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CANADIAN ELECTRICAL NEWS

JNO. HORN,

EDITOR.

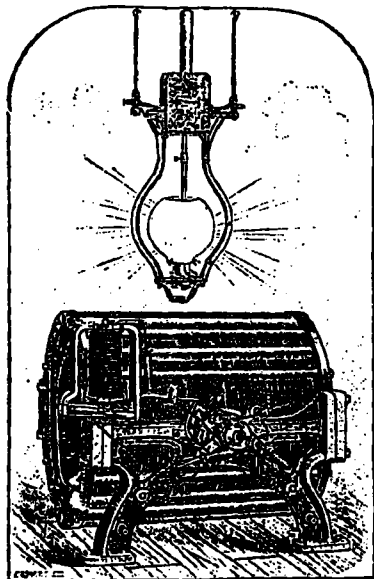
VOL. 1.

MONTREAL, JUNE 1, 1884.

No. 5.

ELECTRIC
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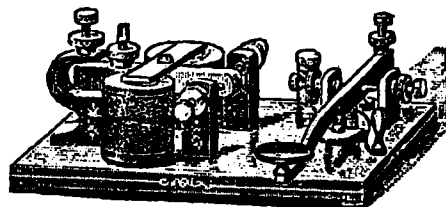
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Book of Instructions, &c.	-	-	-	-	

Incandescent Lamps at \$2.00.

Leader Building - - 144 Superior Street,
CLEVELAND, OHIO.

THE CANADIAN ELECTRICAL NEWS.

Published Semi-monthly at No. 30 St. Helen St.,
Montreal, Q.

JNO. HORN, Editor.

HART BROTHERS & CO., Publishers.

Correspondence on all Telegraphic, Telephonic or Electric Light subjects is solicited.

Readers are cordially invited to communicate their views and opinions on all topics within the province of this journal.

Items relating to Telegraphy, Telephony, Electric Light, or Inventions, will be thankfully received.

Rejected manuscripts cannot be returned unless accompanied by the necessary postage when received.

Subscriptions \$1 per annum in advance, if addressed to any place in the United States or Canada, to all Foreign Countries, the price is \$2; Single Copies 5c.

All business communications, subscriptions, or letters relating to advertisements should be addressed to the Publishers.

HART BROTHERS & CO.,
30 St. Helen Street,
or P. O. Box 786,
Montreal, Q.

MONTREAL, JUNE 1, 1884.

A SUPERANNUATION FUND.

An Operator who enters the service of our leading Telegraph Company, may remain in the employ for many years, all the best years of his life, acting loyally and faithfully by his employers, and as old age creeps on him, has nothing laid by for the time when the Operator's foe, paralysis, renders him incapable of winning his bread. This is not a problem which can be solved with increase of pay, for now-a-days there are so many artificial wants that married men with limited income find it next to impossible to lay by sufficient money to enable them to pass their last years of life in comfort. Pay cannot exceed, even in the most prosperous times, a certain limit, and when the limit is judged by what similar service of others is worth, and this is usually the criterion with Managers and Superintendents, it is not to be expected that our operators can lay by any considerable sum from their earnings, for use in their days of incapacity. Besides when we have good times, they are so because every one is spending money lavishly, and telegraph operators are of a class who associate with those who have plenty of money, and they too spend their money freely. They cannot help it, their friends and associates do it, and why should they not enjoy life also? They spend their earnings, and cannot save.

The only solution of this problem that we can see, must result from action taken by the employers. The earnings of the employees cannot be reduced by any assessment either forced or voluntary, as they require all they get, to live. Were the employing Company to set apart a certain sum yearly to fructify at compound interest, and additions be made thereto from time to time by means of entertainments given in the cities by the operators, to which the general public might contribute by the admission fee; any surplus over the expenses going to the Superannuation Fund, and further contributions be obtained from annual subscriptions given by the Daily Press which

could not now exist; but for the patient and careful labor of telegraphers, and also by gentlemen who have during their career been indebted to Telegraphy for a living, and who may have become wealthy in other pursuits, it is quite possible that from all these as well as other sources, a respectable Fund would, in the course of years be formed, and some help be given in their old age, to those who have spent the prime of their life as continuous Operators, in this service.

A SINGLE POLE QUADRUPLIX.

We have the pleasure to place before our readers a description of a Single Pole Quadruplex, which has just been invented by Superintendent B. B. Toye, of the Great North Western Telegraph Company's service at Toronto. We understand the patents have been applied for, as we are confident from the serviceable appearance of the innovation, that this new Canadian invention will be adopted everywhere in America and Europe.

We think the arrangement of Arm X a very pretty one, where it cuts out a magnet, when it is required to be cut out, and cuts it in again, when it is necessary to be in, and both by a stroke in the same direction.

The apparatus works remarkably well on a short line; and will, no doubt, do all that is anticipated, when introduced on a main business circuit.

We understand Mr. Toye has given this invention most of his spare time during the past six months, overcoming one difficulty after another, and in many cases "overcoming a difficulty" means introducing another, in another place. Thus it seems the main parts of this new invention are nearly as simple as a Repeater. We are pleased that a Canadian gentleman should be the first to invent this improvement, and we wish him all the success he merits.

AGENTS.

We would like to have an operator in each of the large cities to act for us as Agent, to obtain subscriptions and advertisements. Besides assisting *their own* Canadian Paper, we will give a liberal remuneration for such services, and as only a portion of their spare time would be devoted to this work, we trust to have responses from many of our friends.

CLUBS

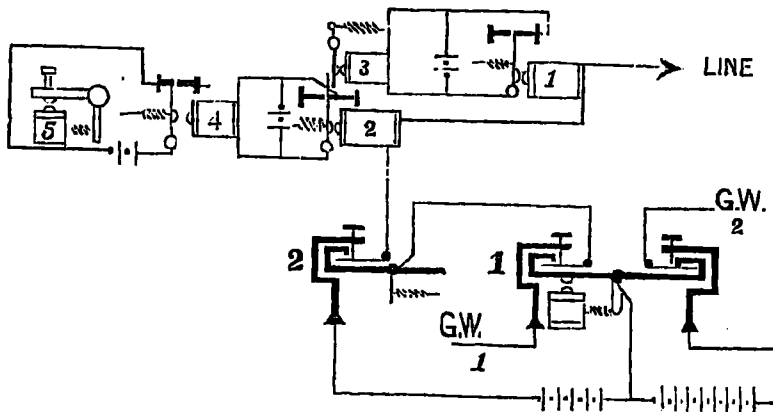
Any friend who forwards us five subscriptions, we will send a copy of the News gratis for one year, to any address in Canada or the United States.

We are very thankful for many items of news from all quarters, but wish many more, as we are quite certain there is much transpiring of which we have no knowledge. Will every Superintendent, Operator and Clerk of every Telegraph, Telephone and Electric Light Company, as well as every other worker in the science of Electricity, consider him, or herself our SPECIAL correspondent, and in this way assisting to make our Journal, which is really *yours*, the repository for all information that may prove interesting, as well as having it printed in a form easily preserved for future reference.

DUPLEX AND QUADRUPLER TELEGRAPHY.

A NEW INVENTION BY B. B. TOYE, Superintendent C. N. W. Telegraph Co'y., Toronto.

FIGURE 1.



is adjusted too high to respond to it. When the stronger current from the long end of battery is sent to line, relay No. 1 responds but No. 2 does not its armature being kept open by the armature of No. 3 falling back, its local being opened by the arm of No. 1. When both transmitters are closed, the additional strength closes relay No. 2 (as well as No. 1) by overcoming the spring of No. 3.

Now suppose both transmitters and relays are closed, if transmitter No. 1 is opened,

For the present purpose, we will suppose that the transmitters are at one end of the line and the rest of the apparatus at the other. Transmitter No. 2 sends the weaker current, say one-third of the whole, from the short end of the battery to line, transmitter No. 1 sends the stronger current from the long end the other two-thirds and both together send the whole current of the battery to line. Relay 2 is adjusted the usual way to be operated by the current from the short end, while relay No. 1

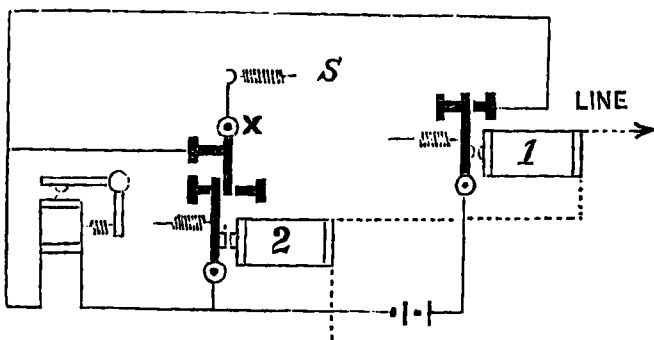
long end of battery is taken off line, relay No. 1 opens and simultaneously allows local to retain No. 3 closed, and the short end of battery keeps relay No. 2 closed. Next, when both transmitters are closed, and transmitter No. 2 is first opened, the short end of battery is taken off line. Relay No. 1 remains closed but the arm of No. 3, its circuit being still kept open, opens Relay No. 2, lastly, when both transmitters are opened, there is no current to line and both relays open.

Relays No. 1 and 2 are duplex relays of the usual pattern, although for the sake of simplicity the double wires and artificial line are omitted in the diagram. When both transmitters are open, the line is to ground via spring and arm of No. 2 and spring and post of No. 1 transmitter to G.W. 1.

G. W. 2 puts the long or short end of battery to ground according to the position of the armature of transmitter No. 1.

When both transmitters are closed the route is from G. W. 2 through spring and back post of transmitter to battery thence through whole battery (the tap wire being disconnected from line at the front spring of transmitter No. 1) to post and spring of No. 2 and line.

FIGURE 2.



spring S is overcome and arm X moves off its back stop, so that the battery operates Sounder 2 which then closes

Now let us suppose the short end of battery is to line, transmitter 2 being closed, which of course closes Relay 2, Relay 1 is open being adjusted too high to respond. Next we will suppose transmitter 1 is being worked sending the long end of battery to line; as the short end is already to line, the whole battery goes to line, every time transmitter 1 is closed:— At first sight

Magnets 3 and 4 are dispensed with in this plan, making the system almost as simple as that of a repeater:—

Instead of checking the action of the Armature of Relay No. 2 by holding it back by the arm of 3, it is allowed to play as moved by the currents, when it reaches arm X, under the impulse from the long end of the battery it cuts out the magnets of Sounder 2, so that it fails to respond, but spring S allows it to go no further. When the whole battery is sent to line

it would seem that when the arm of Relay 1 closed on arm X, local magnet 2 would be cut out and consequently open, and such would be the case if the arm of 1 rested against the arm X, but here it has another part, and that a paradoxical one to play, as it not only cuts magnet 2 out, but *simultaneously cuts it in again*, (by moving arm X off its back stop,) in so short a fraction of time, that the cutting out actually does not take place at this particular time, and consequently Sounder 2 remains closed. Then on the back stroke of Relay 1 the same apparently paradoxical operation takes place in the opposite direction, arm of Relay 1 in moving back leaves arm X on its back stop, apparently cutting magnet 2 out but at the same instant it breaks contact with it, so that the local circuit remains complete through the arm of Relay 2.

The above is sufficient to give the key to the whole action of the apparatus: perhaps we may return to the subject again.

SUPPORT THE LOCAL PAPER.

The local paper is the one identified with the interests of your home. It is conducted by those you know. Its columns are filled with what is of special and particular value to you. In its prosperity you have a vital interest, and to this prosperity you can best contribute by giving it your support and patronage. It knows your wants. It is your friend, your neighbor. Your duty is first to it, in preference to any and all others. No outside or foreign paper can possibly have claims upon you until your duty is discharged to the local journal. As the CANADIAN ELECTRICAL NEWS is the only one in the Dominion representing your interests, you should at once send us your subscription.

ELECTRICAL ITEMS.

MR. GUSTAVE TROUVE has successfully applied a system of incandescent electric lighting to brooches, bracelets, hairpins, gentlemen's breastpins, knobs of walking sticks, etc., and the current, which can be turned off or on at will by means of a switch, is supplied by a small battery carried in the pocket, and it supplies a good light for half an hour at least.

AN Electric railway, a mile in length, is running at Brighton, Eng. A single car containing ten or twelve persons is run at a speed of eight miles an hour, though it can be run faster if permitted. The car runs almost noiselessly, and is worked by a stationary engine, which sends a current through the metals.

CITY LOCALS.

Mr. James Dakers is a member, and Honorary Secretary for Canada of the Society of Telegraph Engineers and of Electricians of London, established in 1871.

CHAS. R. HOSMER, president and general manager Canada Mutual Telegraph Coy. is on a trip west on telegraph business.

WE regret to hear Mr. Woodward of the Underground Telegraph system of Montreal is quite indisposed.

WM. HOY, receiver and cashier of the Canada Mutual Telegraph Co., is an active and good general man, being an excellent operator as well.

WHY would considerable difficulty naturally be looked for in operating a telegraph line between New York and Philadelphia? Because of the presence of so much *Jersey* lightning.

THE Montreal City Council, on the 19th May, reported unanimously in favor of granting the Woodward Underground Telegraph and Telephone Co., permission to lay cables underground in certain streets of the city.

W. J. Camp, an excellent operator of this city was one of the few who recently answered correctly, the railway telegraph problem which appeared in the columns of the "Telegraphers Advocate."

THE business contracted for by the Royal Electric Company during the last three weeks amounts to \$40,000, and to turn out the machines and lamps required to fill these contracts in the time specified, their staff at the factory will have to be increased at once.

CHARLES Noble, who does the principal presswork at the main office of the G. N. W., is a very fast operator and an excellent receiver. The copy he makes is such as we should like to see from all who aim to rank as first-class Telegraphers, but it is not strange for a Noble to be the *noblest* Roman of them all.

As the winter has passed without any public entertainment having taken place among the various workers in electrical science, which we may somewhat attribute to the recent unpleasantness; is it not possible the coming season to have a Joint Committee formed for an excursion down the St. Lawrence.

Mr. Lanskael, who was for several years one of the first-class men in the main office of the G. N. W. and who left the Company's service some months ago, is now assistant bookkeeper to Rogers & King, large iron founders of this city. While in the Telegraph business, he was always noted as being a very careful and painstaking operator and will no doubt carry the same good qualities with him into the service of his present employers.

Mr. BARNETT, the Lessee and Manager of the Crystal Palace Opera House, is evidently an energetic and active business man. Seven separate electric lights illuminate the exterior of the building while the spacious auditorium is lighted up beautifully with five, all furnished by the Royal Electric Company. This is the first place of Amusement to exclusively use this system, which is one element less of danger to life from fire.

Mr. ALFRED T. NURSE, of the Great North Western Telegraph Company, has left to take the agency for the company in the city of Sherbrooke. He has been for more than twenty years in the Montreal Telegraph Company employ here, and his attention to duty, integrity and capacity for business are almost a proverb in this office. Mr. Nurse's departure will be much felt in St. Louis du Mile End, where his active exertion in school and religious matters have done much to win for him the respect and sympathy of the Protestant residents.

THE TELEGRAPH.

WHY are tardy operators like the glass caps of a telegraph pole.—Because they are In-so-late-'rs.

THE net earnings of the Western Union Co. in 1883 were \$6,642,000, a surplus for the year of \$577,000.

A TELEGRAPH repairer, named F. S. Denis, very nearly met with a serious accident recently, at Ottawa, caused by a shutter blown from Mr. McCaffrey's Amusement Hall

THE Western Union Telegraph Company has given employment to 35 of the Bankers' and Merchants' Telegraph Company's linemen who were recently dismissed in New York, and will hire an additional number.

AT ROCKPORT, Mass., on May 22.—the arrival of the steamer "Faraday" that morning, with the shore end of the Bennett-Mackay Cable, was announced by the booming of cannon and the ringing of all the church and fire bells. The whole populace hastened to the beach, and soon the water was alive with crafts. Large parties came from adjacent towns and the country. The Cable was successfully landed and made fast.

THE "CITIZEN" OF OTTAWA recently said: "For some days past we have been publishing, on an average, five columns of telegraphic news each morning. The Great Northwestern Telegraphic Company is giving excellent service at present, and we consider it due to the company's officials here to acknowledge the promptitude with which reports are furnished each night, as well as the quantity of matter received by cable and from the United States and Canada. The greater portion of this work has been done by the night staff of the company, and these operators, deserve particular praise for the excellence of the copy they have furnished." We congratulate the staff and Supt. Bethune, as our daily press are not accustomed to show any appreciation of the arduous labor of telegraphers. The press usually gives no thanks.

WE believe Professor Wm. Robert Grove, the inventor of the famous Grove Battery in general use in the early days of the Telegraph, will be one of the scientific visitors from Europe, during the visit of the British Association for the Advancement of Science. We think that Mr. Grove never received any remuneration for the general use made of this Battery in the United States or Canada. Would it not be a graceful compliment to acknowledge this in some way or other, in some suitable presentation, to which all companies might contribute.

IN an interview with the Secretary of the Montreal Telegraph Company recently, he was requested to give his view why the above Co's. Stock was selling as low as 110, when he replied that it arises solely from a clique that is bearing the Stock. It has been stated in the press, the Secretary said, that the earnings of the Company that has leased the Montreal Telegraph are inadequate to pay the full dividend, and that the dividends have been heretofore disbursed by the Western Union. Now these reports are only raised to frighten the Stockholders to sacrifice their shares and therefore lower the price to suit the bears. In the first place, the Secretary said, how can the writers or promptors of these notices tell what the Company is earning, for it is not likely that outsiders have access to the books. The statement is based on nothing beyond the desire to lower the Stock. With regard to the Western Union, he repudiates having ever had any financial dealings with that Company since the lease was transferred to the Great North-Western. The latter Company had, the Secretary said, fulfilled its obligations and paid the dividends with the greatest promptitude and satisfaction ever since the amalgamation of the Companies.

DISC ELECTRODES FOR TELEGRAPHS.

This form of contact, herewith illustrated, is the invention of Messrs. Cumming & Brinkerhoff, of 219 East 18th Street, New York, and consists of two disc electrodes or wheels used for contact points, set at right angles that touch each periphery or rim, so as to attain the smallest surface of contact, a needle dot, forming thereby a PERFECT CONTACT, which will not stick under the most intense battery, when screwed down to the least lever play. These discs are attached to Keys, Relays, Repeaters, Pole-changers, etc., and are held in place by small set screws attached to the shafts or axles of the little wheels. They are highly recommended.

FOREIGN NOTES.

THE world has but made a beginning in the uses of electricity; that the work of the thousands of inventors who have turned their attention to it is surely destined to bear abundant fruit in the form of discoveries and inventions, which will cheapen the production and application of electricity and make it available for practicable and profitable use in many ways not now thought of.

A COMPREHENSIVE scheme of classification has been carefully elaborated by the International Electrical Exhibition Committee at Philadelphia, as well as a system of rules and regulations to govern the internal management of the exhibition; provisions have been made in the interest of intending foreign exhibitors, to relieve them of all trouble in respect to the passage of their exhibits through the Custom House, and for the proper reception and care-taking of the same on their arrival; and arrangements have been made with a number of the leading transportation companies, to return, free of charge, goods on which freight charges have been paid one way.

ACKNOWLEDGEMENT.

Geo. P. Rowell & Co., 10 Spruce Street, New York, 146th Edition; Newspaper Advertising Pamphlet of 112 Pages, with much useful information.

ELECTRICAL DEVELOPMENT AND MANUFACTURING Co., 197 Congress Street, Boston, Mass.—Pamphlet—Prospectus of what the company propose doing.

PROSPECTUS and PAMPHLETS from International Electrical Exhibition, to be held at Philadelphia, Pa., commencing September 2nd, and closing October 11th, 1884.

Wm. B. Cleveland, 144 Superior Street, Cleveland, O. pamphlet—Manual of Telegraphy and Catalogue of Private Line Instruments.

ANNUAL report of the Directors' Financial Statement of the Treasurer, and proceedings of the annual meeting of the Stock-holders of the American Electric and Illuminating Co., at Portland, Me. 1884; pamphlet from E.W. Goff, President.

RECENT wonders in Electricity, Electric Lighting, Magnetism, Telegraphy, Telephony, &c. &c., Edited by Henry Greer, and Published by the New York College of Electrical Engineering, is a very good work of its kind, illustrated and sold at \$2. It should be in the hands of all desiring to keep themselves posted as to the recent improvements and developments in Electrical science. Any of our readers desiring a copy, can have one by writing to the publisher of this Journal.

THE CANADIAN ELECTRICAL NEWS will always be found on sale at Fisher's News Stand, 125 St. Francis Xavier Street, Montreal.

ADVERTISERS.

ADVERTISERS of Electrical supplies, as well as manufacturers and dealers, should try to reach the enormous demand springing up in Canada for their goods. No better medium for advertising their specialties has ever presented itself. Remember this paper goes to every point from one end of the Dominion to the other, and is the ONLY journal representing the interests of the Telegraph, Telephone and Electric light.

AMERICAN SPARKS.

THE underground wire bill recently passed at Albany is in danger of being vetoed by the Governor on the ground of a defect. The alleged defect is that while the bill applies to Telegraph, Telephone and Electric Light wires, Telephonic wires are not mentioned in the title.

GEO. B. PRESCOTT, the well-known electrician, states "that on a line of 300 miles the receiving current, when the weather is unfavorable frequently amounts to not more than one-fourth or one-fifth of that leaving the battery. When the insulation is good, the arriving current of a line of the above length amounts to three-fourths or more of the entering current."

Mr. W. J. JONSTON, a pushing New York Telegraph Journalist, sailed for Europe on the 29th inst. We notice he asks for work in Europe, from his readers. Any of our readers who will give either of the editors of this paper a trip to Europe, or both of them turn about, will earn our lasting gratitude. Please hurry, before the hot weather sets in.

THE American Institute of Electrical Engineers was regularly organized at New York on the 13th of May. The meeting was large and enthusiastic. The Institute will consist of members, honorary members, and associates. The result of the election for the first officers of the association was as follows, and no better selection could have been made:—President, Dr. Norvin Green; Vice-Presidents, A. Graham Bell, Chas. D. Cross, Thos. A. Edison, George A. Hamilton, Chas. H. Haskins, Frank L. Pope; Managers, Chas. F. Brush, W. H. Eekert, S. D. Field, Elisha Gray, Edwin J. Houston, C. L. Billings, F. W. Jones, G. B. Prescott, W. W. Smith, W. P. Trowbridge, Theo. N. Vail, Ed Weston; Treasurer, R. Hazard Secretary, N. S. Keith.

FLASHES HERE AND THERE.

HALIFAX streets were lit with electricity Monday night, the 26th inst., and the exhibit was highly satisfactory.

THE insurance of the Bell Telephone Company, Toronto, was effected in Montreal, and it is understood more than covers the loss.

THE workshops of the Swan Electric Light Company at Lille, France, have been burned. Four persons were injured by a falling floor.

THE Italian Industrial Exhibition at Turin that opened on the 26th April, has a distinct section devoted to an International Electrical Exhibition. This department has become very popular with the general visitors who greatly admire the new wonders of electrical science.

IT is proposed to connect Clayton, Alexandria Bay, Westminster Park, the Thousand Island Park and Round Island Park with Watertown by telephone. It is likely the wire will likely be run to Clayton and Alexandria Bay on the south shore, and cross the river at a point midway between the two places to Fell's Island.

THE TELEPHONE.

THE Telephone is now in full operation at Huntington. It is contemplated to extend it to Dewittville and Ormiston, if adequate substantial aid is given by the residents of these two places. There is a report of its extension to Hemmingford. To be a general benefit however, it must reach Montreal, the market town of that District.

Mr. C. F. Sise, vice-president and managing director of the Bell Telephone Company, and L. B. McFarlane, manager of the eastern division, have recently been spending a few days in the city of St. John, N.B. Their visit there has been of special interest to Mr. J. H. Wagstaff, who has for only a short time been agent for the company, and who by close attention to business, both in the interest of the Company and the subscribers, has so improved the agency as to win the confidence of the managers, and has been rewarded by the appointment to the position of district superintendent, which covers the management and inspection of the Maritime Provinces, with the head office at St. John. Mr. Wagstaff will continue to control the affairs of the St. John agency. The advance has been earned within ten months and without any previous experience in the business, and is, therefore, more to be valued. The Company will shortly remove to new offices in the Bostwick building, which are being specially fitted up for them, and, when finished, will be very complete and comfortable.

THE Bell Telephone Co. are busy stringing in Montreal, a superior new steel No. 12 wire.

THE Bell Telephone Co. exchange office at Toronto, which occupies the southern wing of the Mail building, was burned out on the morning of the 24th May. The Bell Telephone Company employs about eighteen young women to answer calls and make telephone connections, six of whom were on duty at the time of the outbreak, their names being Miss Clarke, Miss Mackenzie, Miss Murphy, Miss Leitch, Miss Porter, and Miss McCarthy. Naturally they were very much alarmed at seeing the smoke, and did not care to leave the office. Had they done so and passed by the elevator to the iron doors leading to the composing room which were closed but not locked, they could easily have escaped by the north stairs without going through the experience which they afterwards met with. Mr. Hambly of the Mail editorial staff, re-entering his room, found the telephone girls at the windows of their office, which overlooks his, but one floor higher up. They called to him for help, and he begged of them to keep calm and he would get assistance. Some of them were preparing to take a jump diagonally to the roof of the white building adjoining THE MAIL building, and knowing the terrible risk they ran, for if they had missed the roof they would have fallen the distance of one hundred feet. Mr. Hambly urged them not to do it. One of them, Miss McCarthy made the leap, and by clutching at a batch of wires, and sliding along them reached the roof in safety. The other girls then went to the windows overlooking King Street, and screamed for help. Mr. F. Thompson, of THE MAIL business department got a ladder on the roof of the white building, and rearing it against the parapet of THE MAIL building, the girls were enabled to creep along one by one and passed into safety. The men were only just in time in doing this, as the girls had become terribly excited, and one of them was preparing to jump into King Street, which had she done she would have met with certain destruction. The reaction on her was such that when she was got down in safety she immediately fainted. The Bell Telephone Company suffered the most, and their hundreds of subscribers will be put to some little inconvenience for the next few days. It is expected the two hundred wires are now in working order again, the men working day and night to make the connections under the energetic direction of Supt. Neilson.

THE Bell Electric Light Co. were burned out in the MAIL building fire, at Toronto on the 24th May.

THE Bell Telephone Co. of Toronto have leased new quarters for their Exchange at 118 Bay Street.

ELECTRICAL INDUCTION IN UNDERGROUND

— AND — METALLIC CONDUCTORS.

BY F. N. GIBBORNE, C.E.; F.R.S., *Sup't. of Dom. Government Telegraph Lines*, OTTAWA, ONT.

THE Paper read before the Royal Society of Canada at its meeting on Wednesday afternoon, 21st May, at Ottawa, by Mr. F. N. Gisborne, Superintendent of the Dominion Government Telegraph Service, possesses peculiar interest at the present time in that it deals with the phenomena of induction in electrical circuits to compensate the effect of which, many and various means have been from time to time suggested, but the inefficiency of which to eliminate the evil, has been declared before the Committee appointed and at present in session at Albany, N.Y., to consider the question of the practicability of placing electrical conductors underground. Mr. Gisborne's paper was descriptive of a new system devised by himself. To overcome the difficulties referred to, diagrams were presented which graphically explained the condition obtained in neighboring circuits, and comparisons were made between two or more circuits arranged as heretofore considered best and the same circuits arranged according to his system. Proofs of the efficiency of his system were given in the production of a tabulated statement of tests made of a section of cable over 3,000 feet in length which was constructed under his direction, and laid between two of the departmental buildings in that city. The cable in question contains 20 insulated conductors; these are directed into ten pairs, two conductors being twisted together in each case, each pair being utilized as a metallic circuit, one conductor being used as a return, instead of the earth as is usual. The peculiarity of the cable consists in this twisting of the wires forming metallic circuits, in that both wires are thus made to occupy the same relative position with respect to any other conductor or pair of conductors in their neighborhood. The philosophy of this device is, that a current passing through any such circuit has necessarily to pass down one wire and up the other, and it is evident that the positions of both with respect to a neighboring circuit, being the same as above stated, the inductive effect of the current passing down one wire is neutralized by the inductive effect of the same current passing up the return wire. It would appear therefore, that Mr. Gisborne's system is in reality one in which the phenomenon of current induction does not obtain rather than one by which the effects are neutralized. Considerable interest in this connection has already been manifested and it is understood that letters patent are about to be issued in Canada and the United States to the gentleman in question.

In connection with the International Electrical Exhibition to be held in September, it may be well to say that the meeting of the American Association for the Advancement of Science, which will be held this year in Philadelphia, and the expected presence of many representatives of the British Association, which will meet this year in Montreal, will attract a numerous and influential scientific gathering in Philadelphia during the time of the holding of the exhibition; and in order that so exceptional an opportunity to promote the interests of science shall not be lost, Congress has been requested to authorize the holding of a National Conference of Electricians, to convene in Philadelphia at this time.

ELECTRIC LIGHT.

The Royal Electric Company have now some 28,000 lights in operation throughout the United States and Canada.

In San Francisco tenders for street lighting service were by gaslight for \$212,304.24, and by electric light for \$203,756.52.

The Guion Steamship Company have adopted the electric light for general use on all their Ocean Steamers. The advantages are, no danger from fire, and no heat is generated. We believe before next spring, all the great lines of ocean steamers, all over the world, will adopt the electric light.

The recent street exhibition of the Royal Electric Light Co. in Halifax, N. S. was a grand success. The general use of this light is sure to be adopted.

F. S. Hastings of the Edison Electric Light Company was recently in Ottawa on business connected with the lighting of the Parliament Buildings.

On dit that the Quebec Government are now contemplating to adopt a system of lighting the Parliament Buildings by a system of electricity, to which Mr. Gregory Glasford has directed their attention.

The St. Lawrence Sugar Refinery is now lighted by the incandescent system. The Edison Electric Light Co. of Hamilton, who made this installation have given great satisfaction to the Sugar Works Company. Two hundred and fifty lights are used throughout this vast establishment.

We hear the trial test of Electric Lights by the two Companies at Toronto is giving great satisfaction. The three months experiment, we have no doubt, will end in a contract for their continuous use.

The Victoria Skating Rink, Montreal, has been leased for the summer months as a Roller Skating Hall, and is lit up with seven of the Royal Electric Light Co's lamps to the great satisfaction of those present.

Mr. Lawson, of the Edison Incandescent Electric Light Company, of Hamilton, Ont., is in Halifax, N. S. introducing their system and is now fitting up the new Woodside Sugar Refinery.

The Gramme Electric Light Association employ the best talent all over the world to watch every improvement and device and wherever any such is satisfactorily accomplished it is immediately put into use.

To the uninitiated we would state for Electric Light purposes the wire is a pure copper, No. 6 size, with insulation of double braided cotton coated with whitelead, making it impervious to the weather and absolutely safe to handle, especially in connection with the automatic cut-outs.

RECENTLY at Bedford, Que., an exhibition of arc and incandescent lighting was given at the Academy by the Phoenix Electrical Company. Several prominent gentlemen were present, and at the conclusion of the exhibition, more than twenty lights were subscribed for, and the following gentlemen undertook to form a company:—Messrs. C. A. Rice, A. L. Lance, J. H. Martin, N. H. Shaw, Joseph Cyr, Dr. Cassels.

HALIFAX to date has had comparatively little experience in electric lighting. With the exceptions of exhibitions by men-of-war and military apparatus, George's Island, one or two private experiments, the lighting at Clayton & Sons' store subsequently abandoned, the fitting of the Dartmouth Rope Works and possibly one or two other ventures, the city has not been favored with the artificial sunlight at night to any vast extent.

In St. John, N. B., they are building their own electric light stations and everything. The company there is incorporated in the names of Messrs Simeon Jones, C. A. Stockton, Major W. F. Howell, Mr Harry Jack and Mr. M. Lee Ross. The capital is \$100,000 in 10,000 shares of \$100 each. The company has \$25,000 in its treasury besides its plant, central station and material. It will require about ten miles of wire, and starts with fifty lights.

A few days ago, Mr. J. A. I. Craig, of Montreal, one of the largest creditors of the insolvent Phoenix Electrical Company, asked through his attorneys, Messrs. Greenshields & Co., for a winding up order. Hon. Mr. Justice Doherty, before whom the petition was made, granted the request and fixed the 20th May for the meeting to carry out this order. The meeting was held when Mr. A. J. Cleveland was appointed liquidator. The liabilities of the Company are said to be between sixty and seventy thousand dollars, and the assets forty thousand.

The Royal Electric Company prices average from \$400 to \$5,000 for each machine and from \$65 to \$80 for each lamp for street lighting. Lamps will burn some 7½ hours and some 14 hours. A single lamp is 1,200 candle power, and a double lamp, 2,000 candle power, or equal to 125 gas burners of 16 candle power each. The cost of lighting a square area by 100 gas burners consuming 6 feet per hour, which would be 600 feet per hour, or for six hours burning 3,600 feet at \$2.50 per 1,000 feet, would amount to \$8.85 and giving 1,600 candle power only. The electric lamps will light the same space for six hours at \$1.50, giving 6,000 candle power, or lighting 4,400 candle power greater than gas for \$7.35 less money.

LIGHTNING'S HAVOC.—A Cape Island correspondent writes: During a violent thunderstorm which passed over Cape Island early on the morning of Friday last, the house of a widow named Brennan at that place was struck by lightning and badly wrecked from roof to cellar. Mrs. Brennan, who, with the exception of a small child, was the only inmate of the house, describes the shock as something terrific, and says that for a few moments afterwards there was a brilliant play of small points of fire about the room in which she was at the time. On investigation it was found that one side of the roof had been lifted about six inches and scattered the entire length. One chimney was almost toppled over, the kitchen stove was completely demolished, and a table in the same room was thrown over, while a window near by had every square in it broken to atoms. In other parts of the house the floor was burst up as if by a force from below, and the carpets were burned to cinders. In the pantry the electricity seemed to have played some fantastic tricks. Dishes were piled up all in fragments, and a barrel of flour was rent from top to bottom and its contents scattered over everything. The child, who was in bed, appeared to be partially stunned, but soon recovered consciousness. Mrs. Brennan was thoroughly alarmed, though otherwise uninjured. Her barn, which stood at a short distance from the house, had all the boards on one end nipped off.

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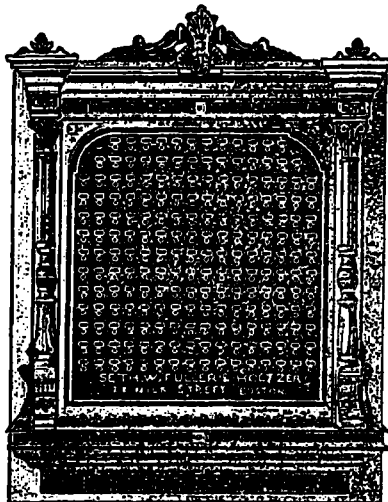
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