground through the back stop of the pole-changer and the main coils of the Weiny-Phillips relay, while the home fifty-ohm relay is thrown out of service, its back stop releasing the third coil of the Weiny-Phillips relay, leaving the main coils of the latter under full control of the distant battery.

The sketch shows one hundred and fifty volts positive at one end and one hundred and fifty volts negative at the other. While it is better that the same potential be used at each end, it is not absolutely necessary for the reason that the adjustment of the Weiny-Phillips relay is al-

ways for the distant battery and that of the fifty-ohm relay for the home battery, the home pole-changer throwing first one and then the other in and out of commission.

### The R. W. Martin Fund.

The fund for the relief of this well-known old timer is growing slowly, but like many other good causes, has its ups and downs, and since our last issue has not increased as much as the committee having the matter in charge had hoped from the generous response which had been made to their appeal during the two weeks preceding our previous issue.

The committee in charge of the fund consists of J. B. Taltavall, of Telegraph Age; Charles W. Price, of the Electrical Review; T. Comerford Martin, of the National Electric Light Association, and T. A. McCammon and Fred Catlin, of the Western Union Telegraph Company. All contributions should be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

Miss Mary J. Macaulay of Lockport, N. Y., sends us \$7.00 as an additional subscription to the fund. Of this amount Miss Macaulay herself contributed \$3.00, in addition to the \$5.00 which she remitted to us some time ago. Since that time during a visit to New York she took occasion to call at the Martin home and learn for herself the true state of affairs.

Mr. J. J. Ghegan, president of the J. H. Bunnell and Company, Incorporated, New York, in remitting \$5.00 to the Martin fund on October 25, says:

"I enclose herewith \$5.00 for the Martin Fund and trust the amount may continue to increase sufficiently to make the remaining days of this veteran telegrapher comfortable."

Mr. Charles Shirley, assistant traffic superintendent of the Postal Telegraph-Cable Company, New York, in remitting \$5.00 to be added to the fund, says: "Walter Phillips does well to call our attention to the necessities of our old friend Bob Martin. Allow me to add a little for his comfort."

The amount received to date is: Previously acknowledged, \$374; Mary J. Macaulay, Lockport, N. Y., \$3.00; Thomas E. Sullivan, Buffalo, N. Y., \$2.00; H. H. Pfeiffer, \$1.00, and J. F. Sullivan, New York, \$1.00; all through Mary J. Macaulay, Lockport, N. Y.; R. J. Murphy, \$1.00; T. B. Yarborough, \$1.00, and C. M. Cunningham, New York, \$1.00, all through Fred Catlin, New York; J. J. Ghegan, New York, \$5.00; Charles Shirley, New York, \$5.00; total, \$394. Of this amount \$274.50 has already been paid to Mrs. Martin, leaving a balance of \$119.50 now in the hands of the committee.

Mr. C. S. Rhoads, superintendent of telegraph of the Big Four System, Indianapolis, Ind., writes us that Telegraph Age in his opinion improves with "age."

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NOVEMBER 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 principle cable codes, will be sent to any one asking for the same.

## Railroad Telegraphers Are Progressive.

The report of Interstate Commerce Commission Inspector M. C. Keefe to the effect that since the enforcement of the eight-hour law on railroads, telegraph operators have difficulty in finding ways of occupying their spare time, has aroused a storm of criticism from railroad telegraphers all over the country. Those who are well acquainted with conditions in railway circles assert that this view of the case is far from correct and does an injustice to the great mass of progressive railroad operators. As a proof of this they show that during the past year over one thousand members of the railway telegraph profession have engaged in other fields of endeavor. A large percentage of these have entered upon professional careers, the ranks of lawyers, doctors and clergymen receiving many recruits from this source. Others by devoting their time to familiarizing themselves with the different branches of the railroad service have prepared themselves for promotion. Of this fact the great number of former operators who are

daily being promoted to higher positions in railroad circles is ample proof.

In explanation of his statement, Mr. Keefe said that the ranks of the operators are not now, as formerly, recruited from the sons of farmers, who took employment merely as a means of continuing their studies, and worked at their books during the frequent periods when their instruments were silent and they had nothing either to receive or send over the wires, but that in the majority of cases the present-day operator is a city-bred boy, with only the bare rudiments of an education and no realization of his need for more. He often becomes an expert in the manipulation of the telegraph key, but it is practically impossible for him to rise further than a position in the train dispatcher's office, since he lacks the sort of information which would render him capable of participating in the management of the road.

This analysis of the subject would not on the face of it seem to cover the entire situation. In the first place, it characterizes all city-bred boys as belonging to the class which has little education and little desire to learn. While this may be true of many, it still seems that it does an injustice to a large percentage of the boys born and brought up in the city, who have as great a desire to learn as their country brothers. The average young man, who has always lived in the city, if he is not of a studious disposition, would find life in any of the small towns in which the greater part of the railway operators are located very dull indeed, whether he worked twelve hours or eight, and would not be likely to remain in such a place very long.

As the inspector quoted did not produce any statistics in support of his claim and merely made his statement as a generality it is probable that his investigation, if it actually found the conditions described covered only a few isolated cases, and he certainly could not have made such a statement as a result of a thorough study of the situation. We have always maintained that the telegraph was a stepping stone to something better in business or professional life, and this statement covers the railroad as well as the commercial branch of the service.

## The Telephone.

As the telephone is extensively used in telegraph offices these days for sending, receiving and delivering messages, we have been asked to give the best mode of procedure to be followed in using the telephone for this purpose. Those who have had considerable experience in this method of transmitting business state that when the receiving operator is ready the person sending the message should first give the name of the person and place to which the message is being sent, and then spell out the words. This method of first repeating the words and then spelling them out should be followed throughout the message. When through the receiving operator should repeat the message back, spelling out only



the figures, names, or difficult words. While this method of procedure may seem unnecessarily long and cumbersome, it has been found by actual experience after operators have become used to handling business in this way that it actually gave faster service than Morse operation, and was more reliable. On one railroad way wire having about twenty stations as high as four hundred and fifty messages per day have been handled by telephone. When this line was operated by Morse the wire was exceedingly busy when two hundred and fifty messages were exchanged in one day, while with only that number of messages to be sent by telephone the operator has plenty of time to rest, and is hence relieved of much nervous strain.

We would like to hear from any of our readers of other methods of handling telegraph business by telephone that have come under their observation, and we will be glad to give space in our columns to a description of such methods, the object being to work out the best possible system of handling messages by telephone, whether train orders, commercial business, or press matter.

#### **The Magnetic Storm in England.**

According to the London Electrical Review the magnetic disturbance of September 25 began in England, about mid-day, and lasted, in the case of the lines to Scotland and the northeast of England, for about three hours. Intermittent interruptions occurred up to 9.30 p. m., and in Scotland there was further trouble the next day. The phenomena were most noticeable on the longer lines, and affected the submarine cables to some extent. The underground telegraph lines to Birmingham, Manchester, Liverpool and Glasgow, which have metallic returns, were not affected. Auroral displays were observed in northern and southern regions, and there was an exceptionally mared spot on the sun, to which the storm was probably due. It was reported from Kew Observatory that the disturbance was of a highly oscillatory character, and the recording apparatus was unable to register the extreme range, owing to the curve having run across the full width of the paper. The compass needle moved 70 degrees to the west and then 85 degrees to the east, and the horizontal force showed remarkably large variations.

#### **Two Types of Magnetism.**

Dr. Daniel F. Comstock, of the physics department of the Massachusetts Institute of Technology, is engaged in important research work in the field of magnetism. He is working on a theory that every substance possesses two kinds of magnetism instead of one. This would mean that even iron has diamagnetic properties. With Instructor George E. Washburn he has devised a method of separating the two types, if they exist, and of studying each separately.

#### **Book Reviews.**

"Peggy-Alone," by Mary Agnes Byrne (Saalfield Publishing Company, Akron, Ohio, 334 pages, illustrated; price \$1.25), is the latest book from the pen of this well known Pittsburg member of the telegraphic profession who has produced several charming and delightfully interesting books for children. The present volume details the experiences of a crowd of girls who called themselves the Happy-go-Luckys and who did not depend upon riches to have a good time. Peggy-Alone was a girl who had riches but did not have a good time. The club elected her to membership out of pity and gave her the jolliest summer of her life.

"Manual of Wireless Telegraphy for the Use of Naval Electricians," by Lieutenant Commander S. S. Robison (published by United States Naval Institute, Annapolis, Md., 129 pages, 60 illustrations), is, as its title indicates, written for the use of naval electricians who are interested in wireless telegraphy. The book has five chapters dealing with: general review of facts relating to high frequency currents; quantitative consideration of high frequency phenomena; damped and undamped oscillations; sending circuits and receiving circuits. In the appendices are also given many valuable notes upon aërials, wave lengths, tuning, installation and operation of wireless stations with official regulations in force governing the use of the United States naval coastwise telegraph service. This work is up to date, well written, and free from abstruse mathematical formulæ, and in fact should be a valuable addition to the library of any wireless engineer or student. Price, \$1.50. Copies will be sent upon receipt of price by J. B. Taltavall, Telegraph Age, 253 Broadway, N. Y.

#### **Secret Type-Printing and Radio-Telegraphy.**

According to the Post Office Electrical Engineers' Journal, of London, a Norwegian captain named Hovland has invented a system of secret type-printing for radio-telegraphy, and lately gave a demonstration of it in Melsomvik, Norway, to the local authorities and the press. Wireless telegrams were exchanged between a station erected by the inventor and a station at Tjömö, belonging to the Norwegian navy, over a distance of twenty kilometres. By the experiments Hovland showed how it was possible by means of his system to ensure absolute secrecy of communication and how easily ordinary type could be automatically converted into secret characters. The characters are transmitted by means of a keyboard similar to that used on an ordinary type-writing machine. On receiving the receiving station the telegram may be received at will in secret or ordinary type. Hovland is a Norwegian naval officer, and has had considerable aid in perfecting his invention from the naval authorities of Norway, at whose disposition he has placed the results of his labors.

## OLD AND RECENT TOURNAMENTS.

### General Information as to Early and Late Speed Trials, with Incidental Comments on the Persons Concerned in Them, and Unnecessarily Complete Reports, Perhaps, as to the Part I Myself Played in Them and in Other Related Events.

BY WALTER P. PHILLIPS.

(Continued from page 725, October 16 issue.)

The first great sending records on an extended scale were made in 1868 when Mr. Cromwell Fleetwood Varley, of England, visited this country with his quiver full of argumentative arrows as to why the world would be benefited by the adoption of an universal alphabet—the Continental, so called. General Eckert, with that directness that has always been his chief characteristic, said, in effect: "Your alphabet, Varley, is too slow; this is a growing country; we have more business to send than we have wires to send it on. If you brought to our attention a faster alphabet than the Morse we might consider it. But I was born in Ohio, a long way from salt water, and the crab does not commend itself to my judgment excepting as an article of diet. He is too slow and I think I have heard that he travels backward, and this new alphabet is too much like the crab to ensnare the fancy of telegraph superintendents and American operators. Now I'll do this: I'll get some of our boys to show you what can be done with the Morse alphabet and you take the records home and let your English high flyers see what they can do with the Continental. If they can beat us then it will be clear that we ought to change."

General Eckert thus convinced the fair-minded British visitor that he entertained honest doubts about the speed capabilities of the Continental alphabet—doubts which have not been dispelled even unto this day. In accordance with General Eckert's proposition the speed trials began, big-fisted Richard J. Hutchinson, of New York, sending 1,352 words in half an hour to N. J. Snyder, of Philadelphia, and E. M. Shape, of Milwaukee, sending to Edward Curry, of St. Paul, 2,631 words in an hour, a record that was thought to be unapproachable, and apparently ended the trials in a very satisfactory manner. Some one suggested, however, that Patrick Henry Burns, then a law student at Harvard, who was working nights, more or less, in the Boston office of the Western Union, should take a hand. Burns had been for two years operator at Worcester, having succeeded Patrick B. Delany, who has since won great renown as an inventor, student and savant, the best known telegraph inventor, next to Edison, that we have. This young man Burns had not only sustained the reputation of Worcester as a training school for receivers which had been created by Oscar Willis and Delany, but he had shown his ability during a regatta by demonstrating that only Fred Catlin,

the famous Fred Seibert, Michael J. Sherman and one or two others could copy him. During his stay in Worcester he slaughtered more telegraphic reputations than any sender who ever lived and at the same time he raised up a coterie of adherents, of whom I was one, who maintained that he was the best fast sender that they had ever heard and he proved it in his final contest with Kettles, of Fall River, for the latter was without rivals, between Washington and Boston, until Burns floated in on the scene with a chip on his shoulder. Among those who believed in Burns were Fred Catlin, Ed. Schermerhorn, Fred Seibert, Jesse Bunnell, Pat Mullarkey, Frank Beach and Al Burkholder, all of them fast and magnificent senders themselves, with the exception of Seibert. Fred started out all right, as Thomas Carlyle did as a writer, but he became contaminated with what was then called the Pittsburg style, even as Carlyle did by his excursions into German literature, which led him into his later involved and unpleasant style. Boston's particular shining light, John E. Wright, could take Burns with one hand tied behind him, as we used to say when we were boys. The reputation that Willis, Delany, and Burns made for Worcester was ably sustained, in after years, by Charles H. H. Cottrell, now of New Orleans, D. B. Grandy, now identified with the telephone interests of St. Louis, and Phineas L. Rider and John Perley Munroe, both now engaged in business in Worcester. For many years Mr. Munroe was connected with the editorial department of the "Spy," and for several years he represented Worcester in the Massachusetts legislature. When he came to that city as the night operator he was the youngest man on the wire, being but eighteen years old, but a finished operator with whom it was a great pleasure to be associated. He came from Concord, N. H., and he reflects credit on his state not only as a telegraph operator, but as a sterling man whose manhood can be spelled with a large M with entire safety.

Mr. Shape having made the wonderful record of 2,631 words in an hour, and Mr. Curry of St. Paul having copied them in the fine Canadian style of writing that has since made so many of the cable service operators the objects of our admiration, Burns woke up and in a spirit of bravado took a copy of "Gulliver's Travels," marked off one hundred words more than Shape had sent, making the number 2,731 words, and began practicing on it. I was very familiar with his sending. I was the night operator at Providence and used to go to Pawtucket, at frequent intervals, to visit the lady who is now Mrs. Phillips. Theoretically, I caught the 5:45 p. m. train and was at my desk in Providence when New York called for report at 6 p. m., which, as time was computed in those days was 6:12, Providence time. Once in a while I missed the 5:45, and trains not being as frequent in those times as they are now, the first one I could get was the 7:40, bringing me to Providence a little after 8 o'clock. I had an arrangement with Burns to fill me in, whenever I

loitered too long at Pawtucket and missed the 5:45 train. By the time I arrived, New York would have been sending some two hours, and on a short wire, in a whirlwind of dots and dashes, Burns would fill me in, in one hour—often less—with all that New York had sent since 6:12—some three hours' constant sending, interrupted, of course, more or less, for the various reasons that cause delays in press wires where some man who is alone is let in to send a train-report message, another is excused to wait on a customer, etc. At the psychological moment Burns would say: "Open No. 4," and in the next sixty seconds, or less, he would fill me in with the last word New York had sent, and I would then hurriedly transfer my manifolded outfit to the regular desk and tell New York where to go ahead. As it would be the first lisp that had been heard from Providence since Mr. Hurlburt, the day operator, answered for me and went home, New York put

editorial work in splendid shape. His activity in connection with Arctic and other explorations, during the past quarter of a century, is a very natural expansion of the thorough and intelligent methods which he applied in the condensation of the undigested mass of telegraphic information that was concentrated and placed at his disposal, in extenso, in the office of the parent institution in those days—the New York Associated Press—at whose head and permeating the organization throughout was the interesting personality of James W. Simonton.

The reputation of No. 4 East, which extended from the Atlantic to the Pacific, had been made by such senders as Dixon F. Marks, George Clarke, Alfred S. Brown, Fred Catlin, M. C. Bagley, Fred Seibert, W. D. Gentry and such receivers as the Fairchilds, Dwight B. Case and William R. Plum at New Haven, Ralph W. Pope at Providence, Henry Denver at Springfield, George K. Walcott and Gershom B. Hubbell at



EDWARD CURRY



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WILLIAM J. LLOYD

up with the slight delay and was scarcely ever disagreeable. In these days, when some of the press circuits are left open for three or four minutes, such a delay as my scheme involved would cause no comment, but ours was a star circuit and no one was expected to do much breaking, say nothing of leaving the wire open. Referring recently to No. 4 East, Henry Denver said: "That old circuit had the best set of operators on it with whom it was ever my good fortune to mingle, with Marks, Gentry and their running mates trying to put it up our backs. Yet the old quill drivers kept in tune with their music, and a break from any of the old guard was something of a surprise. You well remember it all. We are not shouting. We don't have to."

The admirably edited reports which we copied were a pleasure to handle. They were prepared by Herbert L. Bridgman, the gentleman now so prominently in the public eye as the Secretary of the Peary Arctic Club. He is an Amherst man, both by birth and education, and he did his

Hartford, Thomas A. Edison, John E. Wright, E. F. Leighton, Gerrit Smith and Henry S. Martin at Boston, Oscar Willis and P. B. Delany at Worcester, Merton Reynolds at Norwich, Charles Crandall at Taunton, E. A. Beardslee at Fall River, and Benoni Paine and James Smith at New Bedford. So I was exceptionally well equipped to do the work that Burns suddenly called upon me to perform, and it was a little faster than the record shows. All that Burns cared for was to beat Shape's record for one hundred words. He did not occupy the entire hour—probably not more more than fifty-eight minutes, corrected time. It was a showery night and lightning knocked him out several times, but he was a man with an inexhaustible supply of dots and dashes on tap, and when the lightning came in he felt it out with his nervous fingers, and as soon as he was satisfied the wire was clear, he would make up for lost time in a manner reminding one of the flight of some modern railroad trains when they have fallen behind from

unavoidable causes and desire to get back to their running schedule. When he had sent the 2,731 words, the elapsed time was somewhere between fifty-seven and fifty-nine minutes.

On the theory that too close an examination of the mouth of a gift horse is not polite, I had taken from Burns, without a break, whatever he had to offer and in any form that he chose to furnish it, all of the missing matter that I needed as a result of my delinquency in reporting for duty owing to my attempts to launch my craft of happiness on matrimonial seas and so I had no occasion to break him on the 2,731 words, though I did make one condition and that was that he should substitute something for the name Glumdalclitch, saying that I could never spell it, as he would pack it in, with me trailing from five to fifteen words behind. I suggested the word Pekin as a substitute for Glumdalclitch, and that was the only change made in the text as it appears in Dean Swift's standard works.

to hold his watch and when the minute was up to reach over from behind the low-backed table where he stood and open the key. He followed my suggestion and when he counted up the words on the blank he found there were fifty-nine of them. He kept the blank, and afterwards, when I had won a little recognition as a journalist in New York and Washington and had written a book or two, hung my picture in his office, where, I dare say, it is hanging now, and we became great friends. He had done great things for Providence, and he regarded me as a kindred spirit who had done something out of the ordinary, and he liked me for it. In his death, Providence lost a friend indeed and I lost an admirer whose fealty even if somewhat exaggerated was none the less agreeable. In spite of his chaffing, Burns had promptly submitted my copy to the telegraph editors of the leading Boston papers and even as he teased me, certified copies of the following letters were on their way to Providence:



E. C. BOILEAU



GEORGE M. EITEMILLER



JAMES P. BRADT

The Providence Journal, the next morning, had a pleasant account of what Burns and I had done, and it brought to the office Hon. Thomas A. Doyle, mayor of the city, to congratulate me. He said he could not conceive of a man sending so many words in an hour, though being a fast and wonderful penman, he did not enthuse unduly over my share in the transaction. He took kindly to my suggestion that I call Burns up and have him send a little. I attempted this, and Burns pleaded a headache, jeered at me about my copy of the night before which he had under critical examination, but finally consented to send for one minute. He presently found a copy of the Boston Post of that date and sent from an editorial article. He was off in a second, without warning, and I hardly had time to seize a bunch of blanks and a pencil before he had sent half a dozen words. I had told Mayor Doyle

Office of the Boston Journal,  
Boston, May 7, 1868.

Mr. P. H. Burns,

Dear Sir: The original of your message of twenty-seven hundred and thirty-one words, sent hence by you last night within one hour to Mr. Walter Phillips, of Providence, has been examined by me, and I am free to say that it would constitute what I consider, taking the average quality of telegraphic despatches, excellent copy for the printer. We are very fortunate, as you know, in having good copyists connected with The Associated Press, which fact enhances the comparative merit of your work and that of Mr. Phillips. Congratulating you on the fame which your recent feat has already assigned you, I am, dear sir, yours, very truly,

John C. Moore.

(To be continued.)

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.



### Care and Operation of Storage Batteries.

At a meeting of the Western Society of Engineers, held in Chicago recently, Mr. H. M. Beck, one of the engineers of the Electric Storage Battery Company, delivered an interesting illustrated lecture on "Care and Operation of Storage Batteries." As reported by the *Electrical World*, Mr. Beck said that the space where the battery is installed should be suitable for the purpose in accessibility, ventilation and light. As the escaping fumes of a storage battery may be explosive under some conditions, the matter of ventilation is particularly important. An exposed flame should not be brought near the battery. In installing the battery care should be taken to see that the cells are properly connected as to polarity. This is, of course, self-evident, but the speaker remarked that it is astonishing how many people, including battery men themselves, sometimes neglect this fundamental precaution. Another point is to be sure that the wood separators are always kept wet.

Initial charging of a battery should be long and thorough, and should last at least 60 hours. After setting up the batteries should be charged at once, as the plates are liable to sulphate if left standing before the initial charge. It is of prime importance to have the initial charge complete; it is better to have it too long than too short.

In regular operation the charging of a battery is the most important feature in connection with its use. There should be occasional overcharges—that is, prolonging the charge beyond the time when the voltage and specific gravity reach the maximum—and these overcharges should last from one to four hours after the maximum capacity of the battery has been reached. To determine when the cells are fully charged, gravity tests are to be recommended in preference to the use of the voltmeter, whenever practicable. Mr. Beck showed a number of recent improvements in hydrometers, including hydrometer syringes and signal hydrometers—that is, hydrometers arranged to give a signal by ringing a bell when a predetermined gravity has been reached.

It is very important to keep the height of the electrolyte permanent. For this purpose automatic cell fillers are used in large installations. Charging is complete when the maximum gravity or voltage is reached. In discharging the principal precaution to be observed is not to discharge the battery too far; the discharge limit of the manufacturer should never be exceeded. Test readings are valuable, and it is well to keep a record of them.

In inspecting the batteries the operator should look out for falling off in gravity or voltage. Notice whether there is a lack of gassing in charging or a change in the color of the plates. In cleaning the cells the plates should not be allowed to get dry. To replace evaporation distilled water should be used if pure rain water or satisfactory spring or river water (by analysis) cannot be obtained.

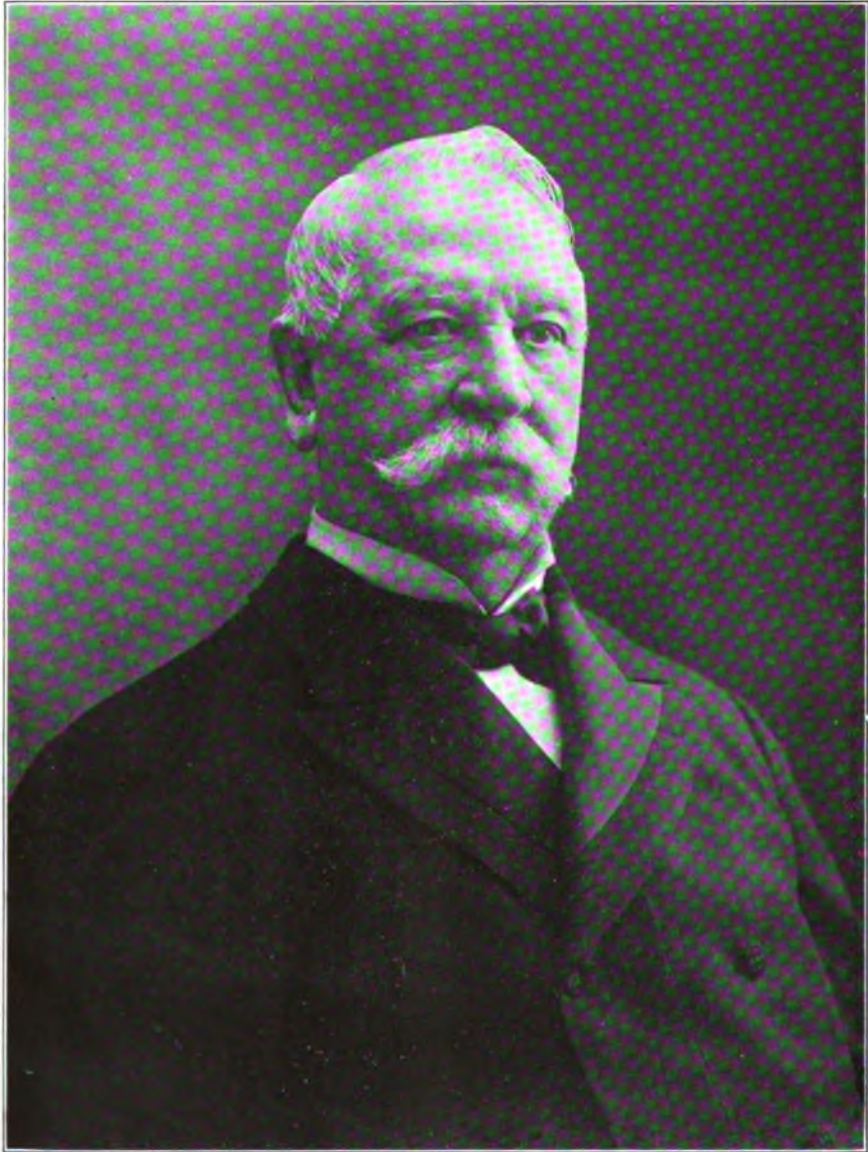
Some of the practical precepts of Mr. Beck were as follows: Avoid incomplete charging. Do not replace the evaporation with electrolyte instead of water. The cadmium test is not recommended for general use, and if used should be employed with care and intelligence. However, if properly used it is sometimes a help in determining the relative condition of different cells in a battery. The new mercury type of ampere-hour meter is promising for use in determining the input and output of a battery under certain conditions. It is to be remembered that the efficiency of a battery varies with the amount of work it does. If a battery is to be kept in good condition, it must be overcharged occasionally at, say, two-week intervals, and, by means of the ampere-hour meter, readings should be kept of these overcharges and also of the regular charges to observe the conduct of the battery compared with its own previous record.

In conclusion, the lecturer explained a number of pictures designed to illustrate more particularly the use of batteries for railway signaling and car lighting. In the discussion Mr. Beck answered a number of practical questions. He said that in overcharging the rate of charge should never be below one-half of the normal rate, and probably the normal rate is preferable. Glass covers for battery jars or tanks are a good thing where wood separators are used; they cause some trouble where it is necessary to remove them for inspection. The use of wood separators is recommended in old cells, and they should be put in at the time of cleaning. There is little objection to continuous charging at a low rate of charge.

In case the battery is not going to be used for a number of months it is best to charge it at intervals of, say, two weeks, and for the rest of the time allow it to remain on open circuit. An alternative is to take the battery apart entirely, but this requires considerable trouble and on re-assembling the battery is to be subjected to a long initial charge, as in the case of a new battery. It is not necessary to discharge a battery not in use if kept on open circuit. In ordinary operations the deterioration of positive Planté plates due to gassing is not apt to prove very serious; there is a greater possibility of danger from this cause in the use of pasted plates.

In high temperatures, batteries are unfavorably affected in efficiency in several ways. Low temperatures, on the other hand, have no permanent effect on storage batteries. The freezing point of 1200-point electrolyte is twenty-five degrees below zero Fahrenheit. An electrolyte of 1250 points will not freeze at fifty-five degrees below zero Fahrenheit, although it will become thick. The life of any plate depends entirely on how it is used. Rolled-lead negative plates have given steady service for five years. A small amount of blistering on plates is not alarming, as it is normal in some types of batteries.





GENERAL THOMAS T. ECKERT.

### The Retirement of General Eckert.

The news of the resignation of General Thomas T. Eckert from the chairmanship of the Board of Directors of the Western Union Telegraph Company, thus severing the last link in his connection with the telegraph industry with which he has been so prominently identified for over sixty years, was received with expressions of sorrow and regret by his many friends among those with whom he has been associated during the years of his active and successful career. In his business dealings he has always been found to be a man of high integrity and sterling worth, and while his part in the direction of telegraph affairs during the past seven years since his retirement from the presidency of the Western Union has not been what would be called an active one, it is still felt that his complete severance of his relations with the great industry in the upbuilding of which he has spent practically all of his life, is a distinct loss to those who are now intrusted with the directions of affairs connected with telegraphic operation.

In 1845 while General Eckert was but a youth residing with his parents at Wooster, Ohio, he read in the National Intelligencer of Washington, a paper which his father subscribed to, about the successful installation of the telegraph between Washington and Baltimore. This awakened in him a desire to see and learn more of this new invention. Though he had no money, he started for Baltimore determined to see for himself the operation of the wonderful device. Working his passage by driving a stage coach and with the assistance of friends whom he met on the way he finally arrived at Baltimore only to learn that the man in charge there had orders from Professor Morse not to show the apparatus to any one and that he would have to go to New York if he would see the object of his search. Still working his way he arrived in New York and witnessed a demonstration of the operation of the telegraph at the Astor House, being present at the opening of the office in that hotel. He remained several days in New York devoting nearly all his waking hours to the study of the telegraph and before he started homeward he had mastered the rudiments and learned most of the alphabet. Two years later when the telegraph reached Wooster he became the operator at that place where he also acted as postmaster.

In 1851 General Eckert took a contract jointly with J. H. Wade to build a telegraph line on the Fort Wayne Railroad from Pittsburg to Chicago. He afterward became identified with the Western Union Telegraph Company remaining with them until 1859 when he resigned and went to North Carolina to superintend the affairs of a gold mining company. Returning to the North at the outbreak of the war he was called by Thomas A. Scott to enter the government telegraph service at Washington, first as manager of the office at McClellan's headquarters, and in the early spring

of 1862 as chief of the War Department telegraph staff and superintendent of telegraph lines in the Army of the Potomac. These positions he held until after the close of the war, receiving a commission first as captain, then as major, next as lieutenant-colonel, and on March 13, 1865, was made brigadier-general for "meritorious and distinguished service." He was also appointed assistant secretary of war under Edward M. Stanton. He resigned from the government service August 1, 1866, to become general superintendent of the Eastern Division of the Western Union Telegraph Company. In 1875 he became president of the Atlantic and Pacific Telegraph Company and five years later president of the American Union Telegraph Company, both of which systems were consolidated with the Western Union Telegraph Company in 1881 when he went back to that company as vice-president and general manager. Upon the death of Dr. Norvin Green in 1892, he became president of the Western Union company and in 1902 retired from active management and was made chairman of the board of directors, which position he has held until the present time.

A man of commanding presence and having an excellent physique, which he has preserved by careful living, General Eckert although near four score and ten is still strong and vigorous and the wish of his numerous friends is that he may enjoy many more years of life in well earned rest.

### Television.

Dr. Alfred Gradenwitz gives in the *Revue Generale des Sciences* a popular account of the efforts made by Professor Ruhmer, of Berlin, to realize "television" of which he claims to be the first inventor. The means employed is the selenium cell, the electrical resistance of which varies when exposed to light. As Dr. Gradenwitz points out, on these lines it should be theoretically possible to reproduce on a screen the image of anything happening at the other end of a telegraph wire, but for the inertia of the selenium cell, which takes an appreciable time before it gives signs of being effected. The difficulty has now, he claims, been surmounted by Professor Ruhmer, and the forthcoming Exposition Universelle at Brussels will contain an apparatus to be constructed, it is said, at a cost of more than a million dollars, by which scenes showing living and moving personages will be reproduced by telegraphy. The process is at present kept secret, but Dr. Gradenwitz, who has himself seen a working model of the apparatus, says that the principle consists in using a very sensitive mirror galvanometer to reconvert every fluctuation of the current caused by variations in the lighting of the transmitting screen into corresponding luminous variations at the other end. At present, as a writer in the *London Athenaeum* remarks, the affair seems to resemble a top.



### Epigrams of the Late E. H. Harriman.

The late Edward H. Harriman who before his death was such a prominent and influential figure in the railway and financial world had a habit of expressing himself in terse language. Some of his epigrammatic utterances given herewith furnish a good idea of his character as well as the reasons for his remarkable success:

No man is absolutely necessary, or even very important. If I did quit nothing would happen. This world is full of men ready to take the place of any one. The fellow who takes hold where I leave off will go right ahead. Nothing will happen if I let go. Trains will run just the same, dividends will be earned as before; so it is with every man.

As I grow older I am beginning to think more of my fellowman:

I take off my hat to the graftless capital.

I have worked hard because I like the doing of things.

Grasp an idea and work it out to a successful conclusion. That is about all there is in life for any of us.

People seem to take more stock in a man who talks than in a man who acts. But this is a day devoted to isms and it will pass.

I have always been too busy to think much about myself. The doctors are beginning to tell me that the other fellow ought to have a chance to do something.

Every tide has its rise and fall and one would be living in a fool's paradise not to take the ebb into consideration in figuring out his future requirements.

The first law of all our civilization is the co-operation of all individuals to improve the conditions of life.

To achieve what the world calls success, a man must attend strictly to business and keep a little in advance at all times.

My father was a clergyman and he was a good one. He was an earnest clergyman and he taught his boys to be earnest in everything they did.

There are two things that menace the prosperity of this country—idle money and idle labor. The one is as mischievous as the other.

It has always seemed wiser to me to sleep on the roof than in the basement.

"Pull" can never carry a man far. It is hard work and application that count.

We have had monkey dinners and the idle and foolish vapors and routs of society. Now is the time for less champagne and truffles and more roast beef and milk.

Matrimony is not essentially a business proposition. In fact, it never should be regarded as such. But nevertheless marriage often plays an important part in the race for what is commonly called success.

In choosing men, I don't notice the cut of their clothes so much as the shape of their heads.

To the young man who would be a success in life I would give these hints: Always be courteous, always be friendly, and do the best you can under all circumstances. When you marry choose a good woman, a co-operative woman, one who will interest herself in whatever work it may be incumbent upon you to do.

The newspapers have had photographs of everything about me except of my brain in action.

Success is the accomplishment of any one task as well or better than the same task can be accomplished by another.

I was afraid we should soon have more office-holders than stockholders. They have passed so many new laws, you know. Every new law creates a new set of office-holders who have to be supported by the State; and to excuse their salaries the legislators have to hustle round and find new things to tax.

The more prosperity there is the more quickly we have to develop the means to take advantage of this prosperity.

They took an X-ray picture of the workings of my stomach. But when they sat me on a big sheet of wrapping-paper to insulate me they didn't notice that there was a tack in the paper. It gave me a shock, but I got used to it. Same way with court examinations.

An automobile is the greatest drug store in the world. It gives one air, makes him forget, exhilarates him. I wish they were cheaper, so the man of moderate means could be provided with this way of getting well.

I have often wondered whether it was worth while—this thing of placing one's whole nerves and physical force into works of such huge enterprises. I have longed for the shade, rest and comfort. But there is something in man that makes him want to go on, to finish what he has started.

The people have got the get-rich-quick bacillus. It's a fearful disease. It's the only meance to this country.

I truly believe that if wives were to take more interest in their husbands' affairs we would have a happier world.

What sensible man doesn't believe in God? Religion saves and advances civilization.

Telegraph managers will do well to keep a watchful eye on their messenger boys when a circus comes to town. On the appearance of this enticing entertainment in a western city recently the messenger boys of one of the companies went on a strike to attend the performance and but for the kindly offer of some of the lady clerks and other volunteers in the office to deliver messages the business would have been badly demoralized.

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.

### Submarine Telegraphy.\*

BY CHARLES BRIGHT, F.R.S.E., M.I.E.E.

(Concluded from page 729, October 16 issue.)

Realistic history is a practical and interesting weapon of instruction. It commits points to memory so well. Moreover, history—with a personal touch—should surely help one to follow in the steps of those that make history. I, therefore, now propose running through some of the main points connected with the early pioneering of submarine telegraphy.

Unquestionably, the bric-a-brac shopkeepers, Jacob and John Watkins Brett, were the first to deal with submarine telegraphy from a public and commercial standpoint. On June 16, 1845, they registered a company for the purpose of telegraphic communication between England and France, and a little later they addressed themselves to the Prime Minister, Sir Robert Peel, who did not, unfortunately, share their confidence. This move, indeed, only involved the Bretts in a departmental correspondence—more academic than useful—in which they were diplomatically passed backwards and forwards from one government office to another.

By 1849, however, the Bretts had obtained consent from the authorities of both countries to lay a cable across the Straits of Dover.

The line only consisted of a gutta-percha-covered copper wire. This was unwound across the Channel from a huge reel and the further end connected to a Cooke and Wheatstone needle telegraph instrument set up in a bathing machine. The carrying out of this enterprise excited little or no attention at the time. It was, indeed, looked upon as a mad freak—and even as a gigantic swindle—indulged in only by wild minds. When accomplished, the "Times," remarked, in the words of Shakespeare: "The jest of yesterday has become the fact of to-day." But a few hours afterwards it might with equal truth have been said: "The fact of yesterday has become the jest of to-day." Messages were, however, certainly sent through this insulated wire.

Brett had a document, signed by twenty Frenchmen, dated September 6, 1850, who declared that they had seen the electric telegraph working between France and England. The signals, it must be confessed, were rather incoherent; the operators at each end blamed those at the other, and tauntingly suggested that the excitement, or something else, must have gone to their heads. In any case, the glory of this telegraph was, unfortunately, short-lived; for after the first evening it maintained an obstinate reserve, and never spoke again. An attempt was then made to raise the wire; but as a leaden weight had been attached at every hundred yards, in order that it might be successfully sunk, all efforts were in vain. A considerable length was, however, brought up by a fisherman in his trawl,

who carried it off to Boulogne in triumph, as "a piece of rare seaweed with a pith of gold!"

Then, again, on December 19, 1850, a concession was granted to Jacob Brett by the French government, and on the strength of this the Submarine Telegraph Company was formed. But £300 was all that the public would subscribe, because it had been proved that submarine telegraphy was an impossibility. Yet these early pioneers, with that peculiar obstinacy that characterizes inventors, actually went on believing in their own ideas.

Mr. Crampton, the well-known railway engineer, came to the rescue with £7,500 of his own and a similar amount from his friends. Then Mr. Küper, a colliery engineer, came along and said: "Why not protect your gutta percha covering by an iron sheathing?" Well, the cable with its sheathing was made, and on September 25, 1851, a procession, with a man-of-war to lead the way, started from the South Foreland to the shores of France. All went well until they were in sight of the opposite coast, when the cable gave out. Another mile was ordered, manufactured and laid, and on November 13, 1851, the public sent a message through a submarine cable—for the first time in the history of the world. There were in this cable four insulated conductors covered with hemp and iron wires.

The cable had a very good life, and this class of armor has been adhered to ever since.

The Bretts then applied to the government for a monopoly to electrically connect England and Ireland. This time they were not so fortunate; for, on September 10, 1852, the Admiralty wrote that "they had watched with interest the progress of the experiments, but had no power to grant a right." On the 18th the "Foreign Office is directed, by Viscount Palmerston, to congratulate you upon the success of your experiment, and to state that the matter does not relate to the business of his Lordship's department." On the same day the Admiralty again wrote, "that whatever privileges can be granted, can proceed only from the Treasury." The next day, the Treasury "acquaint you that it is not in the power of the Lords Commissioners of Her Majesty's Treasury." They got the same answer on September 28. On October 18, 1852, they received the following letter from the Treasury: "Although sensible of your perseverance in bringing the submarine telegraph about, and in view of the great public benefit likely to arise in connection . . . but it is not in their Lordships' power, etc."

Cables were eventually laid between England and Ireland, and although the first two were failures, in 1853 my father successfully connected the two islands—this first piece of cable work forming part of his honeymoon at the age of twenty-one. This cable was similar to the Dover-Calais cable referred to, but contained six insulated conductors round a heart of hemp.

Then followed a number of lines laid across the English Channel, in the Mediterranean and else-

\* Abstract of a lecture delivered before the Royal Institution.

where. Many of these early attempts either resulted in breaking the cable or in paying it out with so much slack that it reposed in festoons at the bottom of the sea, as there were no means then of indicating what force was being exerted by the brake used to restrain the running out of the line.

We now come to the period when a much more difficult problem was dealt with—I mean spanning the Atlantic Ocean by laying and speaking through a cable 2,000 miles in length, the depth being upwards of three miles. Many eminent scientists had said it would be impossible to deposit the line at all at so great a depth, and that even if laid, it would be a mathematical impossibility to transmit electrical signals through such a length. The Atlantic cable was, indeed, considered at this time (1857) a wild freak of people that were to be pitied.

Mr. Brett had, as I have shown, already been associated with other pioneer cables. Mr. Cyrus W. Field was a wealthy American business man of far-seeing and enormously active character, and my father had already attracted considerable attention as an engineer. These were the three "projectors," and my father was also the engineer.

There were evidently some spirits who believed in the enterprise—or in those at the back of it—for the Atlantic Telegraph Company was formed within a few days, the entire capital being raised almost entirely in England by the public issue of 350 shares of £1,000 each.

The proposed route was surveyed in what we should now consider a somewhat "sketchy" fashion; for whereas, in the present day, we sound at intervals of about ten miles, at that time soundings every 100 miles were considered abundant. The general character of the bottom was, however, correctly arrived at from the specimens brought up, being, in fact, the usual oceanic ooze of extremely minute shells—a perfect bed for cables.

The manufacture of the cable was duly proceeded with—partly at Greenwich and partly at Birkenhead, near Liverpool. The iron sheathing was composed of several strands of fine wire. Thus the entire length of wire employed was as much as 340,500 miles—enough to engirdle the earth thirteen times and considerably more than enough to extend from the earth to the moon. This stranded sheathing had certain mechanical advantages at the outset, but has since been found, by experience, not to be a durable type of armor.

The governments of the countries concerned encouraged the scheme to the extent of lending certain vessels for laying the cable, as they had done previously for the survey.

The main contribution from the United States was the "Niagara"—a splendid example of the frigate of that time. A smaller vessel was also provided by each government to land the ends, pilot the way and act as consorts generally.

Mishaps soon occurred; for it was only four

miles that had been paid out when the cable broke. Another start was made; but, after 226 miles had been laid, it again broke—this time, however, at a depth of two miles. So ended the first attempt to electrically connect America with Europe. Morse, who was on board in an honorary capacity, recorded the circumstances as follows: "The cable parted just before daybreak. The machinery having stopped, all hands rushed on deck and gathered in mournful groups; their tones were sad, their voices low, as if a death had occurred on board."

The next year (1858) more cable was made, and a second expedition started with 3,000 miles. The two vessels were this time to meet in mid-ocean and make a joint, and then sail in opposite directions, laying the cable towards their respective shores. This they did, but the joint broke. They made a second, and again it broke. They made a third, and then one ship sailed towards Ireland and the other towards America.

On her way, the "Agamemnon" encountered a whale, and though the ponderous monster made commendable attempts to carry off the cable, these attempts were attended with no evil result. The "Niagara," however, had not gone far before another break occurred which ended in the loss of 500 miles of cable. Sufficient yet remained on board for a third trial.

Meanwhile, however, both ships had run out of stores, and it was therefore necessary to put into Queenstown. On the way a terrific storm was encountered and the "Agamemnon" nearly "turned turtle." The boots, food and crockery—not to mention the coal—got, of course, terribly mixed up; but so did the cable in the tanks, and that was a much more serious affair.

Matters were, however, righted; and after stores had been procured the telegraph fleet again met in mid-ocean to make the splice, and again set forth on their respective work. The first expedition created considerable excitement, but when it came to the second and third, everyone—except the shareholders—merely pitied those that were continuing such a futile errand. The pity was, however, now beginning to be misplaced; for this time the entire line was laid successfully.

Though having little to do with the actual work, our American cousins were, as might be expected, more demonstrative on the subject, and wild excitement prevailed on the landing of the end at the Newfoundland station. But even the "Times" remarked: "Since the discovery of Columbus nothing has been done in any degree comparable to the vast enlargement which has thus been given to the sphere of human activity."

It was on August 5, 1858, that England spoke for the first time electrically with America. Formal and reverential were the first words of greeting between Her Majesty Queen Victoria and the President of the United States, James Buchanan.

The cable never worked very successfully from the outset; for the message from the United

States' President to our Queen occupied over thirty hours in transmission, though only containing 150 words. Moreover, the utmost speed achieved was some six words a minute, whereas a modern Atlantic cable, with modern implements, can be worked up to 100 words per minute. Indeed, that is approximately an ordinary working speed.

Though doing useful work for some two months, the line was gasping under its efforts throughout, and gradually reached the sinking stage. It was suffering—and ultimately succumbed—from the effects of mistaken electrical views, in which even the great Faraday shared. The line was, indeed, an electrical failure, though a complete engineering success. It had been proved that such a length of cable could be laid in really deep water; and, though various mishaps had occurred before final engineering success was achieved, these were only due to unavoidable accident on the one hand, and lack of perfection in manufacture on the other, such as could be improved on by the experience gained. My father, the engineer-in-chief, was knighted at the age of twenty-six for services in connection with this pioneer work.

From the next cable, however—that laid by the government in the Red Sea in 1859—nothing useful was learned. The sections failed one after the other, and it is doubtful whether a message was ever sent through the whole of the cable; but it is certain that the British public have paid, are paying, and will continue to pay till next year £36,000 per annum for the privilege of having put some copper wire, gutta percha and iron sheathing at the bottom of the Red Sea.

There were several other cables laid soon after—from Malta to Alexandria, to India and elsewhere, and these proved a complete success. A little later a project was mooted for an extreme North Atlantic cable, with stepping stones at Iceland and Greenland; but possibly the temperature there was not sufficiently inviting, for certainly the scheme came to nothing.

It was not until 1865 that the question of re-spanning the Atlantic took active shape. My father had, in the interval, persuaded the powers that be, that a larger and more costly insulated conductor was essential. Moreover, the electricians were also better advised in regard to the generating power and apparatus for signaling purposes; indeed, Professor William Thomson (afterwards Lord Kelvin) had not only introduced his mirror speaking instrument, but was taking a more active part in the electrical arrangements generally. There is something peculiarly life-like in the mirror apparatus, and it proved the turning point in ocean telegraphy, both as regards signaling and testing, though now superseded by the "recorder" for the former purpose.

Then, again, at this stage in the history of submarine telegraphy, the improvements in manufacture, due to experience, were altogether encouraging.

The larger sized core meant a larger sized cable, and this could not have been got into any other vessel than the "Great Eastern," which, as it chanced, happened to be available.

In the 1865 cable several faults occurred, and it was feared they were produced intentionally by people on board sticking pins, or iron wire, through the gutta percha. They watched the tanks, but still the faults occurred, and while attempting to haul the cable back to repair a fault, the cable snapped, after 1,186 miles had been laid. For nine days they made strenuous efforts to pick up the cable, but, though they grappled it many times, the rope broke, and thus the 1865 cable had to be abandoned. A new cable like that of 1865 was then made by the Telegraph Construction and Maintenance Company. This company contributed £100,000, and undertook to make and lay the cable for half-a-million of money, whether it was successful or not, this sum to be increased to £600,000 if it were successful, and to £737,000 if they could also pick up and complete the 1865 cable. So three-quarters of a million of money was the prize; and it was won. Nowadays the prize would be only half-a-million for a cable giving, of course, far better results.

This new cable, after a few further misfortunes, was eventually laid. From an engineering standpoint, this was really work that had been effected eight years previously, with about the same number of misfortunes, though with no applicable experience to go upon. The work to come—that of recovering the 1865 cable—was, indeed, the matter of the moment.

For thirteen days they alternately hooked and lost the cable. Once they brought it to the surface; but it slipped away from them like a great eel. On lowering the grapnel, however, for the thirtieth time they succeeded—thanks mainly to Mr. (now Sir Samuel) Canning, the engineer to the contractors; and thus, two good cables were laid between England and America.

On this expedition a remarkable incident occurred—that of the "Great Eastern" while in the act of picking up the cable, bumping against the very mark buoy put down to indicate the supposed line of the cable. This was, indeed, a striking suggestion of accurate navigation. For it we were indebted to the late Captain Henry Moriarty, R. N., who was loaned by the Admiralty as navigator.

Other cables to the East and Far East followed in more or less rapid succession; and these, thanks to the commercial foresight and enterprise of men like the late Sir John Pender, have all proved a lasting success.

There are now as many as sixteen cables across the North Atlantic and several different routes to various eastern points. The much-discussed All-British Pacific cable to Australasia, and also the more recent American Pacific cable to the Philippines, China and Japan. Both of these run into depths of four miles, and just as the Atlantic



cable was considered at the time a wild freak of people that were to be pitied, so also the first Pacific cable was similarly spoken of by some, mainly on account of the great length—3,458 nautical miles—of one of the sections. It was, however, laid almost without a hitch, and will no doubt serve an increasingly useful purpose.

In the present day cables have no history. Happy is the cable without a history. It must not, however, be supposed from this that we do not have occasional minor mishaps nowadays. Even though our materials are so vastly superior to what the pioneers had at hand, there are still the usual eventualities, many of which—as we have seen—are scarcely under control; and there comes a time for all cables, when the iron wires are too decayed to permit of profitable repairs, bearing in mind the fact that a repairing expedition often costs as much as £200 a day. Most of these cables have been manufactured on the banks of the Thames—in the neighborhood of Greenwich and Woolwich—this being the only branch of engineering enterprise that remains almost entirely British.

Personally, I am not one of those who believe in the early consignment of cables to the region of antiquarian museums, though having great faith in the utility of wireless telegraphy for all maritime purposes, and as a helpmate to our cable systems. Certainly, so far, there are no signs of cables being replaced by wireless telegraphy when further means of communication are required. Only a few weeks ago, while in Egypt, I read the record of a meeting according to which the chairman of a well-known cable-making company stated that "Marconi had done away with the manufacture of telegraph cables." I also, by the same mail, received news that the three large cable works were particularly busy with submarine cable orders just received for various parts of the world; and, perhaps it should be added that on inquiry I was informed on good authority that the chairman in question never expressed what he was reported to have said. As a matter of fact, some 85,000 miles of cable have been made and laid since the Marconi Company was established, ten years ago—nearly five times as much, indeed, as was made and laid during the ten previous years. While I am a great believer in the future of wireless telegraphy as an aid to cables for the purpose of telegraphic communication—mainly in directions where cables are ineffective—I do not think that the wireless telegraphy that we know of at present will ever actually replace telegraphy by cables.

If it is worth while to do a kindness at all, it is also worth while to do it gracefully and cheerfully. If you are going to grumble while you do it, you rob it of more than half its worth and all its beauty. This rule is as good in the home, among the brothers and sisters, and between husband and wife, as it is anywhere else.

### Cipher Codes in Turkey.

The Turkish Government has decided to authorize the use of cipher codes for telegraphic correspondence exchanged between different parts of the Empire as well as with foreign countries.

The United States embassy at Constantinople is taking proper measures to secure the inclusion of at least one well-known American code among those to be authorized by the Turkish Department of Posts and Telegraphs. This permission for the commercial use of cipher codes is likely to prove of considerable benefit to American commercial interests. The note from the Turkish Minister of Foreign Affairs reads:

"With a view of satisfying the demands of certain business firms, the Imperial Government has decided to authorize the use of private codes for telegraphic correspondence exchanged between the different parts of the Empire as well as with foreign countries.

"Nevertheless, as the use of all the existing codes would give rise to some difficulties, for the present only ten will be allowed, the choice of which will be made by the General Direction of Posts and Telegraphs.

"The Imperial Ministry requests the American embassy to kindly communicate this to all the interested nations."

### Minding the Other Man's Business.

Many of our most humiliating mistakes are made when, leaving our own neglected duties, we undertake to tell some other man how to manage his. When, with suppressed indignation, we begin to tell him how little he knows about his duties, it is somewhat disconcerting to have him calmly convince us, in about three minutes, that we have made fools of ourselves. And yet how often the experience is repeated. With our superficial vision we think we see things that the practised eye of the life-time specialist has missed, but we are likely soon to discover that he has not only seen them, but some other things besides. Then comes our discomfiture, a shambling retreat, and the longing for some indulgent benefactor to kick us around a ten-acre lot. What is the answer? Simply this: Give the other man credit for knowing his business, unless you have full knowledge of the case, and the proof in your hands that shows his incompetence. Even then, feel your way carefully, for your "proof" may be only one side of the story. There is always something to be said on the other side, and, not infrequently, it is very enlightening. Then there is the proposition of the "glass house" to be reckoned with. Sometimes the man most active in the affairs of others is most inefficient in his own. And while we are zealously devoting ourselves to hurling rocks at the other man, there is the ever present danger that a missile will shatter our own unprotected and fragile structure. Strong indeed is the position of the man who has learned the art of minding his own business.—Express Gazette.

### The Military Telegrapher in the Civil War.

PART XXX.

That the duties of the military telegrapher were not always performed amid comfortable surroundings and without any personal danger to the operator is shown very clearly in the story of J. T. Tiffany, who served throughout the war, first as operator and later as an enlisted man. In writing to Colonel William R. Plum, the historian of the United States Military Telegraph Corps, in 1878, he relates in part his war experience as follows:

"When the war broke out I was operator at Lebanon, Ill. I went from there to Cairo, Ill., and reported for orders to J. C. Van Duzer. I was assigned for duty at Fort Holt, Ky., a little below Cairo and nearly opposite Birds Point. I operated there in a tent on the bank of the Mississippi River nearly all winter and suffered greatly with the cold and wet. On account of the very cold weather I did not know what it was to have any of my clothing off at night. Early in the spring of 1862, Colonel Cook, of the 7th Illinois infantry, had a log hut built for me on the bank of the river, giving me a commanding view down the stream. I was stationed there for the purpose of watching flag of truce boats coming up the river which they very often did from Columbus, Ky. Then I would notify General Grant, then Brigadier General commanding at Cairo, and he would go down the river at once and meet the Confederate flag of truce. The 7th and 28th Illinois infantry regiments, besides four companies of cavalry, were all stationed at Fort Holt. In the spring when the river overflowed its banks these troops embarked and were ordered to Fort Donelson. I was ordered to Caledonia, a small village on the Illinois side about half way between Cairo and Paducah, Ky. I only worked there a short time, going from there to Paducah where I helped a line repairer, by the name of Sawyer, to put up some wire opposite Paducah on the Illinois side that the high water had carried away. Sawyer and myself in a skiff crossed the river which was then at its highest and the current strong. We would tie the boat to a tree and then climb up and fasten insulators to the trees. We worked all that day with the water raging under us. Prior to that time there was no communication by wire from Cairo for several days. I was next sent to Smithland, Ky., and by orders of Major George H. Smith, superintendent of the United States Military Telegraph, was put in charge of the line from Smithland to Fort Henry, a distance of over one hundred miles. This line was built through a hilly and mountainous country, heavily wooded. It was continually being torn down by the Confederates living along the line. I took a trip on horseback with no one but my faithful repairer who was detailed for that duty, and a braver man I never saw. We were nearly two days going through to Fort Henry, owing to the rough condition of the roads. On the second day after our arrival at Fort Henry, we commenced our journey

back to Smithland. While on our return my repairer and I were fired upon by a bushwhacker who was on a high cliff, the bullet passing through the lapel of my overcoat. We fired at him with our carbines, emptying every chamber, but he had the start of us and being out of pursuit with our horses, we had to give up the chase, although we found drops of blood for some distance. I notified all of the land holders along that line that if the wire was found cut on or near their land that they would be held responsible and that their houses and barns would be burned to the ground. After that we experienced very little trouble on the wire. Some times the repairer would take an escort of five to ten cavalymen with him.

"I went from Smithland to Fort Donelson after the attack on that place and worked there for a short time. From there I went to Pittsburg Landing with orders to report to Major George H. Smith. I did not get there in time to see the finish of that battle owing to the transport I was on getting caught on a sand bar. From Pittsburg Landing I went to Corinth, Miss., where I installed several pocket instruments in the depot office; in fact those were about the only kind of instruments army operators used. I remained at Corinth but a few days, going from there to Bolivar, Tenn., where I acted as railroad agent and operator. I had to write all of the tickets sold also the heads of my way bills, etc., for all shipments of cotton from that point. This city was second to Memphis in regard to the quantity of cotton shipped. The military railroad had but a few flat cars and box cars, consequently it was difficult to please all of those desiring to ship their cotton. There was much danger from Confederate cavalry, which was manoeuvring close by, and the Union force was small. General Stevens, military superintendent of the railroad, stated that I did my duty well and to the entire satisfaction of all.

"A Confederate General and a Colonel used to visit their families in Bolivar every few weeks, coming in late at night and going away the next night. I heard of this from one of the colored servants and captured both of them with a squad of men after surrounding the house. The next morning they were taken before General John A. Logan, at Jackson, Tenn. They took the oath of allegiance and were allowed to go. I remained at Bolivar until all of the cotton was shipped and was about to come home, as there was a surplus of operators, and I was anxious to see my family, although I could have had employment all of the time. General Ross put me under arrest while he was intoxicated for allowing a Confederate citizen operator to come into the office. I was placed in the old court house under guard until General McClellan heard of it and ordered my release at once, reprimanding General Ross. I came home in 1865 and enlisted in the 186th Ohio Volunteer infantry. I was detailed as operator at Strawberry Plains, East Tenn., and from

thence sent to Monce Creek, where I worked one night. The next morning William Patterson, chief operator, and I, walked to Morristown, Tenn., on the railroad, a distance of sixteen miles, where I worked for several months. From there I was sent to Cartersville, Ga., as operator and railroad agent. I had been there six or eight weeks when there was an order from the War Department that all men on detached duty should report to their respective regiments. As I came under that heading I reported to my regiment at Chattanooga and was then detailed for General Stedman's headquarters to approve passes and copy court martial proceedings. From there I was returned to my regiment and served as sergeant major until I was honorably discharged at Camp Chase, O."

The following bit of reminiscence of happenings after the war contributed by a friend will be of interest, showing as it does the part that military operators played in the period immediately following the cessation of hostilities:

"At the close of the war and just after the departure from Bristol, Tenn., and Goodson, Va., of the Third New York Cavalry and the Eleventh Connecticut Infantry the United States military telegraph operator located at those points which are divided by the State line passing through the center of the main street, was the only person left to represent the government, and for a time things were quite lively.

"Dr. Craig and Samuel Bibb, Confederates, and Mr. Goodman, an East Tennessee Union man, engaged in a pistol duel in a ten-foot alley right in front of the office of the United States military telegraph operator Jesse H. Robinson, who arrested Dr. Craig after Goodman was killed by Bibb, who was mounted on a fine blooded mare and escaped to Texas. Dr. Craig was taken to Lynchburg and tried by a court martial composed of Union officers, but upon the evidence given by operator Robinson was acquitted. Dr. Craig's attorney was Beverly Johnson, of Abingdon, Va., brother of the great Confederate general Joseph E. Johnson. Scarcely had this case been disposed of when two young drummer boys of Lee's army became engaged in a quarrel within ten feet of the United States military telegraph operator. One of the boys grabbed the other by the coat collar, placed an army pistol in front of his heart and fired, killing him instantly. The boy that did the shooting was arrested, but his father made an appeal to the operator that he be not confined and he would take him to Lynchburg the next day for trial, which he did. The court martial on account of the boy's youth sent him to the penitentiary for fifteen years. Shortly after the military operator's return to Bristol he ascertained that Colonel John S. Mosby was hidden away in Goodson, Va., and the information was telegraphed to General Irwin M. Gregg, who was the Union officer then in command of Lynchburg, Va., the nearest post where Union

troops were located, of the fact and requested information whether Colonel Mosby should be taken prisoner, but General Gregg replied that the government did not want him. Whether Colonel Mosby ever knew of this fact is not known, but within the past two years one of the colonel's friends stated to the writer that the colonel informed him that the United States government had offered a reward for him at the close of the war, but they could not find him."

#### A Representative Chicago Telegrapher.

Mr. Thor J. Benson, who has served the Western Union Telegraph Company at Chicago for a third of a century, is a local politician of some note and a well-known member of the Old Time Telegraphers' and Historical Association. Mr. Benson was born in Norway in the latter part of 1857 and came to this country with his parents in 1871, settling in Minnesota. In 1876 he entered the telegraph service at Chicago where he has since been employed as operator. He early began to take an interest in political affairs and in 1881



THOR. J. BENSON OF CHICAGO.

declined an offer of a position as chief operator at Des Moines, preferring rather to remain in Chicago where he would have a greater opportunity to study questions of public interest. During the dull times following the depression of 1893 he found time to take a course in the Chicago College of Law, from which he graduated in 1895, still retaining a short night trick in the telegraph service. In 1901 he served as assistant city prosecuting attorney for six months. He has taken an active part in political affairs, supporting Democratic candidates from the speaker's platform, and having several times been made their nominee for election to various offices, but each time failing of election owing to the fact that his home is in strong Republican territory.

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### Barclay Printing Telegraph Patents.

Mr. John C. Barclay, assistant general manager and electrical engineer of the Western Union Telegraph Company, New York, has been granted two patents for printing telegraphs.

The first patent, No. 936,849, granted to Mr. Barclay, is described in part as follows:

This invention relates to printing telegraphs and particularly to the printing receiving instruments of such telegraphs, and consists in the novel selecting mechanism for automatically selecting the character to be printed; in the novel means controlled by such selecting mechanism for effecting the printing; and in various other features.

The objects of the invention are to improve and simplify printing telegraph receivers; to make the same more rapid in operation; to improve the selecting mechanism of such receivers, and reduce the time required for the operation of such selecting mechanism each time a character is to be printed; to provide simple direct-acting mechanism controlled by such selecting mechanism for effecting the printing; and generally to produce a simple, compact, reliable and direct-acting telegraph printer.

In various prior patents telegraph printers which are of the general nature of power-operated typewriters controlled by printing magnets corresponding to the different characters to be printed, and themselves controlled by electrical selecting mechanism have been described. In the machine herein described, much of the selecting mechanism is mechanical, its operation being effected by electro-magnets controlled by a sunflower and relays, themselves controlled by current pulses in a line circuit. The mechanical selecting mechanism has the advantage of being very simple and readily understood, of being readily corrected in case of possible derangement, of having no contact points requiring cleaning and inspection at intervals and which, by becoming dirty may prevent the selection of the desired signal, and of requiring a very small time interval for its operation.

The first claim for this patent is: A printing telegraph comprising in combination a series of selector bars, selector magnets controlling the same, character bars controlled by said selector bars, drop mechanism comprising a drop magnet and means operated thereby controlling engagement of said character bars and selector bars, a printing magnet and means operated thereby for operating a selected character bar, and selecting means for said magnets comprising a sunflower and a separator relay and circuits controlling said selector magnets, drop magnet and printing magnet, means causing the drop magnet to operate in advance of the operation of the printing magnet, and means controlled directly by the sunflower causing the action of the drop magnet to be delayed.

The second patent, No. 937,032, is for a printing telegraph system to take care of the business be-

tween offices where the volume of traffic is upward of fifty messages per day. This system is both simple and accurate in operation. The sending over the wire is direct from a keyboard, and the letters are printed in page form at a distant end at the speed of forty-five words per minute. This printing system is extremely flexible, making it adaptable to meet average telegraph conditions. It admirably meets the requirements of railroad traffic, as well as commercial work, and it can be operated any distance that Morse instruments can be worked. The power necessary to operate the instruments is furnished locally and no increment of current is on the main line. The device can be worked duplex as well as single and has a capacity of eight hundred messages per day worked duplex. The invention is described in part as follows:

The printing machine described is of that class, of which the ordinary stock ticker is an example, comprising a type wheel adapted to be rotated synchronously with a sunflower arm of a corresponding transmitter, pause of such arm on any one of the segments of the sunflower, causing operation of the printing or other suitable mechanism of the printing machine. But whereas the ordinary stock ticker is adapted only for printing on a paper tape or ribbon, the machine described is adapted for printing in regular lines on a sheet, the same as an ordinary typewriter.

The machine comprises a movable paper carriage with automatic mechanism for feeding the same forward and backward and for feeding the paper line by line.

The machine is particularly adapted for receiving ordinary telegraph message blanks and for recording telegraph messages on such blanks. The blank lies flat horizontally in the machine in the direct view of the operator, the letters printed being upright, as viewed by the operator from the front of the machine, the paper being fed toward the rear of the machine during line-spacing; the operator therefore finds it easy to insert and remove blanks and to check the message while it is being printed.

Heretofore in telegraph printers of the stock ticker type, where the performance of numerous functions besides that of rotating a type wheel synchronously with the operation of the transmitter and of operating a press-arm or the like, have been attempted, for example, where mechanism for shifting from one line of type to another, for rewinding a driving spring, and for other added functions, have been provided, it has been customary either to operate the ticker by a plurality of circuits or to effect the performance of the added functions by increasing or decreasing the strength of the line current. In the present printer the necessity of varying the strength of the line current to effect performance of these added functions has been avoided, and instead, a commutator has been provided which rotates with the type wheel and controls, in conjunction with a relay, termed a separator relay, with which the instru-

ment is provided, a plurality of local circuits by means of which magnets controlling the performance of functions such as shifting of the type wheel, return of the carriage, feeding of the paper, etc., are energized at proper times. The separator relay not only acts in this connection, but also in controlling the printing of the characters.

Heretofore in telegraph printers of the ticker type, the magnet operating the press arm or equivalent part, has usually been in the line circuit or in the same circuit as the escapement magnet controlling the rotation of the type wheel, and printing has been effected by using for the press magnet a magnet which is somewhat sluggish and hence operates its press arm only when a pulse in the line is prolonged, due to momentary arrest of operation of the transmitter contact mechanism. In this present printer, however, the magnet or solenoid which effects the operation of a hammer, corresponding to the press arm of an ordinary ticker, is in a local circuit controlled by the separator relay. Since this relay has very little mechanical work to do it may be very sensitive and easily operated, and for this reason permits the operation of the printer on much longer lines than the ordinary stock ticker can be operated on successfully, also a number of such separator relays, corresponding to separate printers, may be included in the same circuit without building up the resistance and retardation in such circuit to the same extent as would be the case were a corresponding number of press magnets of the ordinary telegraph tickers included in such circuit. For greater sensitiveness and rapidity of operation, and in order that the effective length of the line over which the printer may be operated may be increased, this separator relay, or the separator relay of a plurality of printers when a number of printers are to be worked from the same circuit is commonly placed in a local circuit controlled by a line relay; and for the same reason the magnet of the escapement mechanism controlling the rotation of the type wheel is commonly placed in a local circuit also, both of these local circuits being controlled by the same line relay. By reason of the use of this line relay, separator relay, and the local circuits and commutator mentioned, only one strength of current is required in the line circuit and only one class of signals therein, namely, current alternations; and these alternations may be of quite high frequency, comparable to the alternations produced by a Wheatstone transmitter operating at high speed. In fact, since the line conditions controlling the operation of the printer are much the same as those which obtain in Wheatstone operation, the printer is susceptible of being operated over lines of very great length.

The invention consists in means whereby the complete control of the various mechanisms of the printer is effected with only one class of line signals: in the separator relay controlling the hammer magnet and the magnets of various other mechanisms of the printer; in the general arrange-

ment of the mechanisms of the machine, whereby the machine is particularly adapted for receiving flat sheets of considerable length and width and for printing in successive lines, i. e., for "page printing," all in full view of the operator, and in various other features of construction and arrangement of the parts.

The objects of the invention are to improve and simplify the printers of printing telegraph systems, to avoid the use of more than one line conductor and more than one class of signals in that line, to adapt the printer for high speed operation over relatively long lines, to make the printer sensitive and accurate, simple, compact, durable, relatively inexpensive, and easily kept in repair, and to particularly adapt the printer for use for receiving ordinary telegraph messages on ordinary telegraph message blanks, and for operation under the charge of ordinary receiving operators.

#### **The Edison Quadruplex Patents.**

There will be no reargument in the United States Circuit Court on the motion to confirm the report of Arthur H. Masten, special master in the case of George Harrington and others against the Atlantic and Pacific Telegraph Company and George J. Gould and other executors of the estate of Jay Gould. Judge Hough, in an opinion delivered October 14 said that the complainants, through Alton B. Parker, their counsel, had failed wholly to submit proof which would warrant the court in permitting reargument.

The complainants asserted that the special master had disregarded testimony that showed damage of \$1,622,760, and thereby had done great injury to their case. Harrington, the chief complainant, says he had an assignment from Thomas A. Edison of a two-thirds interest in a patent for duplex and quadruplex telegraphing. He made contracts in relation to that holding. Edison, who did not know of those contracts, complicated things by assigning to George B. Prescott a one-half interest in the patent. Afterward Edison and Harrington assigned their remaining interest in the patent to Jay Gould, who turned it over to the Atlantic and Pacific Telegraph Company.

Afterward Jay Gould obtained control of the Western Union, and it came into possession of the patent. Harrington and his associates say it was worth \$4,000,000 on December 30, 1874. Masten reported that it was worth only \$1,622,760 at that time, and then threw those figures aside. The complainants contended that they never parted with their legal title to the patent, and that they are entitled to the damages shown. Judge Hough told them that they must show damages in the usual way, and then denied the motion for reargument.

The practical side of the telegraph is discussed in every issue of *Telegraph Age* in a manner to 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.



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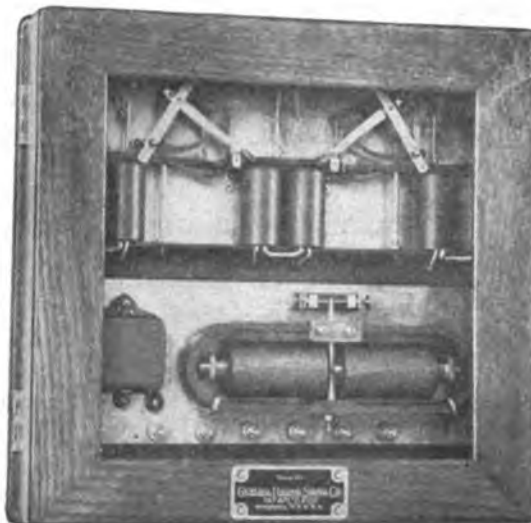
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### The Railroad.

Mr. W. F. Williams, of Portsmouth, Va., superintendent of telegraph of the Seaboard Air Line, was a recent New York business visitor.

The annual meeting of the Railway Signal Association held at Louisville, October 12, 13 and 14 was a most successful affair, about three hundred members being present. Atlantic City, N. J., was selected as the place for holding the next annual meeting.

A patent, No. 936,405, for a wireless railway-signal system, has been taken out by E. R. Brodton, of Mobile, Ala. Electric waves are sent out from one engine cab to the other. Controls the strength of the waves so as to keep them uniform by day and night.

The Atlantic Coast Line has in process of construction, and will shortly put into service, a telephone train-despatching circuit from Richmond, Virginia, to South Rocky Mount, North Carolina, a distance of one hundred and twenty-one miles. The despatcher for this circuit will be located at Richmond. There will be thirty-two selector way stations and two local telephone stations in the chief despatcher's office and the superintendent's office at Richmond. These stations will be called by means of a buzzer. The transmission line is constructed of No. 9 B. & S. copper, two hundred and ten pounds per mile.

The Lake Shore and Michigan Southern Railway Company has ordered telephone equipment and is making provision to equip for telephone train despatching the Youngstown division of its road and is making the new Clearfield branch a part of its telephone system. This is the second circuit on this road to be equipped with telephones for train despatching. The first circuit between Buffalo and Erie has been in service more than a year. It is being clearly recognized now by the majority of the larger roads that the telephone has passed the experimental stage for this class of service.

Charles A. Darlton, formerly and for many years superintendent of telegraph of the Southern Railway System at Washington, D. C., died at the home of his daughter in New York, October 16, aged fifty-eight years. Mr. Darlton was actively engaged in the telegraph service since 1864 when he became an operator and held positions with various roads as operator, train despatcher and chief train despatcher until 1881 when he became superintendent of telegraph of the Cincinnati, Hamilton and Dayton Railroad. He next occupied similar positions with the Lake Erie and St. Louis Railroad and the Long Island Railroad. In 1886 he became superintendent of telegraph of the Richmond and Danville Railroad. When this road was consolidated with the Southern Railway System, Mr. Darlton became superintendent of telegraph of the latter, retaining this position until his retirement in 1904. Since that time he has been engaged in commercial pursuits.

Announcement has been made that authority has been granted for the equipment of the Albuquerque and Arizona divisions of the Atchison, Topeka and Santa Fe system with telephone train despatching circuits and that this work will begin at once. The total mileage of the two divisions is 887.

A patent, No. 933,662, for a train despatcher's signaling and controlling system, has been secured by G. E. Patrick, of Salem, Va. The despatcher has entire control of the road by means of a board that includes a miniature railroad and tell-tale trains thereon, equipped with propelling devices automatically operated by the train or trains on a main road.

Mr. W. W. Ryder, superintendent of telegraph of the Burlington system, Chicago, was a recent New York visitor. The system which he represents is now despatching trains by telephone on 2,500 miles of road. On about 1,300 miles of this there are no telegraph circuits in operation, all Western Union and railroad business being handled on the telephone circuits.

The Merchants and Manufacturers Association of Los Angeles is preparing to hold their annual fiesta next May at the time of the convention of the Association of Railway Telegraph Superintendents in that city.

This need not alarm the members of the association who will attend the convention for fear of inadequate hotel facilities, as Los Angeles has one hundred good hotels which provide accommodations at reasonable prices, and this festival is attended principally by the natives, about the only out of town visitors being those that come in the morning and return home at night on the suburban electric lines, steam railways, or by boat. This festival will undoubtedly prove very interesting to the eastern visitors, as it is something entirely different from anything to be seen east of the Rocky Mountains.

The entertainment committee of the association, of which Mr. I. T. Dyer is chairman, is hard at work on their plans for the enjoyment of the visitors, their principal difficulty being to so arrange the program as not to tire the ladies and other visitors too much, and at the same time have them enjoy, during the brief stay of four days, as many as possible of the beautiful trips that can be made from Los Angeles.

In accordance with the action of the executive committee of the Association of Railway Telegraph Superintendents at the meeting held in Chicago, September 28, President John L. Davis has appointed the following Transportation Committees to arrange for special cars, train service, routes, etc., for the meeting at Los Angeles, Cal., May 16 to 20, 1910:

For the East: W. F. Williams, chairman, Portsmouth, Va.; E. P. Griffith, Jersey City, N. J.; S. A. D. Forristall, Boston; W. J. Camp, Montreal, and L. B. Foley, New York.

For the West: G. H. Groce, chairman, Chicago; C. H. Gaunt, Topeka, Kansas; Wm. Bennett and W. W. Ryder, Chicago; H. D. Teed, St. Louis.

Members are requested to communicate with their respective chairman before December 1, advising whether or not they intend to make the trip, and if so to notify route their transportation will call for, number in party, berths required, etc. It is, of course, understood that transportation for members and their party, will have to be secured through the regular channels, as is customary. The entertainment committee desires to announce that trips for the ladies to points of interest while the association is in session, will be free of expense to them.

#### **Telephone Train Despatching on the Michigan Central.**

The Michigan Central Railway has just completed a telephone train despatching circuit between Niles, Mich., and Kensington, Ill., a distance of seventy-six miles. There are eighteen regular train order stations and two emergency stations. The emergency stations are for the use of train crews and are so arranged that a crew may at any time stop at these sidings and call up the despatcher to obtain assistance if necessary, or get instructions to go ahead if the track is clear. Orders received in this way will be handled with the same care and precision as those at the regular stations. The order from the despatcher to the conductor is written out by the conductor, repeated back to the despatcher, approved by each, a copy given to the engineer, one retained by the conductor and a third left in the register for the company's records.

This installation is on the main line of the Michigan Central Railway, between Chicago and Detroit, and is the fourth circuit of the kind installed by this road. When the circuit now being installed between Jackson, Mich., and Niles, Mich., is completed, all trains run between Chicago and Detroit, Detroit and Toledo, and Detroit and Saginaw, on the Michigan Central Railway, will be despatched and receive all running orders by telephone. This entire equipment of about 500 miles, one-fourth of the entire Michigan Central mileage, is reported as giving excellent satisfaction. It is said that extensions will be made as expeditiously as possible until every train on this road receives its orders by telephone.

#### **Telephone Possibilities.**

H. D. Teed, superintendent of telegraph of the Frisco Railroad, and H. O. Rugh, chief engineer of the Sandwich Electric Company, recently installed the necessary apparatus to derive a third metallic circuit from two parallel transposed circuits.

The third circuit is superimposed, being itself complete metallic, and can be cut in at as many intermediate offices as desired, and calling done selectively by virtue of the double call feature of the Sandwich selector.

The two metallic circuits upon which this installation was made extend from Kansas City, Mo., to Ft. Scott, Kan., a distance of ninety-nine miles, and are equipped with selectors, one circuit for train despatching and the other for railroad message work. The superimposed circuit required no modification of the present apparatus and in no way interfered with its operation, it being impossible to distinguish even the slightest cross talk when the three talking circuits were in operation.

So satisfactory was the experiment that it was decided to extend the service within a few days as far as Springfield, Mo., and as soon as the physical circuit is complete to St. Louis, a through circuit will be established between St. Louis and Kansas City, using for its intermediate connecting medium three train despatching and three message wire circuits.

Summing up the entire situation, three complete selective and talking circuits are derived from four line wires. This system is of such importance that those contemplating telephone circuits should investigate and so arrange their circuits that by the application of the necessary apparatus the ultimate capacity of the wires can be utilized.

#### **An Improved Line of Pocket Meters.**

Those engaged in electrical pursuits have become so accustomed to the large power installations of the present time that they are apt to lose sight of the fact that immense units of energy in the aggregate are being used in the shape of dry cells and small storage batteries, yet it is undoubtedly true that the daily production of batteries in this country, measured by their kilowatt-hour capacity would prove a revelation to most of us.

So widespread has the use of batteries become that the demand for small pocket meters with which to test them has grown to considerable proportions.

The Hoyt Electrical Instrument Works of Penacook, N. H., early recognized the importance of this field, and have devoted a great deal of attention to it. Their latest product being a line of ammeters and voltmeters approximately the size of a gentleman's watch, the novel feature of which is a silver-plated metal scale which combines accuracy, durability and tastiness in design.

Realizing that the first requisite was a careful standardization of every part, this company has for some time been working along these lines, and they claim to have designed every part so carefully that exhaustive tests have failed to show any material error in any part of the scale.

These meters are of the permanent magnet type, and in designing them the purpose of their use has been constantly kept in mind. The relation of the moving system to the poles of the permanent magnet is such as to insure a practically dead beat movement, with extreme sensitiveness to current changes. Every detail has been carefully looked

# WITH THE KELLOGG

Portable train telephone the  
Despatcher can be reached  
from any point on the right  
of way, \_\_\_\_\_

Ask for our Booklet No. 7  
\_\_\_\_\_

☛ Kellogg railway telephones  
are in operation on many of  
the best known roads.

**KELLOGG SWITCHBOARD & SUPPLY CO.**

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Increased efficiency of ser-  
vice and decreased cost of  
maintenance is insured to  
Superintendents of Tele-  
graph and Telephones who  
shelve gravity cells and use

# Rock Island NEW PATENT Dry Cells

This is not hot air. It is demonstrable  
truth. Ask us to SHOW you, Mr.  
Superintendent, how to make a report  
of expenses reduced.

We'll be glad to send samples  
and Battery Booklet FREE. Our  
Standards—No. 6 (2½ x 6 in.) and  
No. 8 (3½ x 8 in.).

**THE ROCK ISLAND  
BATTERY COMPANY**

209 Sycamore St., Cincinnati, Ohio



# The Sensation of the Season



Pocket Ammeters  
and Voltmeters with  
Indestructible Metal  
Dials more accurate  
than other makes  
with hand drawn  
scales.

Permanent mag-  
net type, indicates  
polarity as well as  
current. Guaranteed  
for one year.

A SUPERIOR METER AT THE PRICE OF A  
POOR ONE

Look for **Ampères** The Mark of  
This Design Superior Quality

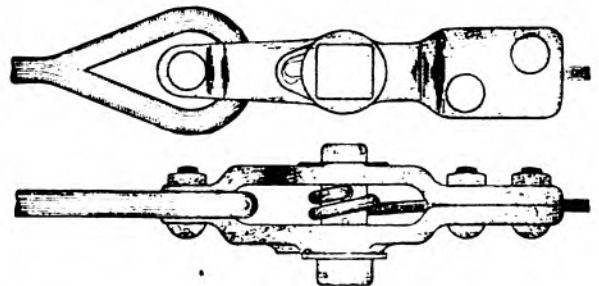
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## DROP FORGED COMBINATION GUY WIRE CLAMPS

A NEW POLE LINE DEVICE, AND THE BEST ON THE MARKET

NOT an experiment!  
Over 150,000 now in use throughout the United States



Method of applying our Combination Clamp to  
anchor rod, slack readily taken up by the use of a  
standard wrench.



Former method of applying guy wire to anchor  
rod, necessitating use of block and tackle to take  
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ONE MAN CAN DO THE WORK FORMERLY  
PERFORMED BY A CREW OF 3 OR 4 MEN

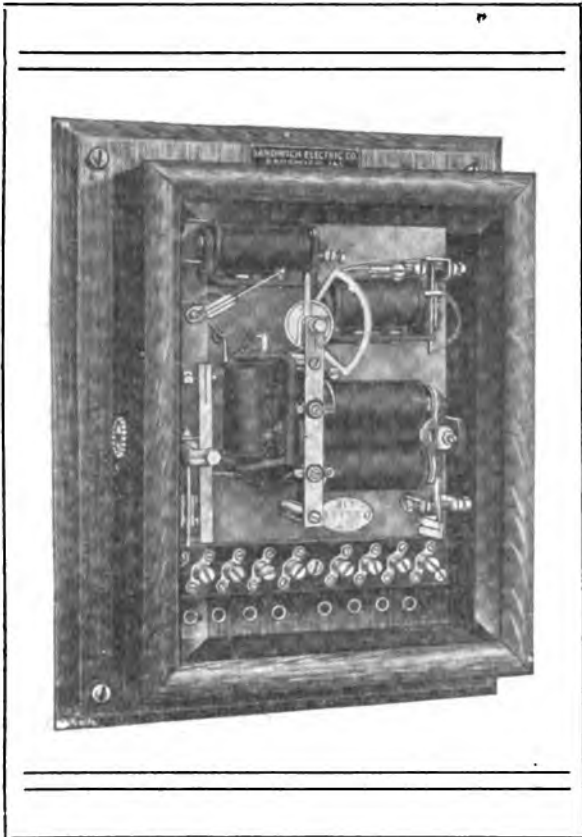
Give it a trial.

Samples free upon request to the Manufacturers.

**STEEL CAR FORGE COMPANY**

PITTSBURGH, PA.





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SANDWICH  
AND YOUR  
WORRIES  
WILL BE OVER**

**SANDWICH ELECTRIC CO.  
SANDWICH, ILL.**



**The Hudson  
Word Register**

**IS the only reliable word counter on the market. Has unlimited counting capacity. Cannot get out of order**

**Every Operator Should Have One  
They Save Time and Trouble**

**Mailed to Any Address upon Receipt of Price, \$5.00**

In ordering state what machine is used, as attachments differ. Remit by express or postoffice money order to

**JOHN B. TALTAVALL**

**Telegraph Age, 253 Broadway, New York**



**MINIATURE KEY  
AND SOUNDER**

**Furnished Complete at \$4.00**

**THE KEY**—Same as presented at the memorable 1905 Reunion in New York of the Old Time and Military Telegraphers, \$1.50.

**Perfect Mechanism  
Beautifully Finished  
Emblematic in Character**

**A REFINED GIFT**

**THE SOUNDER**—Same as presented at the Carnegie "73" Birthday Dinner in New York on November 27th, 1908, \$2.50.

Either or both of these beautiful miniature instruments will be sent, carrying charges prepaid, on receipt of price. Address

**J. B. TALTAVALL**

**Telegraph Age, 253 Broadway, New York**

after, even to the construction of the case which is substantially made in one piece to insure rigidity and mechanical accuracy.

A novel design of lettering has been adopted for the dial, and it is the purpose of the makers to carry out the same idea in all instruments of this type to readily distinguish them from other meters of somewhat similar, general appearance.

#### Radio-Telegraphy.

A patent, No. 934,883, for wireless telegraphy, has been taken out by S. G. Brown, of London, Eng. A sensitive receiver consisting of electrically deposited peroxide of lead.

A jeweler at Milton, Mass., has established a wireless receiving station on his store and now regulates his clocks by Western Union time which he receives every day from the wireless station in the Charlestown Navy Yard.

A patent, No. 935,721, for a wireless telegraph system, has been secured by V. C. De Ybarrondo, of Los Angeles, Cal. A central switchboard with suitable wiring in position so as to be connectable with the aerial and sending apparatus.

An invention, which has recently been patented in Berlin by F. van der Wonde, has for its object the adaptation of wireless telegraphy to multiplex working. The speed of action is such that several revolutions take place during the time necessary for the sending of a Morse dot.

Arrangements are being made to establish a high-power wireless station on the roof of one of the buildings at the Massachusetts Institute of Technology. The institute has a flourishing wireless society with a membership of eighty. Mr. E. B. Moore, the president, has been actively interested in wireless development since 1902 and is the inventor of a special form of detector.

A patent, No. 934,875, for a wireless telegraph transmitter, has been granted to C. D. Babcock, of New York. Includes a transformer, a condenser, an impedance calibrated to wave lengths, a spark gap, a lever and a series of contacts corresponding to the calibrations over which the lever plays, the contacts jointed to the impedance. A scale shows the length of sparks.

The Russian government is beginning the establishment of a chain of wireless stations for the purpose of connecting European Russia with their far eastern territory. As it has been found possible to communicate between stations on the Baltic and on the Black Seas, a distance of 1,240 miles, it is calculated that three or four stations only will be required between St. Petersburg and Vladivostok.

A patent, No. 936,163, for a receiving system for electrical oscillations, has been granted to E. Quack and F. von der Wonde, of Berlin, Germany. For receiving waves in the Pederson system. The detector is permanently included within the oscillating circuit, and the condenser, parallel to the detector is intermittently connected with the circuit by an interrupter device.

The United Wireless Telegraph Company has established a wireless station in the department store of Siegel, Cooper Company, New York. The station was installed as a temporary attraction, but so many people sent aërograms that it will probably become a permanent feature of this store.

A patent, No. 936,207, for a telephone transmitter, has been awarded to C. D. Babcock, of New York. For wireless telegraphy, the transmitter including oxide of a metal whose conductivity becomes extremely sensitive at a certain critical temperature with controllable means for heating the oxide.

A patent, No. 936,258, for a receiver for space telegraphy, has been granted to W. Schloemilch, of Berlin, Germany. An electrolyte, electrodes of different materials in contact therewith to form a primary battery and a local circuit, including an indicator influenced by variations of current in the circuit.

Professor J. A. Fleming, of London, England, is probably one of the best informed authors upon the subject of radio-telegraphy. He has devoted much time to the investigation of that subject during the past few years and his new volume "An Elementary Manual of Radio-Telegraphy and Radio-Telephony," is the most up-to-date book on wireless now on the market. This work is written for the use of students, practical operators and general readers, and dealing in simple language with the underlying principles and theories of wave telegraphy, is free from complicated mathematical formulae. Copies of this valuable work will be sent, charges prepaid, to any address upon receipt of price, \$2.50, by J. B. Tallawall, Telegraph Age, 253 Broadway, New York.

#### Obituary.

L. Semper, a telegraph operator of Salt Lake City, died at Portland, Ore., of typhoid fever, October 9.

Phillip A. Deffer, for twenty years employed as chief electrician for the Postal Telegraph-Cable Company at Washington, but recently in the employ of the war department in the Philippines, died at Seattle, Wash., October 6.

John R. Van Wormer, the well-known old time telegrapher, aged sixty years, died at his home in New York, October 27, of paralysis. Mr. Van Wormer began his telegraph career as operator at the age of fourteen at his native place, Adams, N. Y. He was employed by the Western Union Telegraph Company and as newspaper correspondent and reporter until 1877, when he became private secretary to George B. Sloane, speaker of the New York Assembly. Later he occupied a similar position in Washington to Senator Roscoe Conkling, and in 1881 became secretary to Postmaster General James. In 1882 Mr. Van Wormer became secretary and general manager of the Lincoln Safe Deposit and Warehouse Company of New York, which position he held at the time of his death.

## LETTERS FROM OUR AGENTS.

## PHILADELPHIA, POSTAL.

Miss McDaniel, formerly manager of the Camden, N. J., office, has been appointed manager of the North Second Street office. D. H. Farrell, who served all summer as a life-guard at Atlantic City, has been appointed manager of the uptown fruit and produce district office.

Commendable service was rendered by Messrs. Lane and Madden at the International Golf Tournament, held at Haverford, which lasted an entire week.

Albert Zintl, assistant manager of this office, was married at his home on October 20 to Miss Florence M. Biddle. Among the guests present were: C. E. Bagley, superintendent; J. A. McNichol, manager; James H. Wilson, Wm. Fitzgerald, Earl W. Miller, Frances P. McElroy, Robert C. Mecredy and E. H. Locke, of the office force. The bridal couple were the recipients of many useful gifts, among which was a beautiful cut glass water set, presented by their friends from the office.

## NEW YORK, WESTERN UNION.

Mr. and Mrs. J. J. Murtha, of the Hartford Western Union office, who were recently married, while en route to Niagara Falls on their wedding trip, paid this office a visit and were escorted through the operating department by assistant traffic chief C. A. Kilfoyle.

Frank Plain, assistant southwestern wire chief, has resigned and returned to the west.

John N. Warren, aged twenty-eight years, a native of Wheelersburg, Ohio, and employed in the cable office at 16 Broad Street, died suddenly October 23.

A surprise party was tendered to "Senator" William L. Ives, dean of the eastern division, at his home on October 24, when he celebrated his sixty-eighth birthday.

**Remington No. 6, Smith Premier No. 2, \$30 to \$45; Fay-Sholes, \$25. Rebuilt just like new. One year's guarantee. Rentals \$2 and \$3 monthly. All rentals apply on purchase. Central Typewriter Exchange, 203 Broadway, New York.**

## OTHER NEW YORK NEWS.

Assessment No. 499 has been levied by the Telegraphers' Mutual Benefit Association to meet the claims arising from the deaths of Georgiana Tyler at Skaneateles, N. Y.; Michael Horrigan at Cleveland, O.; George H. Sinclair at New York; George W. Dickinson at Seattle, Wash.; and William H. Farrand at New York.

A company has been incorporated in New York for the purpose of publishing news by telephone. Subscribers to the proposed service will receive news of general interest, political happenings, sporting results, etc. The plan of operation will be the same as that which has met with some success in London, Paris, Vienna and Budapest.

## New York Telegraphers' Aid Society Annual Entertainment.

From present appearances the twenty-eighth annual entertainment and reception of the New York Telegraphers' Aid Society for the benefit of the relief fund which will be held on Tuesday evening, November 9, at the Lexington Avenue Opera House and Terrace Garden, Fifty-eighth Street and Third Avenue, will be one of the most successful affairs ever held by the society. Mr. J. J. Riley, manager of the Western Union Telegraph office at 319 Greenwich Street, the chairman of the entertainment committee, is putting forth extra efforts to make this year's affair a great success. A high-class vaudeville performance will be given, followed by dancing, and a pleasant evening is assured to all who attend. Visitors are expected from sister societies in other cities.

Mr. George Levene, as in other years, will look after the talent, which insures satisfaction to all concerned.

A friend of telegraphers and conducted in their interest the Serial Building, Loan and Savings Institution, 195 Broadway, New York, is assisting over one thousand telegraph people to save money and secure homes and is one of the safest possible depositories for your savings. Its stability is guaranteed by the fact that it is periodically examined by the State banking department and has received special commendation from them. Write for particulars.

INVENTORS having electrical patents for sale or wishing financial assistance should address General Superintendent, Box 178, Boston, Mass.

## ATTENTION "WIRELESS."

You can install a wireless station for about \$2.00 to \$20.00. You can study the wide field of wireless telegraphy in practical and theoretical form by sending a one-cent stamp for my circular. I have outfits that will work from one mile to 1,000 miles. It will pay anyone interested in the WONDERS OF WIRELESS TELEGRAPHY to send for my circular. For those who have experimented in this wide field, I have a variety of good instruments. I. WOLFF, 48 Garden St., Brooklyn, N.Y.

## Rubber Telegraph Key Knobs.

No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Price, fifteen cents.

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Leg Pattern . . . . . \$3.50  
Legless Pattern . . . . . 4.00  
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## THE LEFLEY KEY



The Best Key on the Market for Business and Profit. Because it does not stick; is durable; speedy; insures fine clear-cut Morse; an easy sender.

Send draft, express or P. O. Money Order.

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# \$800

**Buys the Material Needed to Build This Home!**

**Price includes Blue Prints; Architect's Specifications; Full Details; Working Plans and Itemized List of Material.**

**OUR HOUSE DESIGN No. 131**

Here is a handsome Colonial residence of eight rooms, bath, pantry and numerous closets. It is 28 feet square, not including porches; full two stories high, and provided with every modern labor-saving convenience. Every detail has been carefully worked out, so that the finished product shows a happy blending of the useful with the ornamental. If you intend to build it will pay you to investigate our offer. This house will please you. You will enjoy it while you use it, and when you are through with it you can easily sell it at a good profit.



**We Save You Big Money on Lumber and Building Material!**

The Chicago House Wrecking Co. is the largest concern in the world devoted to the sale of Lumber, Plumbing, Heating Apparatus and Building Material direct to the consumer. No one else can make you an offer like the one shown above. We propose to furnish you everything needed for the construction of this building except Plumbing, Heating and Masonry material. Write for exact details of what we furnish. It will be in accordance with our specifications, which are so clear that there will be no possible misunderstanding.

**How We Operate:**

We purchase at Sheriffs' Sales, Receivers' Sales and Manufacturers' Sales, besides owning outright sawmills and lumber yards. Usually when you purchase your building material for the complete house shown above, elsewhere, it will cost you from 50 to 60 per cent more than we ask for it. By our "direct to you" methods we eliminate several middlemen's profits. We can prove this to you.

**What our Stock Consists of:**

We have everything needed in Building Material for a building of any sort. Lumber, Sash, Doors, Millwork, Structural iron, Pipe, Valves and Fittings, Steel and Prepared Roofing. We also have Machinery, Hardware, Furniture, Household Goods, Office Fixtures, Wire Fencing—in fact, anything required to build or equip. Everything for the Home, the Office, the Factory or the Field. Send us your carpenter's or contractor's bill for our low estimate. We will prove our ability to save you money. WRITE US TODAY, giving a complete list of everything you need.

**Free Book of Plans!**

We publish a handsome, illustrated book containing designs of Cottages, Bungalows, Barns, Houses, etc. We can furnish the material complete for any of these designs. This book is mailed free to those who correctly fill in the coupon below. Even if you have no immediate intention of building, we advise that you obtain a copy of our FREE BOOK OF PLANS. It's a valuable book.

**Our Guarantee!**

This company has a capital stock and surplus of over \$1,000,000.00. We guarantee absolute satisfaction in every detail. If you buy any material from us not as represented, we will take it back at our freight expense and return your money. We recognize the virtue of a satisfied customer. We will in every instance "Make Good." Thousands of satisfied customers prove this. We refer you to any bank or banker anywhere. Look us up in the Mercantile Agencies. Ask any Express Company. Write to the publisher of this publication. Our responsibility is unquestioned.

**High Grade Bathroom Outfits!**



Price of this Bathroom Outfit. \$37.50

this same outfit. This is a positive fact. other complete outfits that we are offering at prices ranging from \$25.00 to \$100.00. Our catalog describes them in detail. You need the book if you want to keep posted on up-to-date business methods. Get our prices on Pipe and Fittings. Write us today.

Strictly new and as good as anyone sells. We have everything needed in Plumbing Material. Our prices mean a saving to you of 30 to 60 per cent. We can easily prove it if you will give us a chance. Here is an illustration of a bathroom outfit we are selling at \$37.50. Your plumber would ask you about \$60.00 for it's only one of ten.

It's only one of ten. Your plumber would ask you about \$60.00 for it's only one of ten. Our catalog describes them in detail. You need the book if you want to keep posted on up-to-date business methods. Get our prices on Pipe and Fittings. Write us today.

**Hot Water Heating Plants!**

We furnish new complete hot water heating outfits at half the usual prices. Our proposition includes all necessary plans, specifications, blue prints and detailed instructions; so that any ordinary mechanic handy with the use of tools can easily install it. You can't go wrong when you deal with us. We stand back of every sale. You send us today a sketch of your building and we will make you a proposition to furnish you a complete steam or hot water heating outfit.

We also have hot air furnaces. Our booklet on heating plants tells every feature of the heating question. We can quote radiators & heaters separately. Whether you buy from us or not it is a valuable book for you to own. Write us today.



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 I saw this ad. in Telegraph Age  
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Fill in the coupon to the left and we will send you such literature as best suits your needs. We publish a 500 page mammoth catalog fully illustrated, giving our business history and showing all the vast lines of merchandise that we have for sale. We buy our goods at Sheriffs', Receivers' and Manufacturers' Sales. Ask for Catalog No. 933. Our Book on Plumbing and Heating Apparatus contains 150 pages of useful information. Our free "Book of Plans" is described elsewhere in this advertisement.

**Chicago House Wrecking Co., 35th & Iron Sts., Chicago.**

**Water Supply Outfits!**

Modern Air Pressure Water Supply Systems at prices ranging from \$4K.00 to \$200.00. They are strictly new, first-class and complete in every detail. It makes no difference whether you live in the country, you can enjoy every city comfort at little expense. Why not investigate this! We are ready to furnish you with all facts free of charge. All material fully guaranteed. We also have a complete stock of Pipe, Valves and Fittings at 40 to 60 per cent saving. Gasoline Engines at low prices.

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**LOFTIS SYSTEM**  
**Diamonds**  
**ON CREDIT**

**\$33.<sup>60</sup>**  
 On Credit



No. 36 A, 18 Size  
**SPECIAL PRICE \$33.<sup>60</sup>**  
 Pay \$3.36 Per Month

**WATCH AND DIAMOND SPECIALS FOR RAILROAD MEN**

**18 Size Elgin, Waltham or Illinois Railroad Watches**

21 FINE RUBY JEWELS (gold settings); adjusted to temperature; isochronism and five positions; double roller escapement with steel escape wheel, pallet arbor and escape pinion cone-pivoted and cap-jeweled; exposed pallets; compensating balance; Breguet hairspring; micrometric regulator. Open face, lever set double sunk Railroad Dial, large steel hands. In 18 Size Gold Filled Case, warranted to wear for 20 years. Screw bezel, solid back, dust proof, with dust proof screw cap; plain polished, engraved or engine turned. If 16 Size is desired, let us send you our No. 36 B

**\$30** 16 Size 21 Jewel Special  
 Dueber-Hampden Railroad Watch

In Gold Filled, Dust Proof Case, Warranted to Wear for 20 Years.

**Credit Terms: \$3 per Month**  
 Guaranteed to Pass Inspection on Any Railroad

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**\$50**  
 Gentlemen's or Ladies'  
 14k Solid Gold  
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 Fashionable Mounting  
**\$5 a Month**  
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**FINEST DIAMOND**—A marvel of brilliancy, purity and color. Not too expensive for the income of salaried people, yet of such beauty as to awaken the admiration of all lovers of Diamonds. *Diamonds increase a man's prestige and open the door of Opportunity.*

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**Our Prices** are 10 to 15 per cent lower than those of the ordinary spot cash retail jeweler. We are direct importers, buying our Diamonds in the rough, which we cleave, cut and polish in our own work shops. In buying from us you save the profits of broker, jobber, wholesaler and retailer.

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**We Are the Oldest,** largest and most reliable Diamond, Jewelry and Watch Credit House in the world. Est. 1858. We refer to any bank in America—ask your local bank how we stand in the business world. They will refer to their Commercial Agency books and tell you that we stand very high, and that our representations may be accepted without question. Our guarantee has over \$1,000,000 behind it.

**Our Guarantee Certificate,** is the broadest and strongest ever issued by a responsible house. Our exchange system is the most liberal ever devised, for it permits you to return any Diamond bought of us, and get the full amount paid in exchange for other goods or a larger Diamond. Buy now.

**Our Handsome Souvenir Booklet,** telling all about "How Easily You Can System," will be sent free on request. The Diamond is the emblem of success.

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**THE OLD RELIABLE, ORIGINAL  
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**LIFEBUOY SOAP** protects the hands from germs that infect scratches and cuts. It disinfects and heals as well as cleanses.

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together with one of our heavy burnished Ornolu Gold Watch Fobs (regular price 50c), as here shown, with russet leather strap and gold plated buckle. Can you beat this!

**25c**

WATCH FOR REGULAR PRICE . . . 50c ALL NATIONAL SPORTSMAN . . . 15c YOURS TOTAL VALUE . . . . . 65c FOR NATIONAL SPORTSMAN, Inc., 24 Federal St., Boston, Mass.

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Buy At Cut Prices On Credit!

**Lieutenant Landis**  
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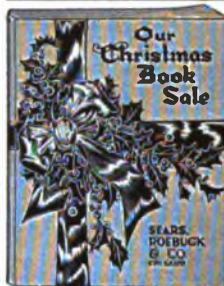
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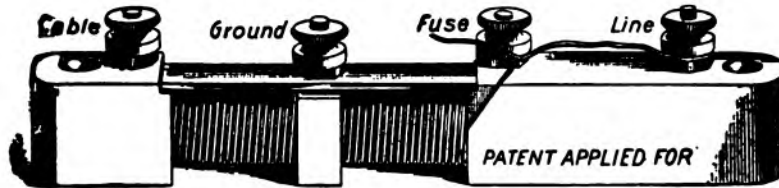
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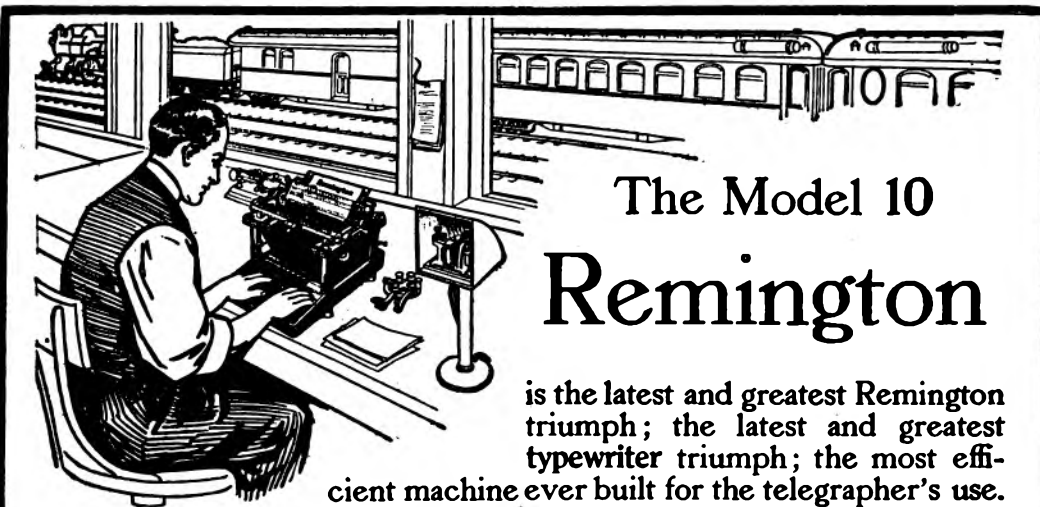
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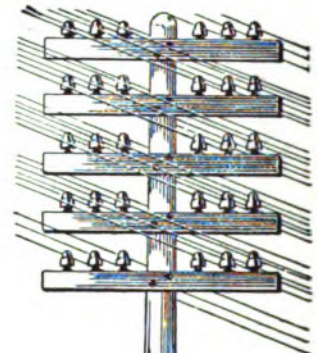
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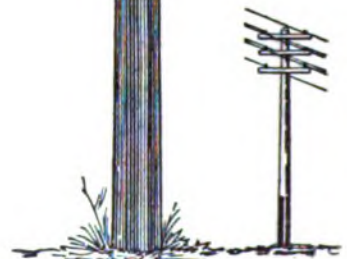
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The diagrams appearing in "Official Diagrams of the Postal Telegraph-Cable Company's Apparatus and Rules Governing the Construction and Repair of Lines" were made from the company's blueprints and are absolutely correct. This volume, which is published 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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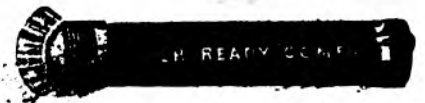
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Twenty-Sixth Year.

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## SOME POINTS ON ELECTRICITY.

BY WILLIS H. JONES.

### The Earth's Magnet Field.

Owing to the spherical form of the earth and the fact that it is a natural magnet, a perplexed student asks the following question:

"The flow of the earth's magnetic circuit being from south to north, where is the return flow? In other words, where is the other side of the completed circuit? Assuming the potential of the earth at the magnetic north pole to be lower than it is at the south pole, what becomes of the magnetic lines of force after they reach the north pole?"

It is apparent that the writer suspects that either on account of the earth's round form, or it being the master magnet of all, a different law obtains from that governing ordinary magnets, but such is not the case.

In Houston's "Electricity in Every-Day Life" he answers this question very nicely in the following words:

"Were it possible to map out the earth's magnetic field, by rendering its flux visible to the human eye, as we have done on a smaller scale in the case of the magnetic figures, by the use of the iron filings thrown on the surface of a photographic plate, we should obtain definite ideas of

the earth's magnetism, that would likely change our ideas of it. Supposing, however, things to be in accordance with present theories, then we would see magnetic streamings, or throbbings in ether, issue from the earth's north magnetic pole and, after having traversed the atmosphere, again enter the earth's mass at the south magnetic pole."

Hence it is obvious that we must consider the mass of the earth as being somewhat equivalent to a long bar of metal in which all flux which flows through it from pole to pole returns in like manner through the surrounding atmosphere. The fact that a magnet is spherical in shape does not alter its capacity for carrying magnetic flux, but it has a great deal to do with its distribution. The flow will always be from pole to pole, and a straight line drawn between those two points will represent the length of the magnet even if it is as round as a ball.

### THE LAW OF INVERSE SQUARES.

Another question asked by the same correspondent is:

"Does the law of the 'inverse square' hold good in connection with magnets?"

It is presumed that the writer refers to the somewhat prevalent belief that the pull of a magnet on its armature varies in proportion to the square of the distance the latter is placed from the polepieces; in other words, to the width of the air-gap.

No; this law does not hold good in connection with an electromagnet as usually constructed, especially the horseshoe-shaped pattern.

Coulomb is probably responsible for creating the impression that such is the case. He tried to establish this law by means of a torsion balance, and was apparently successful, but investigations showed that the conditions existing in his magnet were entirely different from that of the practical magnets in actual service to-day. In other words, his magnet consisted merely of a long, thin, straight steel needle, highly magnetized, from which there was practically no leakage. Under these conditions only does the law hold approximately good. This fact should be obvious for the following reasons:

When an armature is placed near the polepieces of a horseshoe-shaped magnet all of the lines of force do not go through that bar. A few cross directly over the air space between the two ends of the magnet. In other words, there is a certain amount of leakage. Now, if the width of the air gap between the polepieces and the armature be doubled the conditions are greatly changed. The first result that follows will be a

greater leakage from pole to pole. This means that the armature will then receive just that many lines of force less than before, hence the attractive pull of the magnet must also be less than it was at first. This is equivalent to saying that when the air gap is doubled we have not the same magnet to work with, but one greatly inferior.

#### Recent Telegraph and Telephone Patents.

A patent, No. 937,050, for a telephone system, has been granted to H. P. Clausen, of Chicago, Ill.

A patent, No. 937,189, for a telephone repeating system, has been awarded to H. E. Shreeve, of Wyoming, N. J.

A patent, No. 937,399, for a four-party telephone line, has been taken out by K. Weman, of Buffalo, N. Y.

A patent, No. 937,832, for a telephone exchange system and apparatus, has been issued to R. H. Manson, of Elyria, Ohio.

A patent, No. 937,901, for a telephone repeater apparatus, has been taken out by N. G. Warth, of Gallipolis, Ohio.

A patent, No. 938,026, for a locking and signaling system for telephone registers, has been granted to A. S. Spiegel, of Chicago, Ill.

A patent, No. 938,039, for apparatus and system for measuring telephone service, has been secured by S. H. Browne, of Pittsburg, Pa.

A patent, No. 938,060, for an appliance for use with telephone transmitters, has been granted to C. J. Kintner, of New York.

A patent, No. 938,337, for telegraphy, has been issued to J. F. Richardson, of Montreal, Canada. For utilizing alternating currents in telegraphy. The relays include arc-shaped solenoids with arc-shaped cores.

The following patents have expired:

Patent No. 484,375, for a railway-train telegraph, held by Matthew S. Reiley, of Washington, D. C.

Patent No. 485,279, for combined telegraphy and telephony, held by Wm. W. Jacques, of Newton, Mass.

Patent No. 485,334, for electro-magnetic telegraph apparatus, held by Alfred G. Safford, of Washington, D. C.

#### Personal.

Mr. Andrew Carnegie has returned to New York after spending the summer at Skibo Castle, Scotland.

Mr. Daniel Colestock, one of the leading citizens of Titusville, Pa., and a prominent member of the Society of the United States Military Telegraph Corps, accompanied by his wife, was a recent New York visitor and took occasion while in the city to call on many of his old friends.

Mr. H. A. Tuttle, vice-president and general manager of the North American Telegraph Company, Minneapolis, was recently elected to the presidency of the Commercial Club of that city.

Mr. Ralph W. Pope, secretary of the American Institute of Electrical Engineers, has returned from a two months' trip through the Western States, which took him as far as the Pacific Coast. While on this trip he had the pleasure of meeting many of his old-time telegraph friends.

Dr. Sannosuke Inada, electrical engineer of the Japanese Government Posts and Telegraphs, who has been spending the past two months in this country, inspecting telegraph and telephone systems, will sail from San Francisco November 23, on the steamer Manchuria, for Japan.

Mr. A. C. Terry, of Pittsburg, Pa., district manager of the American Telephone and Telegraph Company, and for many years identified with the telegraph at Buffalo, N. Y., was a recent New York visitor, coming here on business in connection with the service.

Mr. Elmer Umsted, son of Mr. W. W. Umsted, manager of the Western Union Telegraph Company at Omaha, Neb., has been engaged by Professor Kelso of the Auditorium Building, Chicago, who sees in young Umsted the possibilities of a great piano instructor.

The Turkish Government, desiring to reorganize the service of the Posts and Telegraphs in that country and to also establish telephonic communication, has appointed as director general of Posts, Telegraphs and Telephones, M. James Sterpen, formerly director general of posts of Belgium.

Mr. Louis Casper, a well-known telegraph and electrical engineer of Chicago, has been appointed principal of the department of telegraphy and telegraph engineering in the Port Arthur Business College, Port Arthur, Texas. Mr. Casper has had a varied and practical experience in the telegraph industry, which eminently qualifies him for the duties of his present position.

Mr. James P. Bradt, the genial old-time telegrapher who has been abroad in the service of the Columbia Phonograph Company for the past six years, has been appointed general manager for Canada and will henceforth represent that company, with headquarters at Toronto, his territory extending from Halifax to Vancouver. This is one of the most important positions in the service of the company and one of the best rewarded.

#### Postal Telegraph-Cable Company.

##### EXECUTIVE OFFICES.

Mr. Clarence H. Mackay, president of the company, accompanied by Mr. C. C. Adams, second vice-president, returned to New York, November 6, after an 8,000-mile trip of inspection of the company's lines in the West. Speaking of the conditions found upon his trip, Mr. Mackay said in part:

"The people out there are not watching the horizon for a return of prosperity. They think it has already arrived, and so it has, if my judgment is worth anything. The telegraph is certainly as good a barometer of business as can be found. In the last twelve months our business in the West has increased remarkably, and we shall lose no time in meeting the requirements.

"We began some time ago the construction of a new transcontinental line of two 435-pound copper wires direct from San Francisco, via Reno, to Salt Lake. It was a serious undertaking because of the difficulty of obtaining a private right of way and imbedding poles in solid rock across the Sierras for practically forty miles, the altitude at the summit being over 7,000 feet. This has now been accomplished, and I had the pleasure of receiving in Reno the first direct message over this line from San Francisco."

Additional wires are being constructed between Seattle and San Francisco, Salt Lake City and Denver, Denver and Omaha and Omaha and Chicago.

Colonel Albert B. Chandler, chairman of the board of directors, has returned to his home in this city after spending the summer upon his farm in Vermont.

Mr. W. I. Capen, general superintendent of plant, has returned to his office after a months' trip of inspection of the lines in the southern division.

Mr. T. J. Keohane has been appointed chief clerk to Superintendent A. L. Edgecomb, at Boston, vice I. R. Woodside, resigned.

The lease with a local district company which delivered and collected the telegrams at Providence, R. I., having expired, this work is now performed by the local staff.

Extensive repairs have been made to the marine stations at Fire Island, Sandy Hook and the Highlands of Navesink. At the latter place a commodious residence has been erected for the use of the observer, who has heretofore had to live in a rented house in the village.

Mr. L. L. Apperson, whose promotion to the chief operatorship of the Mobile, Ala., office of the Postal Telegraph-Cable Company was announced in our November 1 issue, is one of the younger members of the profession in the South who is making a good record for himself. Mr. Apperson was born at Selma, Ala., January 2, 1884. He entered the employ of the Western Union Telegraph Company as operator in 1901. A year later he accepted a position with the Southern Railway at Stanton, Ala., but January 23, 1903, returned to the Selma office of the Western Union as bookkeeper. In March, 1904, he was promoted to be wire chief of the same office. In October of that year he transferred his services to the Postal Telegraph-Cable Company, later going to their Montgomery office, where he served as night chief operator. July 23, 1905, he returned to Western Union employ as traffic chief of the Montgomery office, later becoming night chief operator. In

November, 1907, he accepted the position of chief operator, of the Postal office at Vicksburg, Miss., which position he held at the time of his present promotion.

#### RESIGNATIONS AND APPOINTMENTS.

Mr. B. F. Ramsdall, manager of the Indianapolis office, has been appointed manager of the Detroit office, vice P. J. Becker, who has resigned to engage in other business. Mr. Becker had been connected with the telegraph for thirty-five years, entering the service as a messenger boy in Detroit.

Mr. E. J. Nerburn, of Ogdensburg, N. Y., has been appointed manager of the Rome, N. Y., office, vice Mr. Charles N. Kenyon, resigned to engage in other business.

Mr. J. M. Laurendine, chief operator of the Mobile, Ala., office, recently resigned to engage in the brokerage business.

#### Western Union Telegraph Company.

##### EXECUTIVE OFFICES.

Mr. M. W. Hamblin, city superintendent, who has been confined to his home by sickness for some time past, is still seriously ill.

Mr. John McRobie, superintendent of the American District Telegraph Company at Chicago, was a recent New York visitor.

Mr. E. A. Baird, manager of the Binghamton office of the company, was married to Miss Nina Johnson, of that city, October 30.

Mr. E. C. Davis, all-night chief of the Dallas, Tex., office, has accepted a position in the Barclay printing department of the Kansas City, Mo., office. Mr. Davis is a very efficient telegraph engineer.

The American District Telegraph Company of New Jersey declared the regular quarterly dividend of one per cent., payable on October 22, to stockholders of record October 13.

A new Barclay printing installation has been added to the Cleveland, O., office equipment, on the Detroit circuit, which makes six printing circuits in daily operation in that office, the other five being on the wires extending to New York, Chicago, Pittsburg, Cincinnati and Buffalo.

The appointment of Mr. W. J. Higgins to the managership of the Buffalo, N. Y., office of the company, as briefly noted in our November 1 issue, vice W. A. Sawyer, who was recently promoted to the superintendency at Philadelphia, is but a fitting reward of long and meritorious service for his company. Mr. Higgins entered Western Union employ in 1884 as operator, two years later becoming chief operator of the Mutual Union Telegraph Company, a Western Union subsidiary. In 1896 he returned to the Western Union office as repeater chief. In 1901 he became printer chief and in 1903 was appointed assistant chief operator. January 1, 1908, he was again promoted, becoming chief operator, which position he held at the time of his present promotion. Mr. Hig-



gins' entire telegraphic career has been spent in Buffalo and his consequent close acquaintance with telegraphic affairs in that city renders him especially well qualified to assume the responsibilities of his new position.

Mr. Harry F. Whetzle, whose appointment as chief operator of the Buffalo, N. Y., office was mentioned briefly in our November 1 issue, was born May 8, 1876, at Strasburg Junction, Va. He entered the telegraph service in 1899 at Baltimore and since that time has served the company as manager at Butler, Pa.; wire and repeater chief at Pittsburg; chief operator at Chattanooga, Tenn., and Birmingham, Ala., and assistant chief operator at Buffalo, which position he held at the time of his present promotion.

#### RESIGNATIONS AND APPOINTMENTS.

Miss Ada Eiseman, manager of the office at Monongahela City, Pa., has been transferred to the management of the Brookville, Pa., office, vice Miss M. A. Cox, resigned. Mrs. Ada McCague has been appointed to succeed Miss Eiseman at Monongahela City.

Mr. S. J. Armstrong, division chief in the Pittsburg office for forty-two years of almost continuous service, resigned on November 1 to engage in other business. He was presented with a watch charm by his associates in the office.

#### The Cable.

It is reported that the contract between the Brazilian Government and the Amazon Telegraph Company for the duplication of the subfluvial cable between Para and Amazonas was signed on September 28. The work is to be completed within fifteen months, and a reduction of twenty per cent. in the rates, or thirty per cent. if the traffic exceeds 600,000 words per annum, is to be made.

Cable communication is interrupted November 12 with:

Mogador	October 18, 1909
Macao	October 22, 1909

#### Municipal Electricians.

Recommendation has been made in Kansas City, Mo., for the installation of a complete electric fire-alarm system. At the present time the telephone is depended upon entirely as a means of reporting fires.

Springfield, Ill., and Grand Rapids, Mich., are preparing to install additional boxes upon their fire-alarm circuits.

A new switchboard and other improvements in the fire-alarm system will be installed at Plainfield, N. J., at a cost of \$2,735.

"Young man," said the president of the company, "I started as a messenger boy at four dollars a month and to-day am at the head of the company."

"I know," answered the young operator, "but they keep books in all of the offices now."

#### Radio-Telegraphy.

A patent, No. 937,281, for space telegraphy, has been issued to S. Cabot, of Brookline, Mass. A multiple series spark gap with a rotating member.

A patent, No. 937,282, for space telegraphy, has been granted to S. Cabot, of Brookline, Mass. A multiple series spark gap and means for including any desired number of the electrodes in circuit.

At the regular monthly meeting of the Wireless Institute of New York, held November 3, Mr. Alfred N. Goldsmith presented an illustrated paper upon "Radio-Telephony."

The British Admiralty is beginning the erection of a high-power wireless station at Wick. It is hoped to have the new station in operation in the early part of 1910.

It is reported that during recent experiments carried on in Germany the airship Zeppelin III. communicated by wireless with stations 300 miles distant.

The first recorded wireless messages from the Great Lakes to the Gulf were exchanged during the evening of November 1, between the Chicago Record-Herald and the Houston Post, the distance between the two stations being over 900 miles.

The record for long-distance wireless transmission is claimed by the Pacific Mail Steamship Korea, which, it is stated, on a recent trip from San Francisco to Japan, was in direct wireless communication with the San Francisco station of the United Wireless Telegraph Company, when 4,720 miles distant.

Mr. P. F. Godley, the wireless operator for the United Wireless Telegraph Company at Grand Rapids, Mich., has been engaged to teach the art of wireless telegraphy to those desiring to master this branch of the telegraphic industry at Dodge's Institute of Telegraphy, Valparaiso, Ind.

"Wireless Telegraphy," by Gustav Eichhorn, is a general treatise upon this subject, dealing with the ether and electrical oscillations, coupled systems, the receiver, theoretical results furnished by the sender, theoretical results and calculations in respect of sender and receiver, measurement of waves, management of a station, modern apparatus and methods of mounting. Price, \$2.75. Copies may be obtained by addressing J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

The subject of electric oscillations is one upon which much has been written and yet it is a subject about which very little is known by the average reader. Professor J. A. Fleming in his recent book, "An Elementary Manual of Radio-Telegraphy and Radio-Telephony," has devoted three chapters to a treatment of this subject, and explains in detail the general phenomena of electric oscillations and damped and undamped oscillations. The perusal of this matter ought to do much toward rendering this important question clear in the minds of those interested in wireless communication. Copies of this book will be sent, charges prepaid, upon receipt of price, \$2.50, by J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

At the October meeting of the Society of Wireless Telegraph Engineers, held in Boston, Mr. John Stone presented a paper upon "The Singing Arc and Its Application to Wireless Telephony." Mr. Stone gave a résumé of the development of the singing arc along lines which adapted it for use in wireless telephony and illustrated his talk by numerous diagrams and oscillograph curves.

It has been announced that the steamship Minnesota, belonging to the Great Northern Railway and plying between Seattle and Japan, during a recent trip was in communication with either the Seattle or Japanese wireless stations during every night of the voyage. It is claimed that they exchanged messages with Seattle when 3,628 miles distant from that port. The generating apparatus on board this vessel is a five-kilowatt set.

A patent, No. 936,684, for a receiving system for high frequency electrical oscillations, has been taken out by Frederick K. Vreeland, of Montclair, N. J. Dissimilar coils are wound in close inductive relation and connected in parallel and in the same sense in a circuit traversed by the oscillations, a support for the coils permits their relative movement, and a diaphragm affected by such relative movement of the coils produces audible signals.

A new edition of "Maver's Wireless Telegraphy and Telephony" is now in press and will be ready for delivery about December 1. This edition will contain several new chapters on wireless telephony and a chapter on amateur wireless telegraphy, besides a full description of the most important improvements in wireless telegraphy during the past five years, including directive wireless signaling, singing spark systems, etc. In all over 140 new pages and over 130 new diagrams have been added to the work in this edition, making a volume of 368 pages and 258 illustrations. Price \$3.00. Copies may be obtained by addressing J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

#### A Directional System of Wireless.

In a recent article in the Electrical Review and Western Electrician, A. De Courcy tells of some interesting experiments carried on recently with the Bellini and Tosi directional system of wireless telegraphy.

The work which was carried out for directing the waves consisted of two parts: First, the experimenters were able to direct the waves in a certain line, but in this case the waves proceeded in both directions from the front and the back of the apparatus. Quite recently, however, they were able to suppress the waves coming from the back part, so that the messages could be sent in one direction.

For the aerial circuit there are used two systems, each of which consists of a triangular nearly closed circuit formed by two wires brought down from the top of the mast and connected by a cross-wire at the station. The second vertical

triangle is mounted crosswise to the first, so that we have four descending wires at the four points of the horizon. When the two circuits are excited at the same time, they give a resultant effect, and the direction of the effect in space depends upon the amount of excitation in each. Where one of the circuits only is excited, the waves will follow one direction, owing to the neutralization effects which take place between the two wires of the same triangular oscillatory circuit. In all these cases, however, the term "direction" applies to the front and rear at the same time. Thus if directly in front, or at an angle of no degrees, the energy of the waves is represented by the value 308; at the fifteen-degree point it falls to 264; at thirty degrees it is 198, and so on. The working angle may thus be limited to a comparatively small area. When we mount a like system perpendicular to this we have an effect which is the same as if the original curve were to be rotated about its center, and the waves may thus be directed to any point of the horizon. Were we to discard all the values below 264 as useless, we would thus secure a directing effect limited to fifteen degrees on each side of the center, and so on.

The triangular form is chosen instead of a four-sided circuit, as it is easier to support from a mast. However, all the previous attempts to direct the waves failed because it was impossible in practice to turn such a system about so as to face the different points of the horizon, and the problem is only solved by the use of the double system, combined with an apparatus which allows of varying the excitation in the two systems at will, so as to change the direction of the resulting waves.

For the transmitting and receiving apparatus a radio-goniometer was provided with two fixed coils, at right angles to each other and by means of a third coil, movable and adjustable with respect to these two, signals could be sent in any direction desired or received from one direction only.

In the foregoing experiments it was possible to direct the waves at a given angle, but the waves were sent out in the front and the back direction at the same time, so that there was still an important point to be reached in suppressing the backward waves, so that all the radiation would be sent out from the front and in consequence directed toward a single station. In the former case either of two stations placed at the front or back on the same straight line, could affect the receiving station, so that it would be impossible to say from what side the signals were being sent. As to the new method of transmitting the messages, which was carried out very successfully from the channel coast stations, it can be shown how it is possible to suppress the radiation which passes to the backward side of the station. In this case a third antenna is used, which is composed of a single vertical mast wire, mounted in the middle between the wires of the other circuit. In this way we have at the same

time the ordinary antenna, which radiates out in all directions, and the first-mentioned combination, which radiates only in the front and back direction. When both of these methods are operated at the same time a resultant effect is produced which extends only in one direction.

### The Imperial Press Conference.

At the Imperial Conference held in June last, says the London Electrical Review, a Cable Sub-committee was formed of leading representatives of the press of Great Britain and Greater Britain, to open negotiations with cable companies for press rate reductions. The result was an agreement by the Government-owned Pacific Cable Board to reduce their press rate to Australia and New Zealand from one shilling a word to nine pence a word, and this was closely followed by reductions of about twenty-five per cent. on the Eastern Telegraph Company's lines in India, Australia, New Zealand and South Africa, practically falling into line with the Pacific Cable reductions. There has been submitted for the approval of the Board of Trade the memorandum and articles of a new organization, registered under the name of the "Empire Press Union," with which the Cable Sub-committee will be merged. A secretary has been appointed, and Mr. Harry E. Brittain, the honorary secretary of the Conference, will act in the same capacity and help in the organization of the permanent body.

Dominions and over-sea States will form their own committees and enroll members, and every newspaper of the Empire will be eligible, and may nominate one member.

The object of the Empire Press Union is to carry on the work begun by the Conference, and it now remains to be seen what will be the result of its endeavors to obtain for the newspapers throughout the Empire a better and fuller news service. During the Conference the Canadian section seemed desirous of obtaining lower rates between this country and Canada, and of having news of purely British origin and flavor, and went so far as to suggest the laying of a cable to provide for its realization if the Atlantic cable companies did not reduce their rates.

"Wireless" was to be a valuable lever to reduce charges across the Atlantic, but so far, notwithstanding various protestations and Mr. Marconi's statement at a meeting of the Conference, and the pious hope, if not belief, of others at the Conference, we have not yet been favored with a demonstration that would lead to the belief that it is possible to rely on this system of communication, year in and year out, for continuous working at any speed for from twelve to twenty-four hours daily, between the United Kingdom and Canada. This must have been more or less in the minds of members of the Conference toward the finish, as another plan—viz., that of laying a cable to Canada at their own cost, or preferably that of the Government—was freely mentioned.

It will, therefore, be interesting to note the next step taken, because, if the Atlantic companies remain obdurate, there will be no other plan left but cable laying and working. Will the Government or the Committee rise to this, as nothing material has yet been gained in the reduction of rates on Government lines and the consequent meeting of them on competing lines? The rate of nine pence is probably divided up as follows: Five pence to the Atlantic and land-line companies, and four pence to the Government lines beyond Canada; and the Government is apparently not doing much more in the way of cheap rates than the companies.

### An Alternating Current Telegraph System.

Mr. John F. Richardson, superintendent of the Canadian Pacific Railway Company's Telegraph at Montreal, has been granted a United States patent, No. 938,337, for improvements in telegraphy.

The invention relates to improvements in means for utilizing alternating electric current in telegraphy. It consists essentially in the novel arrangement and construction of telegraph lines and parts incidental thereto, whereby an alternating current is utilized in the transmission of electricity throughout the line circuit for governing the connections to the means for operating the receivers.

The objects of the invention are to eliminate the use of direct electric current as the main power in telegraphic work, thereby effecting a great saving in the consumption of electric current, and to provide a simple and better long-distance means for the transmission of messages by wire.

In Mr. Richardson's system the line circuit is normally closed, the line relays holding the local circuits open. The local sounders are operated by batteries as usual. The relay coils are arc-shaped, forming an arc of ninety degrees. When the line is opened by means of a key, which is normally held closed by a cushion spring, the yoke of the relay is pulled back by an adjustable spiral spring against its back-stop, thus closing the local circuit. The use of alternating current as the main source of power in telegraphy is thus successfully accomplished, for the flow of alternating current throughout the line circuit will in no way affect the sounders, as the armatures thereof are not connected with the said line circuit during their operation or otherwise, therefore the sounding instruments will give forth a perfect signal, the movement of the armatures being induced by a flow of direct current through the local station circuits.

In the matter of economy, it is well known that for all electrical purposes, the aim is to use alternating current as the power, and in telegraphy, where the consumption of current is considerable, the saving will be very great, particularly in long telegraph lines, and in this invention the adoption of the alternating current as the power is made without in any way reducing the effectiveness of the instruments.

A feature of this invention is the multiplication of stations possible through the operation of the instruments in series in the line circuit, thus bringing the alternating current into practical use for all telegraph lines.

The principal claim of the invention is:

In means for utilizing alternating electric current in telegraphy, the combination with an alternator and a main-line circuit energized thereby, of a plurality of solenoids arranged in series in said circuit, said solenoids having arc-shaped bodies and arc-shaped cores, a frame supporting said solenoid and having a bracket portion at its upper end, an adjustable screw stop toward the upper end of said frame and extending therethrough, a conducting member, supported on said bracket portion and insulated therefrom, an adjustable screw contact extending through said conductor, a base supporting said frame and having upwardly projecting lugs therefrom, adjustable pivot point bearings arranged in said lugs, a spindle journaled in said bearings, a yoke rigid with said spindle connected to said solenoid cores and forming a switch having a contact co-acting with the afore-said contact, and a spring rigidly held and connected to said yoke and exerting a constant pull thereon.

#### Death of a French Military Telegraph Heroine.

The death occurred in France recently of one of the heroines of the Franco-Prussian War. Daughter of a naval officer, Mme. Juliette Dodu and her widowed mother were in charge of the telegraphic bureau at Pithiviers when the war broke out. On September 20, 1870, the Prussian vanguard marched into the town. They cut most of the telegraphic wires but overlooked the one communicating with Orleans, and Mme. Dodu, who had hidden the telegraphic apparatus on the approach of the enemy, was able to communicate with that town and keep the French informed as to the movements and manoeuvres of the invaders. In the first days of October the German troops left Pithiviers and the battle of Orleans was fought.

Mme. Dodu took advantage of their absence to establish telegraphic communication with Montargis and to send the Government all the news she could gather. In this dangerous work she was greatly helped by a postal employe named Perceval. When Prince Friedrich Karl marched into Pithiviers Mme. Dodu again secreted the apparatus of which she was in charge, and for seventeen days systematically "tapped" the wires over which the German staff was sending orders and transmitted the news thus gathered to the French headquarters by a wire which she succeeded in using. Then she was denounced and arrested, and but for Prince Friedrich Karl's intervention would have been shot. She was decorated with the Legion of Honor in 1877, her sponsor being Baron Larrey who afterward left her a part of his fortune.

Telegraph Age is headquarters for telephone, telegraph and wireless books and cable codes. All orders accompanied by price filled promptly upon receipt. Write for catalogue.

#### Telegraph Happenings Here and There.

According to a Springfield, Ill., exchange, one of the aldermen of that city is after the "scalps" of the telegraph companies for not putting their wires underground, and expects to put them "on the grill." They will probably be "done to a turn" by the time he has finished with them.

The manager of a telegraph office in a western city recently petitioned the city council to grant his messenger boys the right to ride their bicycles on the sidewalks while delivering messages. The city authorities should have immediately granted this request, as the proverbial messenger boy is so slow that there could be no danger of his overtaking and running into a pedestrian.

The telegraph has been in service so long that it would seem as though everyone would be familiar in a general way with its operation. That such is not the case, however, is shown by the fact that an apparently intelligent young woman of Seneca Falls, N. Y., desiring to send a telegram recently, had to be assured by the operator that the recipient would not recognize her handwriting.

Willie Jones, a Memphis, Tenn., messenger boy, may some day be one of the great labor leaders of the country. He recently induced thirty of the messenger boys employed in that city to strike because they objected to a regulation of the company in regard to wearing a prescribed uniform. The strike, which was declared at noon, was effective while it lasted, but unfortunately for Willie's ambitions, the enthusiasm of his followers soon died out and at 5.30 p. m. he alone was left of the strikers, his companions all having decided to return to work.

We note in an exchange from a small Massachusetts town that the railway telegraph operator in that place while out in his touring car collided with a milk wagon. When a railway telegrapher can afford an automobile it would appear to be a certain indication that the long expected prosperity has finally become a fact.

European countries are now investigating the use of glass telegraph poles and patents have been granted for a machine to be used in their manufacture. The small boys who have hitherto been obliged to confine their activities to breaking insulators will have a new field opened to them when this innovation is adopted.

A telegraph superintendent in one of the western cities has issued an order that all lady clerks and operators must discontinue the wearing of "rats" in their hair. As the order referred to did not designate any one as "rat inspector," it is believed by the ladies concerned that the order cannot be enforced unless some one is selected or consents to act in that capacity. A Nashville, Tenn., telephone manager, evidently of a more conservative turn of mind, has issued a request to the girls to reduce the size of these popular adjuncts to beauty. This seems to be in line with the general movement now being agitated in other circles in favor of standardization, and if carried into effect may result in the adoption of a standard size for "rats."

## The Military Telegrapher in the Civil War.

### PART XXXI.

Russell B. Griffin, a veteran war telegrapher now at the Soldiers' Home at Sawtelle, Cal., has written the following entertaining story of his experiences during the struggle between the North and the South. The narrative deals with adventures of men in whose hands the secrets of the Nation were held. Throughout the tale runs the thread of a delicate and modestly told love story, in which the sweet Southern heroine saved the life of the dashing Yankee knight of the key. Mr. Griffin's wife died a number of years ago, but her memory is tenderly cherished by the rugged veteran, and he always speaks of her in words of endearment. The war telegrapher has a daughter living with her aunt not far from the scenes where her mother was wooed and won amid the stirring events when Federal soldiers and Confederates held the ground alternately. Mr. Griffin's wife died November 9, 1884, just twenty years after the day she saved his life by giving him warning of the raiders. In speaking of her Mr. Griffin said: "Mildred's burial place is on a towering bluff on the Ohio River, under the spreading maples, not far distant from her old Kentucky home. From this spot the stretch of woodland away in the valley may yet be seen, where on that memorable day my abiding love was pledged to her."

"Resigning my position as agent operator on a western railway when President Lincoln called for 'three hundred thousand more,' I hastened to my native town, Delaware, Ohio, and enlisted in Company F, Sixty-third Ohio Infantry, for three years or during the war. The regiment was assigned to the army under General Pope, assembling at Cairo. While marching through the swamps of Missouri I noticed that a telegraph line was being constructed along the road. The enemy was heavily fortified at Island No. 10 and at New Madrid. After a siege of many days, with heavy cannonading on both sides, the enemy was compelled to evacuate, and many prisoners were taken. I hunted up General Pope's headquarters, where I found the operator, George Crain. Now I was eager to be handling war messages. Mr. Crain assured me that my services would be wanted, and I at once made application for duty as operator.

"On March 30 I received an honorable discharge from my regiment. The next day, at Cairo, I called at the military telegraph office, where I found Colonel J. C. Van Duzer, in charge of the telegraph department. He asked me if I would enter the service at once, and, accepting his offer, I was given transportation by river boat to Smithland, Kentucky, at the mouth of the Cumberland. My instructions were to proceed to Chaudets' Landing on the Tennessee River, open a test office, and use every effort to keep the line in working condition running from Smithland to Forts Henry and Donaldson. Procuring

a Government horse, I took the road with an escort of fifteen calvarymen. After leaving Smithland we entered a dense woods; the single wire was attached to insulator brackets spiked to the trees. The wire was burdened with military despatches as Grant's army was facing the Confederate army near Pittsburg Landing. An awful struggle was impending.

"Chaudets' Landing consisted of one house, a large barn and a skiff. I was given a room in the house. The cavalrymen camped in the barn. Colonel Plum in his history makes mention of this lonely place, where galli-nippers, wood ticks and prowling bushwhackers made life uncomfortable. The wire would go down with every wind that blew, and without delay we rode rapidly as possible to repair the break, day and night, in sunshine and storm. At times I was left alone, the escort being called away; but it was consoling to watch the steamers passing up the river laden with troops. Gunboats were patrolling the stream day and night to prevent the enemy from planting masked batteries. The steamer *Tigress*, a fast tug boat, was constantly running between Fort Henry and Grant's headquarters at Pittsburg Landing, bearing military despatches.

"C. W. Hammond with an assistant operator was working at Fort Henry. The office was in a log cabin evacuated by the Confederates. The first day's battle of Shiloh was very disheartening to the Union forces, but Grant's despatches that night were encouraging for the next day's struggle. General Buell with a large army was approaching to reinforce Grant. When we heard over the wire that Buell's forces had arrived and were crossing the river in the night it was very cheering news. Listening to my pocket instrument the next day the dots and dashes passing on the wire said that Buell's army had formed in line of battle at the dawn of day, and with cheering shouts were advancing on the enemy; that the shrill Confederate yell of the day before had subsided. At nightfall the victory was won and the enemy in retreat.

"A message was sent to my father at Delaware, Ohio, during the night, reading, 'The battle at Pittsburg Landing has resulted in a Union victory.' This message was picked up by the press reporters and was the first and only news given by the northern papers the next morning of the Shiloh battle. Only military despatches could be transmitted. Little Mack, a noted copperhead reporter, was so insistent that the operators ordered him to get out of the cabin. This man was McCullough, in after years editor of the *St. Louis Globe*. The newspaper reporters were compelled to take steamers for Paducah or Cairo to report the particulars of the engagement.

"After the excitement of the Shiloh battle life at Chaudets was getting monotonous. One genial companion for me was John Thayer, one of the cavalry escort. He was an all-round musician, and put in most his time learning teleg-



raphy. At my request Captain Fuller had him detailed in the service, and finally discharged as a soldier. Secretary of War Stanton issued an order that competent operators in the ranks as soldiers would be honorably discharged to enter the telegraph service in the army.

"When Colonel Robert Ingersoll was post commander at Fort Donaldson, the famous cavalry raider, General Morgan, appeared suddenly, demanding the surrender. Colonel Bob rejected the demand in a humorous manner. The operator there told us what was going on, then left his office for safety. Presently my office, C. H., was called; answering, I was asked who and where I was at. At once I mistrusted that Ellsworth, General Morgan's operator, had tapped our wire. On telling him who and where I was I asked him the same. He replied that he was General Morgan's operator and that the Yankee force in the fort would soon be captured, and they would take me in soon. Morgan failed and was compelled to retire. Ellsworth was the most noted and the most daring operator in the Confederate service.

"On several occasions he tapped our wires, sending falsely signed telegrams to officers in command of Union army posts to move away in certain directions, when Morgan's command swooped in, capturing the remnant of the garrison and destroying Federal property.

"In October I was directed by Captain Fuller at Memphis to report at the Cairo office for instructions, Thayer to go with me. On reaching Cairo, Thayer was directed to report to Captain Fuller at Memphis. I was instructed to relieve Operator Atwell at Blandville, Ky. Going to Columbus, I met Wiley Dicus and W. C. Hendricks, Kentuckians, who were employed as line repairers, both reliable Union men, who knew the country and every cowpath. They had laid out in the brush many a night for safety and said I would probably have the same experience. A wire was strung on the trees from Columbus to Blandville, where it connected with a wire to Cairo and a wire to Paducah. There were no Federal troops at Blandville; the young men of the town had gone to fight with the Southern army.

"At the hotel where I took my meals there was a piano and violin in the parlor. Here I met some of the young women. I played the violin, and with the piano accompaniment we passed many pleasant evenings. But my pleasure ended very suddenly on the night of November 9. My office was under the Odd Fellows' Hall, which was also my sleeping room. My horse was in the barn in the rear. On this night I had been in the hotel parlor, not dreaming of any trouble. On leaving the hotel, while passing a residence, I was confronted by a lady with a shawl over her head. Stopping near me, she said in a low voice: 'Mr. Griffin, you will be captured and killed if you do not make your escape quickly. Captain Wilson, of Forrest's Cavalry command is in our

house, and his company is coming near now. The young lady's name was Miss Mildred Swain, whom I had met in the hotel at different times, and she was very attractive to me. Thanking her kindly for her warning, and bidding her good night, I struck out down the dark alley to the barn for my horse.

"Stopping at the door to listen I heard horses' hoofs in the street and the rattle of cavalry sabres so near that the risk was too great to get my horse. I then started down the alley again. Coming to a corn field, I made for the woods across the field, keeping on through the brush until I reached the cemetery on Mayfield Creek. Here I sat down to rest and listen. Along in the night I heard sounds that made me shudder—the baying of hounds. An old man named Johnson was a slave catcher. He had three bloodhounds for the purpose in the town. Surely they were on my trail, with no chance to escape those fleet-footed dogs. I could hear no horses' hoofs or men's voices. Soon it occurred to me that the dogs were foxhounds on the trail of wild animals, and when the baying sounded fainter in the distant woods I was greatly relieved.

"At the break of day I made my way down to the stream, crossing over on floodwood on my way to the home of Wiley Dicus, who lived in a cabin on the road where the Columbus wire was strung. Arriving at the house, coffee, bacon and corn pone refreshed me. We took down the wire, attaching my pocket instrument I found the circuit open in the direction of the town, but all right to Columbus, where General A. J. Smith was in command. Wiring him the situation, he informed me he would send out a troop of cavalry double quick, instructing me to be on hand in the road to guide them to the town. In the course of three hours the boys in blue came in sight, and they looked good to me. When the head of the column reached me a halt was made, and I joined the major at the head of the column.

"On reaching the suburbs of the town the Confederate cavalry were seen mounting their horses in the public square, and our cavalry made a dash for them. The enemy were taken by surprise and offering but little resistance they disappeared. They had taken possession of the stores and helped themselves without the aid of clerks. My horse was taken and my office fixtures were destroyed, the poles chopped down and the wires cut. Colonel Plum makes mention of this incident in his history, and my escape by the warning of the young lady. Late in the day the cavalry formed in the public square, preparatory to returning to camp at Columbus. As we rode away, passing the home of Miss Mildred, she and her mother stood on the veranda. I saluted her by raising my hat, wondering in my mind if we would ever meet again.

"After a good rest at Columbus I went to the telegraph office and reported the situation to Captain Fuller at Memphis. I was directed to go to

Humboldt on the Mobile and Ohio road and relieve the operator at that place. The office was in the Osborn Hotel, where I found the comforts of life, except for the Tennessee itch, which prevailed, keeping all the guests scratching. In a short time orders were received from General Dodge, in command at Corinth, to evacuate the line of the road, when Captain Fuller directed me to report to him at Memphis.

"I was then instructed to relieve Edward Butler, operator at Collierville, a station thirty miles from Memphis. Butler said to me, 'You'll have to hustle around to find a place to eat and water to drink,' as there was no boarding house or officer's mess for an operator. The water supply was obtained from Wolf River, three miles distant. An escort of cavalry went with the water wagons, as the Confederate troopers were constantly harassing the picket posts and firing on the water trains.

"I got my cooked rations and two bottles of Catawaba from Memphis daily. A mixed train came out from the city in the morning, returning in the evening. La Fayette station, five miles distant, was the terminus of the road, where John Thayer was operator, with a picket post for protection. Falkner's Confederate cavalry made a raid on the place and the pickets fell back. Thayer wired me what was doing; I notified the officer in command, who despatched a cavalry regiment double quick in that direction. Thayer had a bugle. He, for a ruse, sounded the cavalry call to fall in line of battle, which was effectual in holding back the enemy until the regiment arrived. That bugle call made Thayer a famous fellow with the cavalrymen.

"General Sherman's narrow escape from capture or death was an exciting circumstance. He came out from Memphis with an escort of cavalrymen to inspect the troops at Collierville. Great preparations were made to receive the General. The regiments of infantry and cavalry were on dress parade line, no one suspecting what was to occur. Two officers came rushing into my office to wire the General in command at Memphis, that a force of Confederate cavalry were making a dash to intercept General Sherman and his escort. They did not stop to write the message, but dictated what I should say.

"About this time the officers could see the enemy from the window at a distance, placing artillery in position. The brick depot was in line with the earthwork fort, some hundred yards away. Cannonading now began; a shell or solid shot tore through the brick wall; the mortar dust was stifling and blinding to me. I lost no time in running to the fort. Sherman and his escort dashed in, making a very narrow escape. After an artillery fire of short duration the enemy withdrew. Some days afterward it was learned that a Federal staff officer who was in love with a Southern woman, had divulged to her the news of Sherman's intended trip. The woman, being an ardent friend to the Confederate cause, had notified General Forrest in time to be a little too late.

The traitor officer was dishonorably discharged from the service, his shoulder straps and buttons cut off, escorted outside the picket line and turned loose an outcast.

(To be continued.)

### How the White House Keeps in Touch With the President.

One of the most difficult tasks in connection with the carrying out of a presidential tour and one to the very necessity for which the general public seldom gives a thought, says the Boston Globe, is that of maintaining constantly uninterrupted communication between the White House at Washington and the President wherever he may be.

It is when the President sets out on a prolonged journey such as the recent transcontinental tour that the "intelligence officers" at the White House are put to their wits' ends to forge an elastic communicative chain that will always link the White House on wheels and the executive offices overlooking the Potomac.

It is not merely the distance, although, to be sure, that does constitute a handicap when the chief magistrate is upward of 3,000 miles from home. Much more serious is the circumstance that the President is constantly jumping from place to place in carrying out a whirlwind itinerary and has at no time what would be dignified as a "permanent address."

Finally, in the case of tours such as that of this autumn the fact that the presidential party spends days now and then in isolated localities further complicates the task of keeping the presidential finger on the pulse of the nation.

Presidential business is transacted through the White House even though the head of the nation is thousands of miles away. When the President is settled at Beverly for the summer many of his correspondents address him there, but when he is traveling on limited schedule very few of the letter writers attempt to catch him on the wing. Even those personal friends and political advisers whose communications, by means of a secret code of signals on the envelopes, pass the secretaries and reach Mr. Taft's hands unopened, take the White House route at such times.

They address the White House just as persons who wish to communicate with the officers or men of the Atlantic fleet—address their letters "Care of the Postmaster, New York," even though the fleet is known to be at Provincetown. In other words the recognized forwarding office constitutes the best, surest and quickest route to the desired destination.

It is because this vast volume of mail, often numbering 1,000 letters a day, pours into the White House and by reason of the desirability of having as much of it as possible disposed of at the executive offices, that the President leaves at his base of operations his trusted secretary, Mr.

Fred W. Carpenter, and contents himself for the time being with Assistant Secretary Wendell W. Mischler as his immediate aide aboard the train.

Mr. Carpenter who, during more than six years of the closest association with Mr. Taft, has developed into as capable an "understudy" as such a chief ever had, is at all times able to answer the vast majority of the letters addressed to the President without so much as bothering the busy chief executive with a digest of their contents.

Of course there are some letters that require a personal reply from the President and cannot well await his return to Washington, and these, together with the commissions to be signed and other government documents requiring the President's autograph, are forwarded once a day to the Presidential train. With the system working smoothly, the White House each day despatches a batch of mail to the Presidential train and receives from the train a bundle of communications, including the President's dictated instructions as to various matters, commissions and other papers returned with the Presidential signature, etc.

Such mail, to or from the White House, can be despatched by special pouch if it is deemed desirable, and postal authorities keep the White House fully advised as to the time required for transmission, so that the mail from the White House to the President is always sure to make connections with the Presidential train.

For all that there is this continuous interchange of mail the main reliance for keeping the President in almost momentary touch with the White House is placed, of course, upon telegraphic and telephonic means. The responsibility for the maintenance of this electrical bond rests with what is known as the telegraph and cipher bureau of the executive mansion—in effect the nerve center of American officialdom.

The official in charge of this telephone and telegraph headquarters details one or more of his expert operators to accompany the Presidential train and keep open the communicative system at that end, whereas at the White House the telegraphers, working in "shifts," maintain an ever sensitive receiving station—an institution that is open for business every minute of the twenty-four hours, seven days a week. It is the only institution of the kind under the government that is never closed.

The telegraphic and telephonic experts upon whom so much depends at a time such as this begin their preparations long in advance of the departure of a Presidential party—in fact, just as soon as the itinerary is completed. The bureau first makes up its own itinerary with special reference to telegraphic and telephonic conditions in the territory to be visited, and usually a large map is prepared on which every stop of the Presidential party is indicated with its date, hour and duration.

By means of this chart and a thorough system of reports from train despatchers the exact location of the President's train is always known at

the White House, and in an emergency a message can be placed in the hands of the Chief Executive almost at a moment's notice. For the transaction of the main volume of Presidential business under such conditions efforts are made to handle the accumulated messages at points where the Presidential party tarrys for some hours, or even days. For the present trip the White House telegraphers arranged in advance to divide the route of the journey into districts in each of which were available wires direct to Washington.

Something like two dozen telegraph wires enter the White House and it is consequently possible to secure a direct wire to any city at any time, reserving it for Presidential business as long as desired. Two wires are provided for direct communication with the President, wherever he may be, and in days gone by some remarkable records have been established for speedy work in establishing direct communication with a Presidential party afield.

As a notable case in point it may be cited that in less than fifteen minutes after the late President McKinley was shot the signal officer at the White House had secured two exclusive wires to Buffalo—one a telegraph wire and the other a long-distance telephone circuit, and while the President lay hovering between life and death nearly 5,000 messages were passed between the White House and the Milburn residence, to which the stricken executive was removed from the exposition grounds.

The President has a private telegraphic code, which he can use while traveling for the transmission of messages that it is desired shall reach the White House in absolute secrecy. This is seldom resorted to, however. President Taft, unlike his predecessor, is an enthusiast on the convenience of the long-distance telephone and has ever since he entered official life made extensive use of the instantaneous method of communication.

Heretofore the Cabinet officials in Washington have been wont to go to the telephone and telegraph headquarters at the White House whenever they desired to communicate with the President on tour, but if President Taft elects to use the long-distance telephone this may not be necessary, inasmuch as the President, if the distance be not too great, can talk from his car to any government department.

An interesting feature of the "intelligence service" of the present Taft tour grows out of the fact that 1,165 miles of the 12,759 miles embraced in the total journey represented water travel on the Mississippi River. The Presidential craft was equipped with a wireless telegraph outfit, and as most of the United States naval vessels in the river at that time were similarly equipped, there was no difficulty or delay in transmitting Presidential aerograms to shore stations and thence to the White House.

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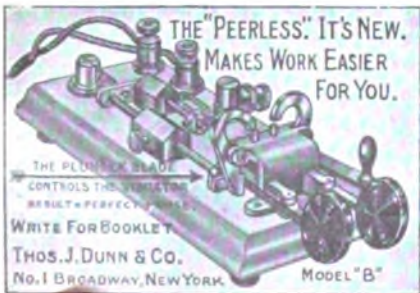
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NOVEMBER 16, 1909.

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.

### Government Regulation of Wireless.

In a somewhat lengthy editorial, the Electrical World, in a recent issue, discusses measures for the regulation of amateur wireless equipments, so that they may not be allowed to interfere with the regularly organized wireless service. There is no doubt but that something will have to be done in this line in the near future, unless improvements are made in the wireless art which will permit of tuning out foreign signals to a greater extent than can now be accomplished. Not many of the amateur stations have sending apparatus sufficiently strong to interfere with the sending from a commercial or government station, but some of them, when within a radius of a few miles from a station which receives messages regularly from ships at sea, can send out waves of sufficient strength to seriously mutilate those signals which come from a distance. An amateur might thus in a case where a vessel at sea was in danger, unwittingly interfere with the receiving of its distress signals and thus prevent

the shore station from despatching relief. With the rapid development in the use of wireless communication for commercial purposes, this problem is becoming more serious, and the government should as soon as possible make a thorough investigation of the subject and adopt measures to minimize the danger from this source. Otherwise, we may some day hear of a great disaster at sea, which might have been avoided by means of the wonderful agent which we now have at our command, but for the thoughtless interference of some amateur who is afflicted with the popular craze.

### Young Women and Messenger Service.

A year or two ago, when the telegraph companies proposed to hire girls as messengers, they were soundly abused on all sides by the press and individuals. They accordingly refused to employ any girls for that service. On the other side of the question, a western paper, in a recent editorial utterance, which has been largely copied, says in part:

"The refusal of one of the telegraph companies to employ a young woman as messenger because of her sex has brought several inquiries, in which there is evident a feeling that it is unjust to deprive young women of such an opportunity to earn a livelihood. We can not see why it is not as desirable for young women to deliver telegrams as it is for them to work in department stores, to act as collectors or to solicit subscriptions of any sort. The delivery of messages is not an unhealthful occupation. It is really more healthful than indoor work and is for that reason more desirable.

"Of course, young women should not be expected to go into saloons to deliver messages, but the great majority of messages are delivered to places where a young woman may go with entire respectability.

"The young woman of to-day is not the helpless creature that the young woman was three or four decades ago. She is independent, resourceful and enterprising. Industrial conditions have changed and many young women of to-day find it absolutely necessary to earn a living, or to at least assist their parents in earning it. Under such conditions it is unjust to deprive them of opportunity because of their sex. As well say that young women should not be collectors, should not solicit subscriptions for books or should not work in factories or department stores as to say they should not deliver telegrams."

### The Reliability of the Telephone.

Editor Telegraph Age:

Your editorial in the November 1 issue of Telegraph Age, on "The Telephone," is confirmatory of the feeling that has long obtained in Morse circles on the question of the reliability of matter transmitted by telephone, and the lack of knowledge and information as to what is daily accomplished in this regard without the "fuss and feathers" suggested in the matter of the spelling of words and their repetition. If this practice had to be adhered to in the dictation of letters to stenographers, or in millions of im-

portant transactions dictated over the telephone daily, the present telephone business would drift into innocuous desuetude.

The writer conducted telephone experiments for over a year in the transmitting and recording of domestic and foreign news matter and commercial correspondence over distances of from 100 to 500 miles, maintaining a speed in excess of record-breaking Morse, with practically perfect copy, properly punctuated, and with few and insignificant typographical errors. In accomplishing this result a slight codification of some eight or ten characters was provided for, but in practice these codifications were found hardly necessary.

The receiving operator employed in these experiments was a female typist, taken from the office force, without any instruction in this particular work, except that developed in this practice.

The theory that transmission by telephone should be hedged about by all sorts of protective conditions is only a repetition of the practices that obtained in the early days of Morse sound reading, when it was required that the embossed tape should be kept running as a protection against errors arising from reading by sound.

Telephone transmission errors has been the subject of much discussion, especially in the conventions of Railway Telegraph Superintendents, and readers of this paper are undoubtedly familiar with the opinions set forth by members of this association as to the impossibility of utilizing the telephone in substitution for Morse in train despatching and railway service. Yet today the advantages of the telephone in this service are pretty generally conceded, and it is utilized in preference to Morse.

Transmission by telephone of news matter is daily practiced in the telephone service at a speed in excess of fifty or sixty words per minute, without previous instruction or practice, and the writer has personally transmitted telephonically, domestic news matter, without error, at the rate of from eighty to one hundred words per minute.

Of course, this is accomplished through a system and method that have been proven experimentally. To one familiar with conditions as they to-day exist, the suggestions as to the repetition and spelling of words to the extent proposed seem absurd.

Telephonist.

New York, November 4, 1909.

### Government to Act Upon Telegraph-Telephone Merger.

The rumored absorption of the Western Union Telegraph Company by the American Telephone and Telegraph Company has attracted the attention of the United States government and it is said that the Department of Justice will take steps to prevent the consummation of the deal if there is anything in the merger which can be construed as a violation of the anti-trust laws.

### Magnetic Club Fall Dinner.

The fall meeting and dinner of the Magnetic Club will be held at the St. Denis Hotel, Broadway and Eleventh Street, New York, Wednesday evening, November 17. Among the guests on this occasion will be the officers of the Signal Corps of the New York State National Guard, and of the Department of the East, United States Army. They will tell something of the history of the Signal Corps and the practical application of its work. As the operation of the signal service is closely related to that of the telegraph, this part of the program should be of interest to the members of the club, and a large attendance is hoped for. The officers and visiting delegates of the Telegraphers' Mutual Benefit Association, which holds its annual meeting on the afternoon of the same day, will also be the guests of the club.

### Pictures by Telegraph.

Experiments have been conducted recently with considerable success by the London Mirror with the Thorne Baker process of transmitting photographs by telegraphy. The method by which the work is accomplished by this process is as follows:

First a half-tone photograph is printed in gum on lead foil, the photograph being compressed under a hydraulic press, so that the dots of gum, which represent the picture, are sunk flush with the surface.

The lead film so prepared is attached to a cylinder, which revolves spirally under a delicately balanced stylus.

Through the cylinder into the stylus, and thence to the telegraph line, passes an electric current, which is broken whenever the stylus touches one of the dots of gum composing the picture in the revolving cylinder. Thus the receiving station receives a series of impulses, varying with the size of the dots.

The impulses then received at the station actuate the receiver and so build up a fresh photograph, dot by dot. Each time the current flows a dot appears on the chemically prepared paper, and when the whole surface has been thus covered an exact reproduction of the photograph at the receiving end is created, ready for the process of engraving.

Improvements are steadily being made on the process and Mr. Baker hopes eventually to make use of wireless to carry on his work.

### Railroad Operators Ask for Increased Pay.

Telegraph operators on most of the railroads operating out of Chicago have petitioned for increases in wages of from \$10 to \$15 per month.

A novel factor enters into the situation in the substitution by the railroads of telephones for the telegraph. Contracts now in existence on roads that have adopted telephones cover only the service of telegraph operators, so that now on the lines where the telegraphers are telephone operators they are working without a contract. New contracts with the railroad companies are now sought by the men. In addition they ask for increased wages.

## OLD AND RECENT TOURNAMENTS.

### General Information as to Early and Late Speed Trials, with Incidental Comments on the Persons Concerned in Them, and Unnecessarily Complete Reports, Perhaps, as to the Part I Myself Played in Them and in Other Related Events.

BY WALTER P. PHILLIPS.

(Continued from page 757, November 1 issue.)

Office of the Boston Herald,  
Boston, May 7, 1868,

Mr. P. H. Burns,

Dear Sir: The copy you sent I think a little superior to the average received direct from operators, so far as spelling and construction of sentences is concerned. Of course, there is lack of punctuation, but aside from this, the copy taken in the short space of an hour, is, judging from an experience of many years, in revising the same for publication, most excellent.

Yours truly,

C. H. Andrews.

Office of the Boston Post,  
Boston, May 7, 1868.

Mr. P. H. Burns.

Dear Sir: I have examined the original copy taken by Mr. Phillips, of Providence, containing 2,731 words, which were received by him from you last evening, and am gratified to state that, in point of legibility and accuracy, the manuscript compares favorably with, and is in many particulars superior to, the average of manifold writing that comes under my eye.

Yours respectfully,

A. G. Harlow.

Although the speed trials took place in May, 1868, it was not until the Spring of the next year that Professor Morse got around to send me the gold pencil case and pen. As his representative, James D. Reid, put it, in his gentle Scotch way, the Professor was very conservative about the expenditure of any considerable amount of money. First he suggested that the matter be allowed to rest until Christmas, and when that mystic season had come and gone it was discovered that he had thought better of commemorating the day on which a child was born in Bethlehem before whom the kneeling magi were lost in adoration, and had decided to defer the presentation until his own birthday arrived. He didn't fail to make his implied promise good, however, as will be seen from the appended letter:

New York, April 27, 1869.

My Dear Sir:

Ever since I received the proof of your great skill, in connection with your skillful associates, in testing rapid transmission of despatches by the Morse Telegraph System, I have been desirous of manifesting to you, and also to N. J. Snyder, Esq., of Philadelphia, some token of my gratification on your accomplishment of feats which, so far as I know, are unexampled in the annals of telegraphy. Please, therefore, accept from me, on this, the seventy-eighth anniversary of my birth, the accompanying gold pencil case and pen, as a very slight and indeed inadequate expression of my admiration of your masterly performance of recording 2,731 words in one hour, a feat which I have not failed to put on record in my report to the Department of State on the telegraph apparatus of the Paris Exposition of 1867.

The necessity for exclusive attention in preparing the above mentioned report has prevented an earlier recognition of your skill. My thanks are also due to all concerned in the satisfactory result of the test of speedy transmission. While your associates deserve high praise for their rare dexterity in manipulation, you and Mr. Snyder, I think, deserve the highest praise for the admirable and indeed faultless manner of recording that which was so ably transmitted. Accept, also, the assurance of my sincere respect and esteem.

Samuel F. B. Morse.

Walter P. Phillips,

Providence, R. I.

I improve this opportunity to express the opinion that there were at least ten men who could have taken Burns and made a much better copy than I did, prominent among whom were John E. Wright and Fred Catlin, two of the most perfect all-around telegraphers I have ever encountered. When I was eighteen years old I went to Boston and took a position, a part of my duties being to take a press report from New York, Sunday afternoons. It was during the later days of the Civil War and it was customary to get out extras if the war news justified it. Sherman was making his famous march from Atlanta to the sea; Sheridan had been called to Virginia from the West and was soon to make his great ride on which Buchanan Read based his stirring poem with the refrain: "And Sheridan twenty miles away"; and the grim and silent Grant was planning his terrible campaign of death and destruction which eventuated in the succession of sanguinary encounters between the Southern and Northern forces which ended at Appomattox when General Lee made his unconditional surrender. One Sunday it was Frank Beach who nailed me to the cross, and another it was Fred Seibert, who was such a phenomenal receiver that he didn't have to confine himself to the Morse alphabet when sending. He simply made a wreck of me. What I had apprehended was Piper's Ferracy I afterwards had the mortification of seeing Wright put down as Harper's Ferry, after I had broken on it several times. He was then in his sixteenth year, and was a recent arrival from Canada. He wore a short jacket with a row of shining brass buttons down the front, wrote a hand like a master in penmanship, and could send to charm the bird from the bush. Old man, you won my heart that Sunday afternoon when things looked pretty blue for me, telegraphically considered, and I trust you will take it not amiss that I am still leaving quite your full share of it in your gentle possession. Somebody has spoken of a bad quarter of an hour, but I had almost a whole bad hour with Burns. He rose to heights that I had never dreamed of his reaching, but even this was as nothing compared with the things that Seibert had done to me a few years before, when the quiet young person came up and said: "If you are not used to him you can't take him, you know. He is one of those crazy Pittsburg senders. Let me try it." And young Mr. Wright proceeded to

gather in Mr. Seibert as easily as if he were a companion graduate from the wires of a northern clime. We used to wonder if the Canadian companies and railroads had any good operators left. Those that came to us must have been inspired, for from the moment they landed in the States they were without superiors and had but few equals among American operators.

For fifty years Canada has been sending to the United States operators of the very highest class—men of character as well as of first-class telegraphic ability. The first of these that I remember was George Clarke, and following him closely were Jack Wright, the Curry brothers, Edward and Tom, and Tom Allen. For forty-five years following their advent the Dorans, the Barberies, the Fullums, the Morelands, the Saylor, the Largays, the Mitchells, the Gibsons, the Waycotts, the Benetts, the Curlettes, the Mavers, the Hoyts, the Inglees, and all their clever Canadian contemporaries have been crossing the

sender, he could put Joseph in a mental condition with ten or a dozen messages that rendered the latter as one not clothed nor in his right mind. He would run his fingers through his abundant black hair, until it stood upright, his bright, black eyes would send forth wicked flashes from their baleful fires and his language, always ornate, and sometimes profane, would take on new lights and shadows, becoming at once convincing and picturesque. With a dozen messages lying about, all more or less bereft of some of their necessary details, Labonte's observations would run about like this: "See 'em? Got 'em in one little minute from Billy Allen. You know what I call him? No? Billy Hell. He is a youth, and he is childish. He sends one message as if he had two hundred—may be two-fifty—that must be gone before he can have his dinner. A! well, so is the operator of the States—always he is in a hurry. When he sends, ah! yes, of course, La! la! la. Mais oui, yet when



CHARLES A. TINKER.

GERRIT SMITH.  
(1880)

EDWARD A. LESLIE.

imaginary line separating their country from Uncle Sam's domain. It has been said of certain countries that all their best people stay at home and they send the scum of the cities to the United States, but it must be admitted that Canada has sent us her best. I recall but one exception, and he was such an original, cynical, sarcastic and jovial son of Satan that unless one were compelled to work a wire with him, his telegraphic infirmities were apt to be forgotten. He was a French-Canadian, and his name was Joseph Labonte. He came to Providence, when I was a messenger. He succeeded—possibly at one or two removes—William H. Allen, a high-toned contribution from Scituate, Mass., who, when he got away from us, proceeded to get away with us whenever he could get on a Providence wire. First he bombarded us from Boston and later from New York. But from whatever place he worked his miracles, his natural and conspicuous victim was Labonte, and being a stunning

I send to him then he is ausgespiel as the Irish say, Ha! Ha! He makes useless havoc of the nerves and the messages themselves. See? Look at all these messages that would already be on their way for delivery but for Bill Allen's haste. Sacristy! but it would be blank, blank amusing if it were not so blank, blank pathetic." And Joe would then proceed to patch up the fragmentary messages which, taken in connection with his own disheveled and indignant appearance, used to remind me of the story of Sut. Lovengood, probably related by some of the earlier American humorists. I used to hear my grandfather tell it. According to the relator, Sut. indulged in the luxury of a starched shirt. It was the first one that had been seen in the community that Sut. so fitly adorned, and having no guide, philosopher and friend to properly adjust him to an unusual environment, Sut. mounted the troublesome kind of a garment that, when worn by Nessus, dripped the blood which infected and



caused the death of Hercules, and went to his work in the hay field. As Sut. mowed and perspired, the flour starch accommodatingly unbent and everything limbered up nicely. When the sun had set, Sut. rested beneath the spreading chestnut tree—a sort of Manhattan Beach incarnate in that he was swept by cooling breezes. At bed time he found that his new article of raiment had become cemented to him, and after many vain attempts to separate himself from it, he went to the barn, climbed into the hay mow and, catching his shirt collar on a hook, usually employed for some rugged purpose, he jumped into a hay mow on a lower floor. Sut. arrived at his destination in a condition to pose to some genre artist as an aboriginal as he appears in his nude and unostentatious moments. Speaking of the shirt, when he had rescued it for future adventures, Sut. said thoughtfully: "Gosh! It just looked like the picture of the Battlefield of Mexico—a patch of skin here, a bunch of hair thar,

Shape, Hutchinson and others appears to have been undertaken. The first recorded demonstration by anybody was made by E. C. Boileau, of Philadelphia, who is credited with having sent to me in the winter of 1875, four hundred and fifty words in ten minutes. The confidence with which newspapers assert and predict is well illustrated in this case. I quote from the Inquirer, of Philadelphia, which said in the course of a column article about telegraphy in general: "Last winter E. C. Boileau sent from Philadelphia to New York four hundred and fifty words, taken at random from a newspaper article, in ten minutes, being at the rate of forty-five words per minute, and copied, in a neat, legible hand, by Walter P. Phillips, of New York. The time made by Mr. Boileau will never be beaten on the Morse telegraph, under like circumstances, except by himself." As a matter of fact, there was floating about at that very moment a sender in the person of Albert S. Ayres, who had made phenom-



FRED CATLIN.



CHARLES H. DAVIS.

JULES GUTHRIDGE.  
(1890)

and blood, blood, blood, in all directions." Labonte and his messages, when Bill Hell had been agitating the mystic key, reminded me of the foregoing hoary-headed and white-whiskered story. The blood was in Joseph's eye, the hair was distinctly in evidence and tumbled at that, and if his tormentor had come within reaching distance, his skin, figuratively speaking, would have surely been nailed to the door somewhere near the wigwam of J. Labonte.

When Mr. Henderson, of the Sun, said to Madame Sembrich: "I prefer your singing of 'Ah, fors e lui' in 'Traviata' to Patti's," she replied, shaking her head in grave protest, "when you speak of Patti, you speak of something that was only once." So with Labonte. We speak of something that was only once.

After the 1868 speed trials, things seem to have settled down for several years and no serious attempt to compete with the time made by Burns,

enial records in all parts of the country, and who, eight years later, sent 500 words to Boston and intermediate points in the ten minutes that Mr. Boileau had occupied with his 450 words. For one, I am glad that Mr. Boileau didn't send any more than that number. It must have been about this time that I printed the appended in one of the telegraphic papers—the Operator, I believe:

#### EDDIE BOILEAU.

Eddie Boileau, Eddie Boileau.  
Never could man send so pretty as you;  
Never could mortal pound brass as you do;  
So plain and so firm, and so rapidly, too.

"Helen Blazes!" says Bif, "he has fingers like steel. And he's as good as he looks, from his head to his heel, He's a bad man to tackle and makes us all feel That to catch him is much worse than catching an eel."

Ah! Eddie Boileau, to an old friend confess  
Some of the things at which we all guess:

How are you always so neat in your dress?  
What makes your moustache turn up like an S?

Why are your eyes so sparkling and bright?  
Why is't to know you is my great delight,  
Although you've rushed me many a night?  
Ah! Eddie Boileau, with your iron-shanked wrist,  
As sencer and gentleman, you head the list;  
To a tired man's prayer, I beseech you, pay heed;  
I weaken—I own it—I'm done up, indeed.

(To be continued.)

### The Real Thing.

The following is an extract from a letter written to Fred Catlin from Nantucket, last September, when Walter P. Phillips was visiting his old friend, Patrick B. Delany:

It is a pleasant thing for his friends that Delany makes it his choice to live on this fascinating island of Nantucket, to work a modest farm, and to ride in the long, cool afternoons over the rugged moors which no doubt suggest to him the face of his native land as he dimly recalls what it was like in his childhood, but which to those unfamiliar with the physical features of the beautiful emerald tinted isle, the land of song and poetry and story, bring to mind the desolate part of England in which the Brontes lived, and from whose somber regions Charlotte and her sisters sent forth, timidly and with prayers, their wonderfully entrancing books to charm and astonish the reading world.

This afternoon, when Delany was driving me over the moors, each engaged with his own thoughts, my mind ran much on the Brontes and I recalled that the father of these wonderful women had been brought up in Ireland, and that the chances were he had chosen to settle in England in a lonely locality that reminded him of home. For he was a genuine Son of the Sod, this Patrick Bronte. In Ireland he had been Prunty as his ancestors had always been, and he was born in County Down in 1777, on the day of the Saint whose name he bore. He went up to Cambridge and here he and Temple, a countryman of his, drilled side by side to become soldiers such as might repel the threatened invasion of England by the French. Temple became Lord Palmerston, and Patrick Prunty became Patrick Bronte and the father of three famous women. I was thinking these matters over and wondering which of the two—Palmerston or Bronte—was the more highly honored, when my dream was dispelled by a voice which said: "Did you hear, Phillips, that both the Western Union and the Postal had abandoned the quadruplex? They had to on account of electrical interferences—the trolley wires and other disturbing causes. Old high potentiality knocked the old quad. out. In some ways it was a delusion and a snare drum (as Mrs. Partington said of something else), though it served its purpose, and a very important one, but we shall have to do without it in the days to come. Both tele-

graph companies are back to the duplex of which the best one of all, of course, is the polar."

Then we rode on in silence for a while, and I was resuming the threads of my romantic thoughts about the Brontes and the English moors of which Thackeray spoke so pathetically when Charlotte died—of her lonely home and her great genius as described by the man whom she adored and to whom, though a stranger to her, she had dedicated the second edition of "Jane Eyre," paying in that dedication the most eloquent tribute to "Vanity Fair," which had just been published, that any one has ever paid, and I was endeavoring to recall what Charlotte had written in a friendly letter anent her sister's death about the moors that get so into one's mind at Nantucket, and to so insistently remain there, in spite of everything.



PATRICK B. DELANY.

"My sister, Emily, loved the moors," she said. "Flowers brighter than the rose bloomed in the blackest of the heath for her; out of a sullen hollow in a livid hillside her mind could make an Eden. She found in the bleak solitude many and dear delights and when she went away to school her nature proved too strong for her fortitude. Every morning when she awoke the vision of home and the moors rushed on her and saddened and darkened the day that lay before her."

"Are you still awake, old man?" casually observed a voice to my right. "I was thinking about the duplex," Delany went on, "and it occurred to me that we never had a real polar duplex until Cook and Peary butted into the game."

Mr. Charles W. Jaques, of Ashtabula, Ohio, a former old time military telegrapher, in renewing his subscription recently, writes: "Although I have been out of the telegraph business for over twenty-five years, I still find great pleasure in reading your paper. It carries me back to my younger days and gives me information in regard to many of the friends of my earlier life."

## Telegraph and Telephone Systems as Affected by Alternating-Current Lines.\*

BY J. B. TAYLOR.

(Concluded from page 734, October 16 issue.)

The early telephone systems copied telegraph practice in making use of a single conductor with earth return, but since it is only in isolated cases that a grounded telephone is at all satisfactory, and since when in the vicinity of other wires it is almost invariably quite unsatisfactory, we shall, for the purpose of this discussion assume throughout that the telephone is operated on a two-wire metallic circuit.

The whole science of having a perfectly quiet telephone line is dependent on the Wheatstone bridge principle, that no current will flow in the wire or instrument connecting two points at the same potential, even though these two points are on conductors carrying currents of considerable magnitude. The practical application of this principle requires that each wire of a telephone circuit shall have the same resistance, the same inductance, the same capacity, and the same insulation resistance; and more exactly, that these conditions of equality shall hold, not only for the circuit as a whole, but for each and every short section of the circuit. Still more exactly these conditions of equality must hold for the entire range of frequency to which the apparatus is sensitive and for currents of any magnitude that are likely to be introduced into the circuit.

In practice these ideal conditions can be attained only approximately, even after making numerous transpositions of the two conductors.

Where the telephone circuit serves also for a telegraph line, the fact that the telephone is on a metallic circuit does not make the telegraph circuit metallic. For this reason, the same general considerations that apply to any telegraph line will apply to telegraph service obtained from telephone wires in the usual way.

The actual magnitude of currents in telephone lines, resulting from speech sent into the transmitter, cannot be given with any accuracy. The strength of the battery, the special characteristics of the transmitter, the ratio of transformation in the induction coils, the constants of the line, not to mention the intensity of the voice, and the manner in which it is directed into the transmitter—all these are factors affecting the value of this current. For the purposes of this discussion, however, we may assume that on short lines the current may be as high as two or three milliamperes, while at the receiving end of long lines the current may be less than the one-hundredth part of this and still be sufficient for the proper understanding of conversation.

On any telephone system eternal vigilance is the price of first-class service. The insulation always has a tendency to become worse, and

change in resistance at connections will upset the balance. So long as the telephone line has the field to itself, the closest attention need not be paid to these points. However, when in the neighborhood of other conductors, departure from a theoretically perfect balance immediately begins to be felt, and much more attention must be paid to transpositions and insulation. While the writer states nothing new, he wishes here to emphasize the importance of bringing the insulation of the telephone system as a whole into first-class shape before wasting any time or money on transpositions. In many cases, on a telephone line becoming unsatisfactory, it is the practice to cut in more transpositions. If these have previously been located at every tenth pole, they may be doubled up, placing one at every fifth pole. Probably there are few telephone lines, on the same poles with power lines, where transpositions at every fifth pole are any more effective than at every tenth pole. While with some forms of transposition there is no objection to placing as many as the line will hold, those forms which involve cutting the wires and making splices are likely to have imperfect joints, with consequent loss of balance. In general, the more transpositions the more likelihood of high-resistance joints. We have also seen a fantastic arrangement of seesawing the two conductors of the telephone line up and down from pole to pole in the vain hope that a noisy line would be quieted in this manner.

In a recent instance, additional transpositions were placed in a telephone line, and also in the power line, with small improvement in service. The trouble was eventually found in some transmitter dry batteries, which were located away from the instrument in a damp location. It is the habit of telephone manufacturers to make common connections between the primary and secondary circuits of their instruments in the endeavor to save, either a few inches of wire, or an extra contact at the hook switch. This means that unless attention is paid to every inch of the telephone system, it is poor economy to replace the cheap pony glass on the outside line by high-grade porcelain.

The resulting disturbances in any telegraph circuit will be due to electromagnetic and electrostatic effects; that is, the two factors must be combined vectorially, the angle of this combination depending on the power-factor of the load and various constants of the telegraph circuit.

Some of the features of electromagnetic and electrostatic inductive effects are given herewith.

Electromagnetic.	Electrostatic.
Varies with load.	Constant effect.
Varies with position of car.	Independent of position of load (neglecting line drop).
Induced electromotive force in proportion to frequency.	Open circuit potential (to ground) independent of frequency. Charging current if grounded, in proportion to frequency.

\*Abstract of a paper presented October 8 at the American Institute of Electrical Engineers, New York.

Induced electromotive force proportional to length.

Current in closed telegraph line practically independent of length. (Assume total impedance increases proportional to length.)

Induced current in instruments greatest when all keys are closed.

Practically same current in all instruments.

Line resistance and reactance an important factor limiting current.

Generally the predominant effect in telegraph lines.

Slight shielding action obtained from neighboring conductors.

Part shielding obtained by placing in lead-sheath cables, or by placing underground.

Open circuit potential (to ground) independent of length.

Charging current, when grounded proportional to length.

Charging current in some instruments greatest when distant key is open.

Current a maximum in some instruments, while zero in others.

More in the nature of a constant current effect.

Generally the predominant effect on telephone lines.

More effective shielding action from neighboring conductors.

Effective shielding by use of lead-sheath cables.

#### SUMMARY.

All working conductors are surrounded by electromagnetic and electrostatic fields. These fields induce electromotive forces and charges in neighboring conductors. With an ideal metallic circuit, external fields are a minimum. Similarly, an ideal metallic circuit may be in fields of any strength without being disturbed.

Practical considerations prevent these ideal conditions from being realized. Hence currents will be induced in any conductors wherever placed as a result of currents and potentials on other conductors. Disturbance results only when these induced currents are of sufficient magnitude to be objectionable.

Commercial telephone lines have little margin to meet disturbing conditions more severe than normal. An increase of telephone currents to three or four times their present values would doubtless result in great disturbance to other wires in the same telephone system and require new standards of construction and maintenance. The same statement applies to telegraph systems.

Theoretically a balanced telephone line can be operated in proximity to alternating-current wires. This is not true of a telegraph line, as there is no way of balancing a circuit using earth return.

When trouble is experienced on a telephone line it may be possible to clear same by putting the system in first-class condition. Where trouble is experienced on a telegraph line, some change in the apparatus or circuit arrangements will be necessary.

For any given case, all the features of the power system and signaling system should be taken into account with a view to arriving at the proper procedure to reduce or to eliminate the disturbances.

The president characterized the paper as an exceptionally interesting and important one, and called upon Mr. Charles F. Scott to open the discussion.

Mr. Scott, in telling of a single-phase railway system in his experience, said that the electromagnetic induction was considered to be the most serious element and that he set about to devise some method of counteracting it. As the load on a railway is shifting, there must be many sections and even then the induction in the telegraph wire will change gradually as the train moves, while the induction in the transformer changes instantly when the train passes it. Moreover, the induction in the telegraph line is not proportional to the current in the trolley wire, but depends also upon the proportion of current which flows in the rails and that which flows in the earth. This variable proportion is dependent upon the number of tracks, the distance from the train, and other conditions. After some consideration he proposed to wind the primary of the transformer differentially by including certain turns in series with the trolley and other turns in series with the rail, so as to make the electromotive-force induced in the transformer more nearly equal to that induced in the line. While this did not offer a complete remedy, it appeared to be a step in the right direction and worthy of a trial. He then described a modification of that method the one which was later adopted on the telegraph circuits paralleling the electrified portion of the New York, New Haven and Hartford Railroad. A neutralizing circuit having practically the same exposure as the telegraph wire is employed as the primary circuit for supplying the neutralizing transformer. This in turn gives a secondary electromotive-force, which is practically equal to that induced in the telegraph wire. The two are connected in opposition. In order to appreciate more fully the intricate problem which is presented it is interesting to note the principal variables which have an effect upon the electromotive-force produced in an adjacent wire: (1) The current in the trolley wire, the amount of which varies with the load; (2) the current in the rails; (3) the current in the earth and the effective position of this current; (4) the phase of the current which is not the same in the trolley, the track, and the earth; (5) length of exposure, which depends upon the varying position of moving trains; (6) the distance from the railway or primary circuit to the telegraph wire, which in a road with two or more tracks is liable to change without notice. By taking a suitable number of turns the electromotive-force on the secondary is made practically identical with the electromotive-force in the telegraph wires. The tendency for alternating current to flow in the telegraph circuit is therefore eliminated. As the secondary coil carries no alternating current, the transformer acts as if on open circuit. The transformer may therefore carry a number of secondary coils, each connected to its own telegraph circuit. It is found that the



secondary coils introduce but little impedance into the telegraph circuits and that the increased mutual induction between telegraph circuits is inappreciable. The arrangement and capacity of the neutralizing transformer is adapted to the particular conditions in which it is to be placed. The neutralizing circuit is grounded just beyond the ends of the exposed section. If this is long, two or more neutralizing transformers may be installed, and the neutralizing circuit may preferably be grounded midway between adjacent transformers. Some time before the electric service was inaugurated on the New Haven road, the engineers of the telegraph company made inquiry in regard to the conditions which might be anticipated. These were discussed, and this system of neutralizing transformers was explained. An order was placed for a number of transformers about a year before the electric service was started. The transformers were built and installed and are now operating as originally designed. The transformer is of the simplest type and is adequate for handling a large number of telegraph circuits. The transformers along the New Haven road are arranged for the accommodation of thirty telegraph wires. It was found that the electrostatic effect upon the telegraph wires, although paralleling a 10,000-volt trolley for a long way at a distance of only a few feet, is not apparent on the system. This may be due to a considerable number of telephone wires, which probably distribute the charge among themselves, and, as these wires are grounded in regular service, the effects due to electrostatic induction have introduced no serious effects, and, indeed, have failed to be discovered.

Mr. A. W. Copley then described some tests made on the single-phase installation on the New York, New Haven and Hartford Railroad, for the determination of the nature of disturbances in neighboring telegraph lines caused by current in the power circuit and the causes of and the remedies for such disturbances. Bad weather conditions were approximated by placing leakages between lines and ground. Several different adjustments were made on the telegraph instruments by a telegraph expert, when there was no alternating current in the line, these adjustments being made to correspond with what might be met with in practice. After each adjustment, alternating current was introduced into the circuit in increasing amounts, until it began to affect the working of the instruments. The ratio of the alternating-current voltage to the working direct-current voltage was then taken. This was tried for alternating current of both twenty-five and fifteen cycles, and on simplex, duplex and quadruplex circuits. The first tests made on simplex circuits were made with box relays in the circuit. It was found that these relays showed the effects of the alternating voltage at very low values, the signals becoming uneven and mushy. Tests made with these relays gave the ratio of allowable alternating voltage to direct current working voltage

as about 0.5 for twenty-five cycles, and 0.4 for fifteen cycles. Duplex circuits are less sensitive, the ratio in this case averaging 0.9 for twenty-five cycles, and 0.7 for fifteen cycles. Quadruplex circuits are by far the most sensitive, and show a great deal of variation, but average values of 0.2 and 0.15 were obtained for the ratios at twenty-five and fifteen cycles, respectively. Results on actual lines checked closely with these results. Mr. Copley pointed out the fact that although the allowable fifteen-cycle voltage is only about seventy-five per cent. of the allowable twenty-five-cycle electromotive-force, the voltage induced by a given amount of current at fifteen cycles, is only 0.6 of that induced at twenty-five cycles, and therefore the telegraph lines are slightly better off with the lower frequency. It is seen then that disturbance can be overcome if only the working direct-current voltage is made high enough. This is quite an effective method as long as the direct current is not increased above allowable limits. The method is substantially the same as the second remedy given by Mr. Taylor, i. e., increasing the working current. If it is undesirable to increase the current, but increase of voltage is allowable, a combination of his first and second methods may be used, increasing the impedance or resistance of the line, and at the same time the direct-current voltage, holding the current constant. The last remedy he mentions, the bug-trap arrangement, devised by Edison in the early days of the quadruplex, might be emphasized. Tests made by this device showed that it was possible to work a simplex line in which the alternating induced electromotive-force had several times the value of the direct-current voltage, but it was found to be inapplicable to cases where the alternating voltage varied. If the induced electromotive-force is steady, the arrangement is quite efficient, but if not, the relays must be constantly adjusted. In regard to the calculation of inductive disturbances, Mr. Taylor has indicated the importance of a knowledge of the values and the positions of the currents in the various parts of the circuit. In particular, it is necessary to know the amount and effective position of the earth current. From theoretical statements, it appears that part of the return current would be found in the rails and a part at the image of the trolley wire. But tests made on the New Haven road and at other places indicate that the effective position of the earth current is far below this image; in fact, its depth is in the order of ten times the depth of the image.

In a written contribution to the discussion, Mr. L. C. Nicholson, of Buffalo, said in part as follows: The three-phase, 60,000-volt, twenty-five-cycle transmission lines of the Niagara, Lockport and Ontario Power Company from Niagara Falls to Syracuse run parallel and closely adjacent to the same company's private telephone lines for a distance of 200 miles, and to Western Union Telegraph Company's telegraph and tele-

phone circuits for 125 miles. The separation between the power lines and the private telephone lines varies from 150 feet to ten feet, the average distance being about fifty-six feet, and between the power lines and the Western Union Telegraph Company's lines the average distance is about seventy feet, though frequently not more than thirty feet. The power lines are transposed only where they are parallel to Western Union circuits. The private telephone line is a copper circuit, on separate poles on the power-line right-of-way. The wires are transposed ten times per mile. The Western Union circuits consist of one continuous two-wire telephone circuit transposed twice per mile, and eighteen telegraph ground-return circuits using from seventy to 250 volts storage-battery current. Originally and before voltage was put on the power line paralleling the Western Union circuit, transpositions were carefully put in to prevent induction effects. In a distance of 105 miles thirty 120-degree transpositions or ten total transpositions were placed at intervals varying from three to five miles. After more than a year's operation of this line transmitting some 6,000 horsepower, during which time no disturbance of any kind arising from normal operation was felt on the adjacent telephone or telegraph lines, eighteen of the thirty transpositions were changed so that the upper conductor was no longer transposed, but remained the upper conductor for a distance of fifty-seven miles. The two lower conductors were transposed 180 degrees at the original transposition points. The remaining twelve 120-degree transpositions covering forty-eight miles were unchanged. Evidently the 180-degree transposition scheme gives a circuit equivalent to a non-transposed single-phase circuit, the two conductors of which are in a vertical plane with, in this case, six feet separation. During two years' operation of this line with loads as high as 15,000 horse-power no disturbance has been felt on adjacent parallel telephone and telegraph circuits, during normal operation. In view of this experience, transpositions of the power wires are considered entirely unnecessary, and in subsequent lines which have been built contiguous to foreign circuits no transpositions have been made. As stated previously, neither the private telephone system nor the Western Union telephone or telegraph circuits can detect the presence of the power circuits when operating normally. However, when a ground occurs on one phase of the power line the electrostatic unbalancing causes chattering of telegraph instruments and sometimes blows fuses in the telegraph or telephone circuits. These disturbances are always of short duration, being usually less than twenty seconds, which is the maximum time a ground can remain on any part of the system before being automatically cut off. Electromagnetic effects of a ground are felt only slightly, on account of a high resistance placed in the neutral connection to earth or the sending transformers,

which allows the passage of approximately thirty amperes earth current. Formerly when the system was operated with a thoroughly grounded neutral, the electromagnetic effects were considerable on account of short-circuit currents to earth, sometimes burning out fuses, relays and lightning arresters. Other forms of abnormal operation have been experienced, and their effects upon parallel circuits noted. Single-phase power transmitted over two wires of a three-phase line causes no disturbance. The combination of transmitting three-phase power approximately one-half the total distance and single-phase power the remaining distance, has never caused inductive disturbance of any kind. Transmitting power three-phase over duplicate lines separated from each other several miles, using two conductors of one line and one conductor of the other line to make up a single three-phase circuit, causes disturbances which appear to be due entirely to electromagnetic induction. Thus, normal voltage on only one wire of either causes no trouble unless considerable three-phase load is delivered (using two wires of the other line), showing that the purely electrostatic effect is negligible under conditions of normal voltage. When, however, a ground occurs on one phase, causing full line potential to exist between the other two phases to ground, the electrostatic effect shows up in a mild form, as mentioned previously. In general, experience shows that with separation between power and telephone lines, transposition of power wires is unnecessary; that transient electrostatic and electromagnetic effects accompanying grounds on the power line are mild and of slight consequence; that the only class of disturbances that will cause trouble to telephone or telegraph instruments is caused by heavy electromagnetic effects induced by short-circuit currents passing through the earth for considerable distances, as may occur in star-connected, high-power, high-voltage systems which operate with a grounded neutral.

#### **The Hudson Word Counter Again on the Market.**

Every telegrapher who operates a typewriter should have it equipped with a Hudson Word Register, which is now placed on the market by a manufacturing house which has the reputation of producing the very best material and goods of a superior quality. This simple yet accurate device for counting words written upon the typewriter is easily read, instantly set and has a recording capacity up to 1,500. It unerringly registers the number of words written and thus obviates entirely the necessity and annoyance of counting checks. It can be supplied with attachment for any standard make of typewriter. The device is made in compact form, carefully finished and is an ornament as well as a labor saver. The price is \$5.00 and orders may be sent to J. B. Taltavall, Telegraph Age, 253 Broadway, New York. Orders should state what make of machine it is to be used on as attachments differ.

### Seaboard Air Line Adopts the Telephone for Train Despatching.

The Seaboard Air Line has recently completed the installation of a telephone train-despatching circuit between Raleigh and Monroe, North Carolina, a distance of one hundred and forty-eight miles. This equipment was put into use on September 4, and has been giving excellent service continuously since that time.

Mr. W. F. Williams, superintendent of telegraph of the Seaboard Air Line, who has been an earnest advocate of the telephone since its use was first proposed for train despatching, has personally superintended the selection and installation of this equipment, and largely to his efforts is due the excellence in construction of the line and installation of the apparatus.

The portion of the road selected by the Seaboard officials for the first telephone circuit is located between Raleigh and Monroe, the dispatcher's office being located at Hamlet, fifty-three miles from Monroe and ninety-five miles from Raleigh. This portion of the road is single track and carries a heavy traffic, being in the main trunk line to the South.



MR. W. F. WILLIAMS, PORTSMOUTH, VA.  
Superintendent of Telegraph of the Seaboard Air Line.

Between Raleigh and Hamlet there are nineteen selector stations and two siding telephones. Between Hamlet and Monroe there are ten selector stations.

The line is constructed of No. 9 B. & S. gauge hard-drawn copper wire, two hundred and ten pounds per mile. Twenty-inch soft copper tie wires are used and all joints are made by means of copper sleeves. The wires are transposed regularly every one-fourth mile. On the section between Hamlet and Monroe the line is carried on a cross-arm, while on the section between Raleigh and Hamlet the line is carried on brackets attached to opposite sides of the pole just beneath the lower cross-arm. Where the line is carried on cross-arms the transpositions are made

by means of the Pierce drop bracket, the idea being that in case of a broken insulator there will always be the cross-arm between the two wires. Where the line is carried on brackets the transposition is accomplished by raising the brackets on one side and lowering them on the other for a distance of two poles, which provides ample clearance for the transposition.

The dispatcher's telephone equipment consists of three sets of head receivers and breast trans-



FIGURE 1.

mitters with cord and plug attached, one set for the use of each trick dispatcher. Figure 1 illustrates the method of using these sets. This cut is from a photograph taken of one of the dispatchers and the desk equipment at Hamlet. The sending cabinet, it will be noted, is equipped with individual call keys, one for each way station. A pair of jacks is mounted in the front rail of the desk into which the plug connected to the dispatcher's telephone set is inserted.

A key is provided for closing the dispatcher's transmitter battery circuit and is so arranged that the circuit may be held closed while talking only, or locked closed, as desired. Portable storage batteries of four volts and sixty ampere-hour capacity are used for the dispatcher's transmitter battery. There are two sets of these, one being in service while the other is being charged.

The chief dispatcher's desk is provided with a standard desk stand telephone, which, however, has associated apparatus designed specially to give good transmitting and receiving and still not interfere in any way with the sending or receiving of the regular dispatcher.

The necessary retardation coils and condensers are provided to absorb the noise produced when sending signals to the way-station selectors. This is necessary in order that transmission and signaling can be carried on simultaneously.

A repeating coil is introduced into the line at the dispatcher's office, which separates the line



into two portions. This arrangement allows signaling on either end and independent of the other and results in a considerable saving of sending battery. The two ends of the line terminate at the despatcher's office, on O'Connell lightning arresters, being brought into the office with No. 12 twisted pair braided rubber-covered wire, independent of all cable. Switches are provided just inside of the protectors so that all of the station apparatus can be cut off from the line if desired. Figure 2 shows the method of mounting the terminal apparatus referred to.

At the way stations the telephone equipment consists of the "flexiphone" transmitter arm,

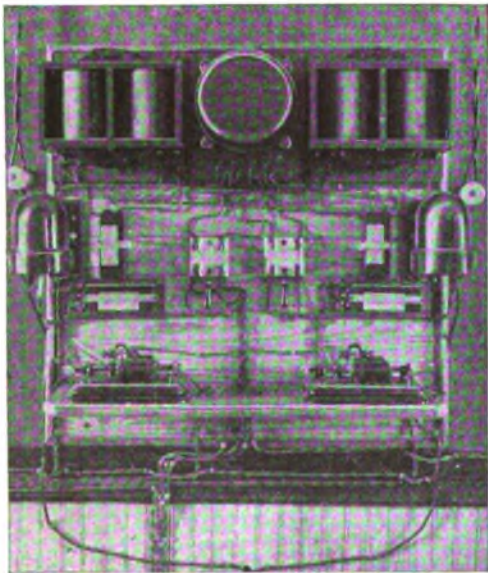


FIGURE 2.

equipped with a special switch hook for use with the leather head band receiver, as shown in Figure 3, together with its associated induction coil, condenser, etc. A small push button key is provided, which, in its normal position, maintains the circuit for listening. When the operator desires to talk, the push button key is operated. The use of this key is necessary in order to give the best possible transmitting and receiving, especially under the condition where there are a large number of stations which may have receivers in circuit simultaneously.

The selectors at the way stations are of the main line bridging type, and are wound to 4,500 ohms. These selectors are bridged directly across the line. A variable resistance is furnished which is placed in series with the selector winding. This resistance is of a high value near the despatcher's station, gradually decreasing at successive stations, so that the last station on the line has no resistance. This resistance is used to compensate for the line resistance and line drop in potential, the result being that all selectors receive the same quantity of current, about eight milliamperes.

On each side of the selector and in series with it are two small retardation coils to protect the selector windings from injury by lightning. The "answer-back" is produced inductively between the line winding and a low resistance winding in series with the bell and selector contact.

The method of bringing in the leads at the way stations is similar to that at the despatcher's station, O'Connell protectors being used in all cases. No fuses are used in protecting the line or apparatus inasmuch as the line is not liable to cross with any high-tension circuit.

At two blind sidings between Raleigh and Hamlet are located wall telephones in weatherproof boxes attached to telegraph poles. These boxes are covered with galvanized sheet iron and have a line switch so arranged that the switch must be opened before the door can be closed. These sets are equipped with high efficiency transmission circuit and apparatus similar to that at the way stations. No ringers are provided, as it will not be necessary to ring these stations, and hand generators are omitted since the despatcher is on the line at all times.

Two portable telephones are furnished for use on wreck cars. These telephones have a hand set, with the necessary associated apparatus for talking and listening, and also a ringer, for use in case the despatcher wishes to call the wreck car while the set is in service. An eighteen-foot line pole is furnished with each portable set, this being



FIGURE 3.

in three sections of six feet each. One hundred feet of flexible conductor is provided with each pole.

At intervals of about twenty-five miles a set of test switches are installed, these being located at Wadesboro, Sanford and Aberdeen. There are three switches, one of which opens the circuit to the station apparatus, the others open the line either way, leaving the station apparatus connected to the end of the line not opened. No provision is made for grounding or short circuiting, as it



is not thought that these operations will be much used when testing.

The movement of trains on this section of the road operated by the telephone circuit is assisted by the use of a telephone block system. Between Monroe and Hamlet, with ten intervening stations, there is in service a special composite block telephone system. This is operated on a local telegraph wire and both telegraph and telephone may be used simultaneously.

Between Hamlet and Norlina, one hundred and fifty-four miles, is a magneto telephone block system of thirty-six stations operating on a grounded block wire.

As stated previously, the despatching telephone circuit has been in operation since September 4. The business of the road on this division has been handled during that time in a manner very satisfactory to the officials of the company.

The dispatchers and operators have adapted themselves very readily to the new method and find that they can handle the work with greater ease than by the telegraph. Mr. H. W. Purvis, the chief dispatcher at Hamlet, states that he is very well satisfied with the new arrangement, and that his dispatchers are finding the telephone method a great improvement.

One of the prominent officials of the road, when asked for his opinion of the telephone, judging from its operation so far, replied that he would like to see every mile of the Seaboard Air Line equipped with the telephone at once.

[We are indebted to the courtesy of the Western Electric Company for the engravings to illustrate this article.]

### Wireless Telegraphy in the United States Navy.

Upon the first introduction of wireless telegraphy the United States Navy grasped its possibilities and was among the foremost to utilize it aboard ship. From the crude sets of the first days the navy has kept abreast of the times and now possesses installations on most of its ships that are second to none as regards efficiency, reliability and work accomplished. The navy has no standard set as yet, and among the ships may be found nearly all the prominent makes except that of Marconi. The only government vessel at the present time having the latter installation is the revenue cutter Seneca.

Until the latter part of the year 1904 the German Slaby-Arco outfit was the only set used to any extent. It was of the coherer and Morse writer type and gave fair service, although being, of course, far inferior to the present-day sets. The Slaby-Arco transmitter, however, survived and is to be found to-day on a great many of the smaller ships. Its compactness—the spark-gap, condenser jars, sending inductance and ventilating motor being all contained in one—makes it very desirable for small cruisers and gunboats. But the receiver, with its coherer so unreliable and unwork-

able when there was atmospheric disturbances, soon gave place to the electrolytic detector. On many of the ships the operators made detectors of their own by using a small incandescent lamp bulb, knocking off the tip and after breaking off the filament filling it half full of a twenty per cent. solution of sulphuric or nitric acid, one of the platinum leading-in wires being broken off flush and the other one bent over toward the broken off one. This detector, with a potentiometer, a couple of dry cells and telephones in multiple around it, was good for reliable work from seventy-five to one hundred and twenty-five miles. The DeForest electrolytic soon replaced this form of detector and was much more sensitive; up until the spring of 1908 it was as sensitive and as reliable a detector as was in use. On shore stations a bare wire was used, but on board ships the wire had to be encased in glass on account of vibration and rolling of the ship, the wire and glass being ground off flush so that the depth of immersion in the electrolyte made no difference in the sensitiveness. The bad feature about it was, however, that unless the operator was extremely careful a strong spark close by would burn the point off and it then had to be taken out and the point and glass again ground flush by rubbing on a whetstone. The carborundum and perikon detectors are now used almost exclusively in the navy on large ships, and at a great many of the naval shore stations.

In the present-day installations there are six principal makes of wireless sets represented on board naval vessels, namely, the Shoemaker, DeForest, Fessenden, Stone, Telefunken and Pierce; with the exception of the Telefunken all are of American make. The Pierce is used on the three scout cruisers, Salem, Birmingham and Chester; the firm making this set has since gone out of business.

The "capacity" of these different makes ranges from two kilowatts to five kilowatts and most of them are capable of standing a fifty per cent. overload. The Connecticut at the present time is having installed a twenty-five kilowatt Fessenden outfit in connection with the high-powered stations the Fessenden Company is erecting for the navy on shore. This set has yet to be given a thorough trial, but the present indications are that the power is too great to be successfully handled on shipboard unless some radical changes are made to allow more clearance from the transmitter to the antenna. Thus far the three kilowatt sets have been doing the most satisfactory work and reaching the longest distance nearly all of them having a higher power factor than the five kilowatt sets. Most of the small cruisers and gunboats use the old Slaby-Arco transmitter with its rotary turbine interrupter (a very efficient piece of apparatus, by the way) and a 25,000-volt induction coil. In most cases use is made of a Shoemaker or De Forest receiver.

In the North Atlantic battleship fleet are also quite a number of composite sets, but instead of the Slaby-Arco the transmitter is a Shoemaker or

DeForest with a three kilowatt or three and a half kilowatt Cutler-Hammer or Holtzer-Cabot 60-cycle, 110-volt motor-generator and 20,000-volt step-up transformer; this set is as near a standard as any in use. The new copper-coated Shoemaker jars give splendid service, and no more trouble is encountered from blistering. The spark-gap in most cases is a modified one made at the navy yards. It consists of a one-fourth horse-power blower, with rubber hose attached to the lower spark-gap, which is a piece of brass pipe about three-quarters of an inch in diameter, the other spark point being a blank piece of zinc of the same diameter and about five-eighths of an inch in thickness. The blast of air across the spark-gap increases the radiation to a considerable extent, and by keeping the sparking points cool prevents fluctuations in the spark and gives it a higher pitch and clearer sound. By making the leads from the alternator to the primary of the transformer as short and straight as possible and by increasing or decreasing the power by field regulation rather than by the use of impedance or resistance a very high power factor is obtained. The aerial is directly connected to the transmitting inductance and with a loading coil in the antenna and a coupling around fifteen per cent. seems to give better results and radiation than the inductive connection.

The motor-generator is brought up to speed by simply closing a switch which operates an automatic starter, the operator taking about five seconds. The transmitting key is usually a standard telegraph key, but its function is only to close the circuit through an electromagnet which operates the main key, which is in series in the primary circuit of the transformer. Protective devices, made of condensers or of high-resistance carbons, protect the motorgenerator set as well as the ship's lamp and motor circuits from kick-backs.

The electrolytic type of detector, while being very sensitive, is not adapted for fleet work. The carborundum gives splendid results when properly handled, it being impossible to destroy its sensitiveness by strong sparks or static electricity; on the contrary, it seems to improve, however, for long distance work it cannot come up to the perikon. The perikon and a very fine wire electrolytic detector are of about the same sensitiveness. The perikon soon becomes dead, however, from strong sparks or static electricity, although recovering by being given a short rest. The best combination seems to be the carborundum for short distance and the perikon for long distance. The telescopic transformer type of tuner, with variable condenser, gives splendid results as to selectivity and bringing in the maximum strength of signal.

Flat-top loop aerials of the L-shape are used almost exclusively, the grid being made up of from four to ten phosphor-bronze wires strung eighteen inches apart. The new cage masts have not affected the radiation or receiving to any noticeable extent, although the construction of the new masts

necessitates running the antenna through and parallel to the after-mast mainly.

The Continental Code is used for official work and the American Morse for general work. There being considerable work between the navy and commercial ships and shore stations, the navy operators must be skilled in the use of both codes.—*Electrical World.*

#### A Peculiar Request.

The following article appeared in the New York papers on July 30:

"One of the oddest letters that has ever been received at the Coroner's office came in the mail yesterday. But for the fact that it contained \$55 in money, which the writer requested to be used for his funeral expenses when his body should have been found, it would have been regarded as a hoax. The letter was dated July 27, was signed 'J. F. Keregan,' and was as follows:

To the Coroner: You will find about \$50, which please use for my funeral expenses, after having communicated with my sister, Mrs. M. J. Walsh, No. 62 Hull street, Charleston, S. C., as to disposition of remains.

P. S.: I will go off the Battery if everything else fails me. If body is not recovered, please remit to sister at above address.

The word of a man about to die is considered generally to be depended upon. Any tale of wrongdoing along the line of that heinous crime I solemnly avow to be untrue in every particular. No more need be said.

"Keregan was up to July 15 an operator in good standing with the Western Union Telegraph Company, in the main office at 195 Broadway, where it was said that he started work on June 11 and resigned on July 15, and that something seemed to be troubling him. At his former boarding-house it was said that Keregan seemed to be suffering from melancholia."

On July 31 a body was found floating off the Battery, but as there was nothing found on it to connect it with the letter, and no one identified it, in due course it was buried as unknown. Nothing more was heard of the case until October 13, when an old time operator, Mr. Elster, who is now engaged in the brokerage business in Charleston, called at the office of the Telegraphers' Mutual Benefit Association, and stated the facts substantially as they appear in the newspaper item.

He substantiated his claim to obtain possession of the body and effects, together with the letter and money referred to. Among the effects was a bunch of keys, which included a locker key, duly numbered and charged to J. F. Keregan, and which was fully identified by Mr. W. J. Quinn, the operating department pay clerk for the Western Union Telegraph Company at 195 Broadway. Mr. Elster proved that the deceased was J. F. Keregan and had the New York City records altered from "unknown" to the name of the deceased, after which he had the body taken to Charleston for burial.

Mr. Keregan was a member of the Telegraphers' Mutual Benefit Association.

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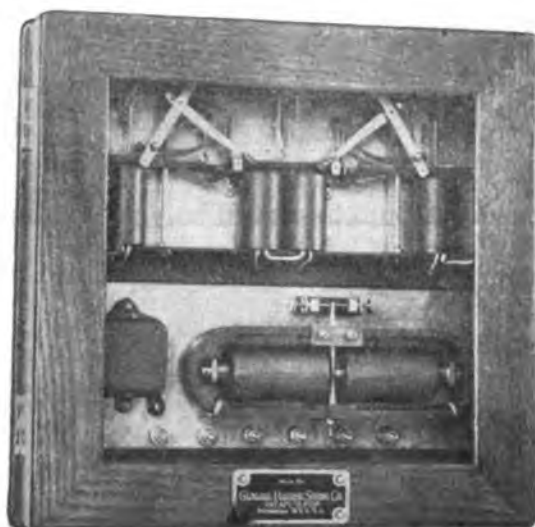
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### The Railroad.

It is announced that the New York, New Haven and Hartford Railroad Company is planning to install telephone train-despatching service on their Northampton division.

Miss Gladys Meldrum Camp, daughter of W. J. Camp, of Montreal, electrical engineer of the Canadian Pacific Railway Company's Telegraph, was married on November 9 to Mr. M. L. Jackson, of that city.

W. L. Connelly, superintendent of telegraph of the Chicago, Indiana and Southern Railway at Gibson, Ind., has been appointed trainmaster of the Danville division, with office at Danville, Ill.

Thomas Brennan, assistant superintendent of the Chicago, Indiana and Southern Railroad at Danville, Ill., has had his jurisdiction extended over the Indiana Harbor Belt Railroad, and will assume also the duties of superintendent of telegraph, with office at Gibson, Ind.

The New York, Chicago and St. Louis Railroad Company is planning a telephone train despatching equipment for its line from Conneaut to Bellevue. This circuit will be the first one installed by this company, and if it proves satisfactory they will in all probability equip their entire line with telephone train despatching apparatus. The total length of the circuit is 132 miles and there will be twenty-eight regular station equipments, with a number of special siding telephones so located that the train crews can get in direct communication with the despatcher. The siding telephones will be mounted in telephone booths which will offer shelter for the train crews when reporting to the despatcher, or receiving orders from him. Arrangements are made so that the telephone sets at these sidings are automatically cut free from the line when they are not in use.

The paper upon "Transmission Line Crossings," prepared by Frank F. Fowle for the Montreal Convention of the Association of Railway Telegraph Superintendents, has now been issued in book form. Mr. Fowle has devoted considerable time to the study of this subject of rapidly growing importance, and his paper is a valuable discussion of the question to all who are in any way interested in telegraph engineering. His book treats of the dangers from transmission line crossings; the effects of a failure of a high tension transmission line at a railroad crossing; causes of failures of high tension lines; different forms of protected crossings and discusses a proposed type of crossing which would be so reinforced electrically and mechanically as to make its failure an extremely remote possibility. It is well illustrated with numerous examples of line construction and bound in substantial cloth covers. Price, \$1.50. Copies may be obtained by addressing J. B. Taltavall, Telegraph Age, 253 Broadway, N. Y.

The Indiana Railroad Commission has asked all of the railroads in that State to furnish a list of the dangerous electric wires crossing the companies' telegraph and telephone lines. The object of the commission is to eliminate wire hazard by preventing contact between telegraph and telephone wires and high tension lines, both trolley and lighting.

Mr. I. T. Dyer, of Los Angeles, vice-president of the Association of Railway Telegraph Superintendents and chairman of the entertainment committee, is congratulating himself upon having the assistance of Mrs. B. F. Frobes, of Salt Lake City, as chairman of the ladies' reception committee for the annual meeting of the association to be held in Los Angeles May 16 to 20, 1910. He regards this as a strong guarantee that the visiting ladies will be well taken care of. Mr. Dyer is expecting a large attendance at the convention and has assurance of a goodly number of exhibitors. A program is being arranged which will appeal to the varied ideas of entertainment of the different members. Church services, baseball games, street parades, trolley trips, and other diversions will be included. Every member is urged to attend and if possible bring with him someone who is eligible for membership in the association. If any member knows of persons who are eligible for membership who he thinks would make good, active members, he should notify President Davis at once in order to help him in his efforts in the upbuilding of the association.

### F. T. Wilbur, Superintendent of Telegraph of Illinois Central Lines.

Mr. Fred. T. Wilbur, whose appointment as superintendent of telegraph of the Illinois Central



FRED. T. WILBUR, CHICAGO, ILL.  
Superintendent of Telegraph of Illinois Central Lines.

Lines, north of the Ohio River, and of the Indianapolis Southern Railway, was previously noted in these columns, is by reason of over twenty-

five years of active service in railway telegraph operation, well qualified to fill the important position to which he has been appointed. Mr. Wilbur was born in Mendota, Ill., in 1868, and first entered the telegraph service in 1883 as night operator at Bertram, Ia., for the Chicago and North Western Railway. He remained with this system until 1899, serving at different places in Iowa as operator and train dispatcher. He next accepted a position as train dispatcher for the Illinois Central Railway at Kankakee, Ill., afterwards becoming chief dispatcher and being stationed at Fort Dodge, Ia., Clinton, Ill., and Carbondale, Ill. In July, 1907, he was appointed supervisor of controlled manual block operation, which position he held until January, 1909, when he was appointed assistant superintendent of telegraph, with supervision of the lines north of the Ohio River. The advancement which has now come to Mr. Wilbur is well deserved, and it is safe to say that the telegraph system over which he has charge will lose nothing in efficiency by reason of his appointment.

#### **T. M. Haston Becomes Superintendent of Telegraph of the Clover Leaf and Alton.**

Mr. Thomas M. Haston, who for the past nine years has been connected with the telegraph de-



THOMAS M. HASTON, BLOOMINGTON, ILL.  
Superintendent of Telegraph of the Clover Leaf and Alton Railroads.

partment of the Burlington system, has been appointed superintendent of telegraph of the Toledo, St. Louis and Western, and the Chicago and Alton Railroads, and of the Western Union lines and offices along these roads, with headquarters at Bloomington, Ill., vice Mr. C. F. Smith, promoted to the superintendency of the Chicago and Alton in Southern Illinois. The appointment of Mr. Haston brings to the head of the telegraph department of two of the most important links in the Hawley system of railroads, a man well qualified for the position by reason of a long experience in railway telegraph circles, during which time he has made good use of his oppor-

tunities for perfecting his knowledge of the business. Mr. Haston was born at Newman, Kan., July 14, 1872, and first entered the telegraph service in 1887 as messenger boy at Abilene, Kan., later becoming night operator, day operator, relay operator and train dispatcher at Cheyenne, Wyo., and other stations along the Union Pacific Railroad. In 1896 he engaged in other business, but in 1898 returned to the service, accepting employment with the Western Union at Kansas City. In 1900, Mr. Haston entered the telegraph department of the Burlington and has been connected with that system up to the present time, serving as wire chief at St. Joe and Kansas City, chief operator at St. Louis, and manager and chief operator at Galesburg, Ill. In the latter place he has made an enviable reputation, having installed several new and improved telegraphic devices, and it is probable that his talent in this line will be used to good advantage in his new position.

#### **General Mention.**

According to the latest report from the United States Bureau of Census the value of poles cut in the United States during 1908 was only \$5,928,824, as against \$8,081,768 for 1907.

Mr. F. E. Patrick, one of the prominent members of the St. Louis force of the Western Union Telegraph Company, has again returned to Olvey, Ark., where he has a well-equipped farm.

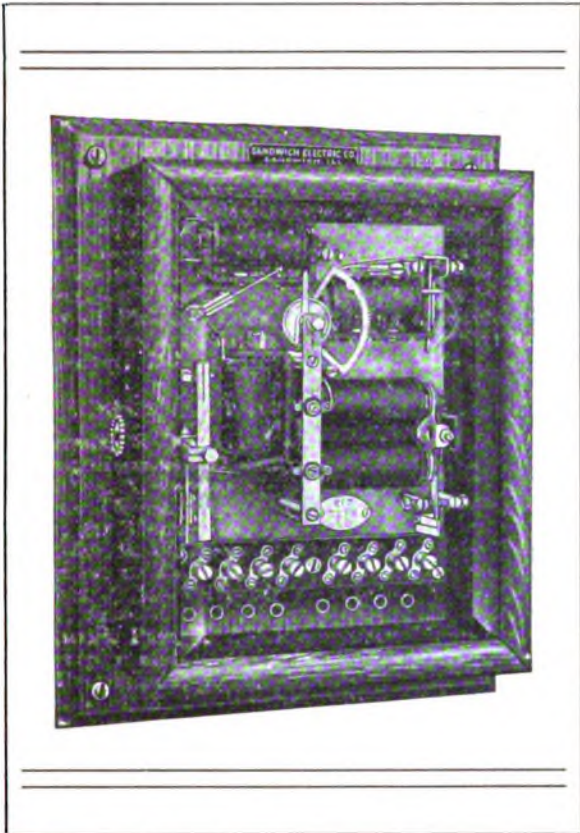
Mr. Lee Ames, who has been employed in the Cleveland office of the Western Union Telegraph Company for the past two years and a half, has gone to Atlanta, Ga., where he has secured a position in the Western Union office in that city. The change was made for the benefit of his health.

While the telegraph business has been on the increase in the United States and other countries, it is reported that the traffic in South Africa has fallen off so much that the government of Cape Colony is able to give additional telephone trunking facilities with the aid of the telegraph wires set free.

It is announced that the Continental Telephone and Telegraph Company, the \$50,000,000 corporation recently organized in New Jersey, will be the successor of the National Long Distance Telephone Syndicate, and plans to take over some of the principal long-distance and local independent systems in New York and the Middle West. The company, it is said, will also enter the telegraph field.

The ceremony of opening the new Tuberculosis Institute at Montreal was performed recently by King Edward from West Devon Park, Chichester, England. The line of the Commercial Cable Company was used, and by means of relays and repeaters the signal for the opening of the institute was transmitted the entire distance, over 3,000 miles, without any manual aid. It is believed that this is the first time that a similar ceremony has been performed by the aid of a long-distance submarine cable.



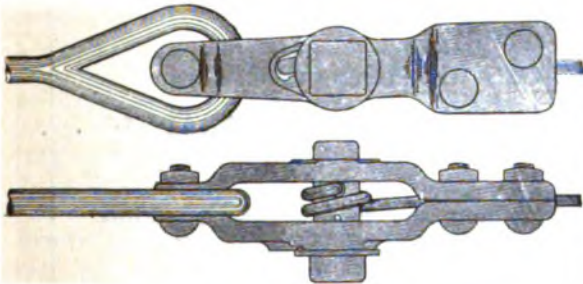


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Telegraph Age, 253 Broadway, New York

# NOTICE

## To Managers of Telegraph Offices and Users of the Wires

On December 1 the Western Union and Postal Telegraph Companies will put into effect new rules governing the transmission of domestic messages sent in code language.

Those who have been in the habit of using mutilated words will have to exercise great caution if they desire their messages forwarded promptly and at the same time avoid complications in the settlement of their accounts with the telegraph companies.

As the Western Union and Postal Telegraph Companies have given their stamp of approval on Official Vocabulary words, those who use these words can feel absolutely safe.

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It is reported that since the accession of M. Millerand as Minister of Public Works in France a large majority of the striking postal and telegraph employes who were dismissed in connection with the strike last spring, have been reinstated. The only ones not restored are those whose former chiefs could not recommend them.

The international jury appointed to supervise the erection of a monument at Berne, Switzerland, commemorative of the formation of the International Telegraphic Union, which was decided upon at the Lisbon Conference of last year, met recently and fixed the conditions of the competition which will be open to the artists of the entire world.

The Telepost Company has opened an office in Indianapolis. Their lines in the west now extend from Sedalia, Mo., and St. Louis to Terre Haute and Indianapolis. They also have a line in operation from St. Louis to Springfield, Mo., and Aurora, Ill., and expect soon to extend this line to Chicago, where an office will be opened.

According to the annual Colonial report of the Bahamas for the year 1908-9, the revenue of the Telegraph Department, of which Mr. P. H. Burns is superintendent, for that year was £1,688 and the expenditure £548, as against £1,248 and £545, respectively, for the preceding year; 4,251 messages were dealt with, 377 of which were to and from Great Britain. The previous year's traffic was 3,847 messages.

The Western Union Telegraph Company, the Postal Telegraph-Cable Company and the Postal Telegraph Cable Company of Texas, as well as the telephone companies, suffered severely during the recent storm which swept over the Gulf States. Thousands of their poles were broken and telegraphic communication with some points was cut off for over a week.

That the management of the American District Telegraph Company in Milwaukee are using the most up-to-date methods at their command to provide a prompt messenger service is indicated by the souvenir post card which we are in receipt of from Manager F. A. Mohr, showing a picture of the motor cycle squad of his office, consisting of messenger boys all provided with motor cycles.

In a recent issue of a French publication is described what is known as a multitonic system of telegraphy. In this system the dot and dash of the Morse are replaced by the use of two armatures vibrating with different frequencies and thereby sending alternating currents of two different frequencies over the line. These are received in the form of two notes of high and low pitch, respectively, in a telephone receiver.

Mr. C. M. Baker, superintendent of construction of the Western Division of the Postal Telegraph-Cable Company, in renewing his subscription, says: "I find more reliable and interesting information pertaining to telegraph and telephone matters in the Age than in any other publication."

### Woman Telegraph Messenger in England.

As a rule, people do not expect to have their telegrams delivered by a woman; but to the people of Waterhead, Oldham, England, the circumstance has long since lost its novelty. For nearly twenty years Miss Emma Lees has been employed in a casual capacity to deliver the urgent messages in the buff envelopes in the Waterhead district of Oldham.

Those who imagine that Miss Lees cannot do her work as smartly and with as much celerity as the trim post-office messengers in uniform are quite mistaken. She is daily to be seen about the streets, and although now sixty-eight years of age she is still very robust, and illness seldom lays its arresting hand upon her.

"Little Emma," as she is locally termed, is very proud of her position and duties, and the people of Waterhead have always a kind word and a nod for her as she hurries by on her errands.

Locally, Miss Lees is considered to be the only woman working in this capacity. Certainly, there are not more members of the fair sex in the Oldham district acting as telegraph messengers, and it is doubtful if such a position is held by any other.—St. Martin's Le Grand.

### Printed Proceedings of U. S. M. T.

The printed report of the proceedings of the Pittsburg reunion of the Society of the United States Military Telegraph Corps has been prepared for distribution among the members. David Homer Bates, secretary of the society, has spent a large amount of time and effort in preparing the book, and he has produced a work which is a credit to the organization and a worthy souvenir of the occasion. The book is illustrated with engravings of the officers and prominent members of the society, as well as a full page engraving of the building in Pittsburg where Andrew Carnegie entered the telegraph service as a messenger boy in the late forties. The paper is of the finest quality and the book as a whole reflects credit upon the work of the secretary.

### "What He Wanted."

A small boy went into a telegraph office that displayed a sign, "Boy Wanted."

"What kind of boy does yer want?" he asked of the manager.

"Why, a decent boy," said the manager. "One who is quick, doesn't swear, smoke cigarettes, whistle round the office, play tricks—"

"Oh, say, boss," interrupted the boy. "Yer don't want no boy; yer want a goil."

Mr. Daniel Colestock, of Titusville, Pa., an Old Time and Military Telegrapher, but who has followed commercial pursuits for many years past, in renewing his subscription to Telegraph Age writes: "I always read your paper and derive much benefit and profit therefrom."

### The R. W. Martin Fund.

In our previous issue we mentioned that, like other good causes, the Martin fund had its ups and downs, and while in that issue we had the opportunity of acknowledging the receipt of only a few dollars, we are glad to state that in this issue we can record the largest contribution to the fund which has as yet been received.

The committee in charge of the fund consists of J. B. Taltavall, of Telegraph Age; Charles W. Price, of the Electrical Review; T. Comerford Martin, of the National Electric Light Association, and T. A. McCammon and Fred Catlin, of the Western Union Telegraph Company. All contributions should be addressed to J. B. Taltavall, Telegraph Age, 253 Broadway, New York.

In a letter received recently from Mrs. R. W. Martin, she says:

"The checks and Telegraph Age received, and please accept our sincere thanks. I should have replied sooner, but have been trying to do a little dressmaking to help out, but shall have to give it up, for I find so much to do in caring for the home and Mr. Martin. He is failing in mind and is very feeble in body, but I suppose this we must expect. We are thankful to everybody, and it is evident from the contributions that my husband has some very good friends."

Mr. W. P. Phillips writes as follows: "I send you check herewith for \$101, of which one dollar was contributed by one of the employes of the National Park Bank, New York, into whose hands a copy of the Martin booklet had fallen. On the same day, in compliance with the request of a gentleman who had sent me a check for \$10, asking me not to mention his name, that I would call on his brother, with whom he is associated in the management of a newspaper, formerly a member of the United Press (No. 1) and make known my wish that he, too, should contribute, he (the writer) thought his brother would do something. So I called and, without a moment's hesitation, he pushed a button and asked of the young man who responded that he bring him \$100. This was pressed into my hand when it was brought, with the remark: 'Give that to dear old Bob Martin, that's a good fellow, and don't print my name in anything.'"

One of our Central American readers, remitting a contribution to the fund, says: "Ann Oldthyer has repeatedly reminded me of the R. W. Martin fund, suggesting her name be added to the list of the many who have contributed to the fund; and I am now fulfilling her wish by handing you herewith one of Uncle Sam's choicest pieces of paper which is in good credit all the world over for twenty dollars of his gold coin. In performing this service I have to impress upon your memory that any attempt at attaching to her name a translation or interpretation foreign to what it reads, will not be looked upon with favor."

The amount received to date is: Previously acknowledged, \$304; John A. Gouldrup, New York,

\$2.00; Washington, D. C., Western Union operators, through George L. Diven, \$38.25; "A Friend," through Walter P. Phillips, \$100.00; George F. Lawlor, New York, \$1.00; "Ann Oldthyer," \$20.00; Irby W. Reid, Bridgeport, Conn., \$1.00; total, \$556.25.

### Obituary.

William B. Rundle, for over thirty years a prominent figure in telegraph and electrical circles in Colorado, died at his home in Denver, October 13.

T. C. Lennond, a Chicago telegraph operator, died suddenly while riding on an elevated train in that city, October 23.

Mrs. William J. Lyons, wife of the old-time and cmilitary telegrapher, died August 27 at her home in Charlestown, Mass., aged sixty-four years.

Mrs. George M. Eitemiller, wife of the well-known old timer and herself a member of the Old Time Telegraphers' and Historical Association, died suddenly of heart failure at her home in Detroit, October 29, aged fifty-one years.

Alexander McGuire, aged twenty-seven years, a telegraph operator of Houston, Tex., committed suicide, November 1, at Birmingham, Ala., where he had been employed recently by both telegraph companies.

Alexander MacNaughton, a well-known telegrapher of Montreal, died November 1, aged seventy-one years. Mr. MacNaughton was one of the oldest employes of the Great North Western Telegraph Company, and had been connected with the telegraph service since he was thirteen years of age.

George F. Durant, general manager of the Bell Telephone Company of Missouri, died at Boulder, Col., October 31, aged sixty-seven years. Mr. Durant served as a military telegraph operator during the Civil War. After the war he was an operator at the Western Union main office, 145 Broadway, New York, from 1865-67, and later was superintendent of fire-alarm telegraphs in Jersey City. He afterward went to St. Louis, where he established a district telegraph service, and in 1878 installed the first telephone exchange in that city, and has been manager of the Bell Telephone interests in St. Louis since that time. He was one of the one hundred and twenty-five original members of the Telegraphers' Mutual Benefit Association and was also the inventor of a self-adjusting telegraph relay. Although he had not touched a key for nearly forty years, he treasured the recollections of his experiences in the telegraph service and was always interested in the welfare of his associates of those days. The death of Mr. Durant is the second to occur among the well-known old timers of St. Louis within a few months, the other being that of C. W. Hammond, who was also a military telegrapher and for many years a member of the executive committee of the Telegraphers' Mutual Benefit Association.

## LETTERS FROM OUR AGENTS.

## SAN FRANCISCO, WESTERN UNION.

Mr. Edward Boening, formerly of Boston, has assumed Assistant General Superintendent I. N. Miller's duties, while the latter takes a much-needed rest. Advices from Tokio, Japan, announce Mr. Miller's arrival there on his trip around the world. He is accompanied by Mrs. Miller, and is reported to be much improved in health.

Assistant Superintendent H. J. Jeffs, of Seattle, had charge of all the arrangements for this company over the entire Pacific division during President Taft's recent visit to the coast, and had charge of the large amount of special press and official matter which it occasioned. He accompanied the party from the time it reached Salt Lake City until it left El Paso, Texas, on its way east.

Manager Taff, of the Washington, D. C., office, attended to the wants of the many correspondents during the 13,000-mile journey.

The President's trip from San Francisco into the Yosemite Valley called for extensive preparations on the part of the company, and the Pacific States Telephone and Telegraph Company and required the sending of their most expert operators with the party.

Messrs. Myers, Corcoran, Kirk and Gibbons, of this office, with Traffic Chief Marlatt in charge, represented the Western Union Telegraph Company, while Mr. Thomas Hooper, of Pittsburg, special agent of the American Telephone and Telegraph Company, now supervising their leased wire system on the coast, and Messrs. Harris, Schubert and Logue, of the general office, looked after the telephone interests. President Taft, in bidding them good-bye, with a hearty handshake, said they were as fine a lot of men as he had ever met.

A recent visitor to this office was C. S. Palmer, formerly of the New York Western Union, more recently of Salt Lake City, and now with the Nevada Northern Railroad, at Cobre, Nevada. Mr. Palmer took great interest in the Barclay Printer Department, and had many stories to tell of the early days of the Wheatstone, when Messrs. Finn, Frier, Strudwick and McGuinness looked after that system from New York to San Francisco and other points.

Mrs. O. L. Harrison, of Atlanta, Ga., is visiting her old home here during the Portola festival and looking up many friends who knew her as Miss Ida Murray a few years ago.

Mrs. Eugene Conner, née Jessie Richards, is receiving congratulations on her return from a visit to her former home, near Boston, Mass., from whence Mr. Conner came with her.

Sincere regret was felt when news of the death of Miss Laura Hogan, at Rhyolite, Nevada, reached here some weeks ago. She had endeared herself to all during her stay in this office a few years ago, and keen sympathy is felt for her sis-

ter, Miss Mollie, at present with this company at Reno, Nevada.

Recent arrivals at this office are: Miss Ollie A. Errett, from Reno; Messrs. M. R. Hansberry and F. L. Ladden, from Omaha; G. I. Carlson, from Wisconsin, and Fred. J. Martin, formerly of Denver, but more recently with the Los Angeles Pacific Railroad, at Redondo Beach.

## SALT LAKE CITY, POSTAL.

T. W. Carroll, general superintendent, visited Salt Lake City, October 27, making an inspection of this as well as of other offices in this territory. He visited Butte, Helena, and Ogden, and was accompanied by Superintendent Hawk, of this city.

T. Derrick, who has been working the Chicago-Salt Lake bonus wire, resigned October 20, leaving for San Francisco. C. C. Hanes is now working the bonus wire.

Recent arrivals are I. L. Adkins and F. J. McLane, working Butte and the Montana ways, respectively.

W. H. Bouma, of Grand Rapids, Mich., is repeater rider on the Chicago-Seattle duplex.

Miss C. Merkle, chief delivery clerk, returned recently from a two weeks' vacation, spent at Butte with relatives.

## BUTTE, MONT., POSTAL.

C. L. Roebuck, manager of this office, has resigned to accept a position with the Northern Pacific Railway. S. G. Brown, chief operator, has been appointed manager, vice Mr. Roebuck.

F. E. Bucking, formerly repeater rider of the Chicago-Seattle local, takes Mr. Brown's place at chief operator.

The remainder of the Butte force is made up as follows: J. A. Rhode, early night chief; H. H. Abbey, late night chief, and J. T. Steele, operator.

**Our specialty is rebuilding typewriters just like new and guaranteeing them for ONE YEAR. Let us estimate. Prices very moderate. Rentals, \$2 and \$3 monthly. Central Typewriter Exchange, 203 Broadway, New York.**

## NEW YORK, WESTERN UNION.

Paul Sheehan, one of the veteran chiefs of this department, died November 2 at his residence in Brooklyn, aged fifty-three years. Mr. Sheehan had been identified with this office for the past thirty-three years. A number of his associates attended the funeral.

R. J. Murphy, of this department, has the sympathy of the force in the death of his mother.

Miss Cornwall, of the Waterbury, Conn., office, was a recent visitor, accompanied by Miss Shelley, daughter of Manager Shelley of the Produce Exchange office.

John Stack, of this department, died on October 30.

M. W. Jones, of Superintendent Mulford's office, has resumed duty after an extended European trip.

W. T. Rogers, general wire chief, was busy passing around Reina Victoria cigars on November 6, a daughter having been born to him on that day.

### New York Telegraphers' Aid Society Entertainment.

The twenty-eighth annual reception and entertainment of the New York Telegraphers' Aid Society for the benefit of the relief fund which was held Tuesday evening, November 9, at the Lexington Avenue Opera-House and Terrace Garden, compared most favorably with the former entertainments held by the society, both in point of attendance and in the general enjoyment of the occasion. The vaudeville entertainment under the direction of George Leveene, stage manager, was agreed by all present to be first class in every particular. Mr. J. J. Riley, chairman of the entertainment committee, is to be congratulated upon the complete success of the affair, and from the large attendance, the opera-house being filled to overflowing, it is safe to say that a goodly sum was realized for the charitable work of the society. The relief fund of the society was instituted in 1885 and the net proceeds of the annual entertainments have enabled the committee to send flashes of cheer and sunshine to many of those in need, and have assured a respectable burial for unfortunates in the profession who otherwise would have been buried in the paupers' field.

At the close of the entertainment the dancing was inaugurated by the grand march, led by Mr. R. J. Marrin, president of the society, and wife. This feature of the occasion was most ably supervised by Mr. J. F. Nathan, floor director, and was enjoyed until a late hour by several hundred couples. Mr. Marrin wishes to thank all who aided in making the event such a great success, especially Mr. Leveene and the members of the various committees. He also desires to express his appreciation to the officers of the Western Union and Postal Telegraph-Cable companies for their kindly and substantial responses to the invitation to attend this laudable and praiseworthy affair.

### Thought First of His Messages.

Joe Finan, a messenger boy of the Great North Western Telegraph Company, at Ottawa, Ont., was struck by an automobile recently and rendered unconscious. When he regained consciousness he began moving his right hand, first to one side of his body and then to the other. The doctors thought he was suffering pain in his side.

"Where is the pain, my boy?" asked the doctor.

"My messages—they should be delivered," said the boy slowly and gaspingly.

"Listen to that," said a man who was fanning him. "There's a boy for you. His first thought is about his work. That's the right sort of boy."

"It's all right," said the doctor. "Your brother

took them to the office for you ten minutes ago." They had been noticed in his pocket and sent back to the office.

### Trade Notes.

The John A. Roebling's Sons Company has received ten grand prizes, the highest awards, for its exhibit at the Alaska-Yukon-Pacific Exposition. A grand prize was awarded the company for its general exhibit and similar prizes were bestowed for different articles shown. Among the Roebling products thus honored were telephone and telegraph wire and cables.

According to the Augusta, Ga., Journal the Absolute Time Company has been organized in that city for the purpose of manufacturing and dealing in time measuring, recording and telegraphing devices. The capital stock is \$1,000,000, of which nothing is paid in.

### The Serial Building Loan and Savings Institution.

We have more than once spoken of the Serial Building Loan and Savings Institution as an association which stands for good citizenship; i. e., the promotion of home-getting and thrift. It is the oldest co-operative savings and loan organization in Manhattan, and its excellent management is the subject of favorable comment wherever these institutions are known. Recently an application was received from Idaho, the person wishing to save his money in the Serial. This association is just as beneficial to persons residing outside of New York City as within the city.

Will buy or sell, in one to ten-share lots, Western Union Telegraph Company and Mackay Companies stocks. Remittances by New York draft or express money order are requested. Address "Stock Investment," care Telegraph Age, 253 Broadway, New York.

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

### Rubber Telegraph Key Knobs.

No operator who has to use a hard key knob continuously should fail to possess one of these flexible rubber key caps, which fits snugly over the hard rubber key knob, forming an air cushion. This renders the touch smooth and the manipulation of the key much easier. Price, fifteen cents.

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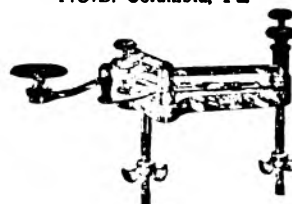
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## We Save You Big Money on Lumber and Building Material!

The Chicago House Wrecking Co. is the largest concern in the world devoted to the sale of Lumber, Plumbing, Heating Apparatus and Building Material direct to the consumer. No one else can make you an offer like the one shown above. We propose to furnish you everything needed for the construction of this building except Plumbing, Heating and Masonry material. Write for exact details of what we furnish. It will be in accordance with our specifications, which are so clear that there will be no possible misunderstanding.

### How We Operate:

We purchase at Sheriffs' Sales, Receivers' Sales and Manufacturers' Sales, besides owning outright sawmills and lumber yards. Usually when you purchase your building material for the complete house shown above, elsewhere, it will cost you from 50 to 60 per cent more than we ask for it. By our "direct to you" methods we eliminate several middlemen's profits. We can prove this to you.

### What our Stock Consists of:

We have everything needed in Building Material for a building of any sort. Lumber, Sash, Doors, Millwork, Structural iron, Pipe, Valves and Fittings, Steel and Prepared Roofing. We also have Machinery, Hardware, Furniture, Household Goods, Office Fixtures, Wire Fencing—in fact, anything required to build or equip. Everything for the Home, the Office, the Factory or the Field. Send us your carpenter's or contractor's bill for our low estimate. We will prove our ability to save you money. WRITE US TODAY, giving a complete list of everything you need.

### Free Book of Plans!

We publish a handsome, illustrated book containing designs of Cottages, Bungalows, Bares, Houses, etc. We can furnish the material complete for any of these designs. This book is mailed free to those who correctly fill in the coupon below. Even if you have no immediate intention of building, we advise that you obtain a copy of our FREE BOOK OF PLANS. It's a valuable book.

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This company has a capital stock and surplus of over \$1,000,000.00. We guarantee absolute satisfaction in every detail. If you buy any material from us not as represented, we will take it back at our freight expense and return your money. We recognize the virtue of a satisfied customer. We will in every instance "Make Good." Thousands of satisfied customers prove this. We refer you to any bank or banker anywhere. Look us up in the Mercantile Agencies. Ask any Express Company. Write to the publisher of this publication. Our responsibility is unquestioned.

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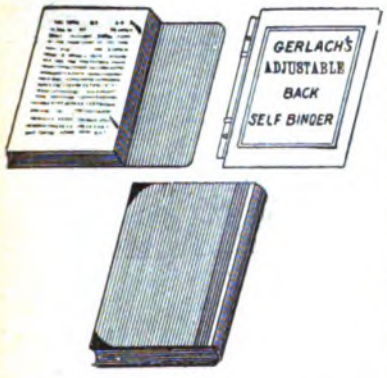
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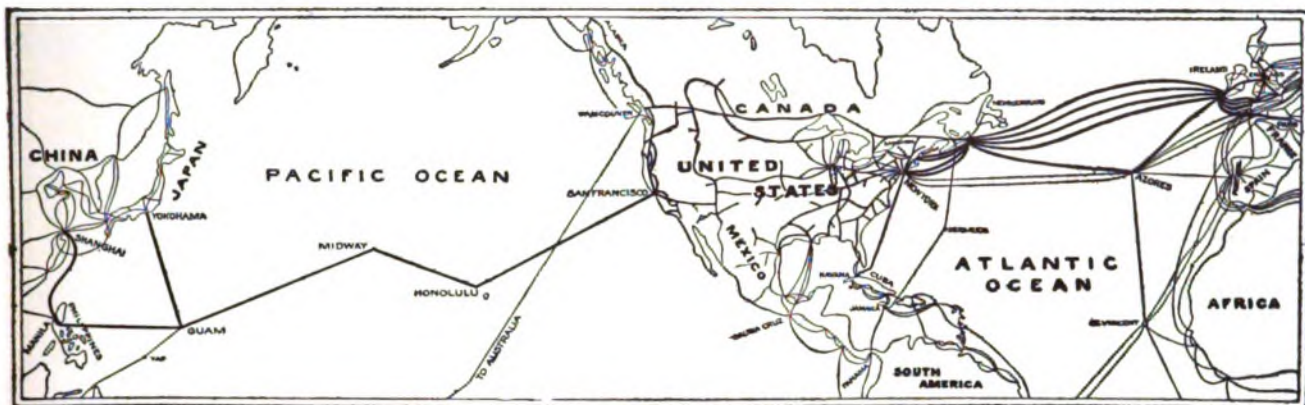
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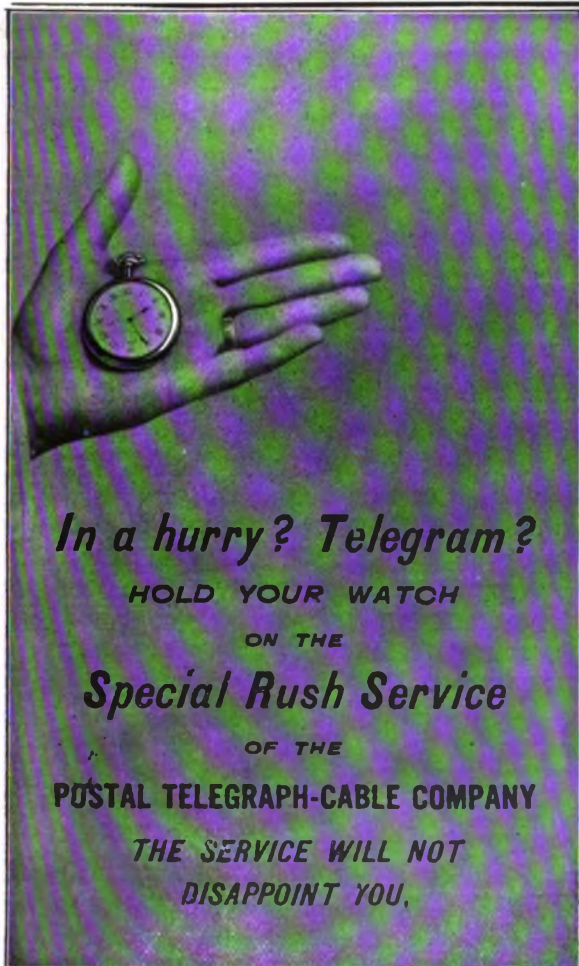
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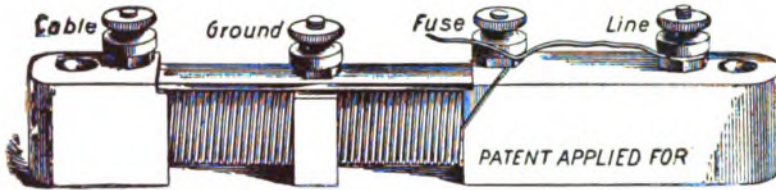
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