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MISSING

The Canadian Engineer

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ESTABLISHED 1893

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No. 19

The Canadian Engineer

ESTABLISHED 1893

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CIVIL, MECHANICAL STRUCTURAL, ELECTRICAL, MARINE AND MINING ENGINEER, THE SURVEYOR, THE MANUFACTURER AND THE CONTRACTOR.

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TORONTO, CANADA, MAY 8th, 1908.

Have you a copy of the Canadian Engineer for February 21st, 1908, to spare? There's a month's extension of subscription in it for you.

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Any reader not wishing to bind their copy of the Canadian Engineer of May 1st, 1908, would confer a favour on us by returning same to this office, as the issue is completely exhausted.

MORE LIGHT REQUIRED.

If the people of Ontario are to know whether municipal ownership pays they must institute a uniform and systematic method of bookkeeping and independent audit in each municipality operating public utility plants.

The second annual report of the Ontario Municipal Board just distributed gives us much detailed information in reference to many municipal-owned electric light and power, gas works, waterworks, and telephone systems. From a total investment in electric light plants of \$1,716,667 a total gross income of \$454,644.20 is recorded. This is certainly a remarkable showing. Few, if any, companies operating such utilities can show such an income.

Upon reading the report one is lead to believe that only those municipalities which have been fairly successful with their plants have forwarded returns to the Board, for the report says: "Other officials frankly stated that they could not furnish the data required." It is not stated why they "could not," but one may infer that the information is withheld for one or both of two reasons: Either they have not the information available, or they are ashamed of the showing of their plant. It is these officials that "could not" that should be required to furnish information. Not until our information is more complete can we form any fair conclusions as to the success of municipalities as operators of public utilities.

Where municipalities cannot or will not furnish full and detailed information as to the operation, cost, and liabilities of the enterprises carried on by the municipalities the Municipal Board should have power to investigate and report. Provincial supervision and inspection of public utility plants is just as necessary as Provincial audit of the municipal treasurer's accounts.

When one commenced to study the detailed report of each station returned they are impressed with the lack of uniformity and incompleteness of the systems of bookkeeping followed by the different city treasurers. In some cases no attempt appears to be made to properly proportion the cost of each plant, sinking funds are not provided for, nor is anything written off annually for the depreciation of the plant. Nor is it possible to gather from many of the statements how much is paid in direct tax, as salary of officials, etc., that should be and should appear as a charge against the municipal plants.

The Government would be acting wisely if it were to provide the Municipal Board with funds that it might engage a chartered accountant, who, in conjunction with a consulting engineer, could work out a system of municipal bookkeeping that would enable us to judge of the merits of municipal ownership as a financial venture, and that would instruct municipal treasurers in preparing yearly reports understandable by the rate-payers.

INDUSTRIAL EDUCATION.

In the early days of our young country agriculture and lumbering were the principal industries. With the growth of cities and increase in population manufac-

turing has become a great industry, and the mechanical trades employ a considerable proportion of our population. With this change in the occupation of a large section of workers has come a demand for a change in educational ideals. It is recognized that in Provinces where manufacturing plants are increasing the education of those likely to be employed in these workshops should be of such a nature as to increase their interest in their occupation and add to their efficiency as skilled workmen; for it is being recognized the immense asset skilled labor is to a country.

The industrial school should not be made a trade school. The preparation of the student given in the industrial school should go far enough to enable him to understand what he is told in the shop. It should do more: it should interest him in the material with which he will work, should inspire him with a love for an occupation, but it should not attempt to make him a skilled workman—this must come later in the shop.

The industrial school should be State-aided and State-controlled. They are a fair charge on the State treasury. They should not be under the control of either manufacturing establishments or corporations carrying forward educational campaigns for private gain. Experience has shown that such methods discourage and confuse the student and mislead and disappoint his employer.

The levelling influence of the machine-like routine of many manufacturing establishments tend to discourage individual effort. Industrial education would develop individuality.

PROTECTION OF WOODEN TRESTLES.

The Board of Railway Commissioners have recently examined two new methods of protecting wooden trestles or bridges from fire, one known as the Montauk fire detecting wire, in the form of thermostat, and the other the Clapp fire-resisting paint. Both systems withstood successfully the tests, and would dispense with the employment of watchmen.

The chief engineer of the Board expresses the opinion that in open country and thickly-settled districts the ordinary section gangs would be able to protect all trestles, but in timbered districts and districts distant from settlement other protection should be provided.

The Board is inviting expression of opinion as to the most suitable method of protection of such structures.

THE DIFFERENCE BETWEEN CAST AND OTHER IRONS.

There is a great deal of confusion in the popular mind as to the difference between cast-iron, wrought-iron, and steel; in fact many people consider them distinct metals.

The fact is, that all iron products, such as cast-iron, malleable cast-iron, wrought-iron, and the innumerable grades of steel, are combinations of iron and other elements, the character of the finished article being determined by the number and quantity of the alloying elements and the process of manufacture.

There is no such thing as "bad iron," the metal, iron, itself, being an element fixed and unchangeable, and of no commercial value whatever in its pure state.

It becomes useful only when combined with other elements which change its nature—being brittle, ductile, tough, weak, hard, or soft, as these added elements vary in their proportions.

A chemical analysis of cast-iron, malleable cast-iron, wrought-iron, or soft steel bars, would show a result something like this:—

Elements.	Cast	Mal. Cast Iron.	Wrought Iron.	Soft Steel.
Iron	92.550	95.770	98.805	99.280
Silicon	2.500	0.600	0.145	0.020
Phosphorus	0.650	0.180	0.100	0.050
Sulphur	6.100	0.050	0.050	0.050
Combined carbon..	0.350	trace	0.040	0.200
Graphitic carbon ..	3.150	3.000
Manganese	0.700	0.400	0.020	0.400
Slag	0.840
	100	100	100	100

With the above elements, and sometimes the addition of two or three others, chemists produce every possible grade of iron or steel, from the light sharp castings used in the arts, to the hardest armor plate; from soft steel which can be dented by a moderate blow to drills which can almost cut the diamond itself.

ORDERS OF THE RAILWAY COMMISSIONERS OF CANADA.

Copies of these orders may be secured from the Canadian Engineer for a small fee.

4652—April 24—Amending Order No. 4580, dated April 14th, authorizing the Brantford and Hamilton Electric Railway Company to erect, place, and maintain its electric power, trolley, and feeder wires over the track of the Tillsonburg Branch of the C.P.R. in the City of Brantford, Ont.

4653—April 24—Authorizing the C.P.R. to construct and operate a branch line or spur in the Town of Lethbridge, Alta., to and into the premises of John Taylor.

4654—April 24—Authorizing the Dominion Natural Gas Company to lay two gas pipes or mains under the tracks of the Grand Trunk Railway, where the same crosses Tamarac Street and Cedar Streets (or Diltz Road) in the Town of Dunnville, County of Haldimand, Ont.

4655—April 9—Authorizing the C.P.R. to construct spur to the premises of the Standard Brick and Tile Company in the Parish of Kildonan, Manitoba.

4656—April 28—Number used, but order not issued yet.

4657—April 27—Authorizing the Bell Telephone Company to erect, place and maintain its aerial wires across the tracks of the G.T.R. Company at corner West Street and Barrie Road, Orillia, Ont.

4658—April 28—Authorizing the British Columbia Copper Company to construct pipe line under the track of the Motherlode Branch of the C.P.R. at Greenwood, B.C.

4659—March 12—Authorizing the Windsor, Essex & Lake Shore Rapid Railway Company to construct its railway along Pitt Street, Windsor Avenue, Strachan and Arthur Streets, Aylmer and Howard Avenues, in the City of Windsor; along and across the highways in the Township of Sandwich East and West; along the Talbot Road in the Town of Essex; and along Division Street and Main Street in the Town of Kingsville, Ontario.

4660—April 24—Authorizing the C.P.R. to construct, maintain and operate a branch line of railway or spur to and into the premises of J. Wilson, Como, P.Q.

4661—April 24—Authorizing the C.P.R. to construct a spur to and into the premises of the Lake of the Woods Milling Company, Keewatin, Ontario.

4662—April 30—Authorizing Messrs. Wiechman & McIvor to erect, place, and maintain an electric light line over the track of the C.P.R. at Treherne, Manitoba.

4663—April 24—Ordering that the time within which the Canadian Freight Association will be permitted to file an answer to the application of the Morang Educational Company, Limited, re fixing proper freight classification throughout Canada, be limited to four days from the date of the service upon it of the said application, and set down for hearing at the Board's sittings in Ottawa, Ontario, on May 5th, 1908.

A REINFORCED CONCRETE STANDPIPE.

What is doubtless the largest reinforced concrete standpipe yet constructed is that built for the town of Attleborough, Mass., by the Aberthaw Construction Company, of Boston. Its erection was necessitated by the inadequate fire protection and the lack of water for domestic purposes provided by the then existing pumping station. Although Attleborough water is of the best, it contains so much carbon dioxide that the serviceability of iron tanks is of comparatively short duration. On this account bidders were allowed to present plans and specifications according to their own ideas of construction, each one specifying the amount of steel to be used, amount of concrete, and factor of safety, with complete plans and methods of construction, confining himself to the general design of foundation, standpipe, and gatehouse; the structure was to be guaranteed by the builders for one year from date of acceptance by the commissioners.

"After a careful study of all plans submitted and methods of construction proposed we considered," so says Superintendent George H. Snell in his report, "that the Aberthaw Construction Company's bid (\$34,000) was the one to accept, if any, for the following reasons: Extra steel reinforcement, richness of concrete, method of construction, and complete plans submitted.

"We had an estimate on a steel standpipe of the same size for \$37,135, making a difference of cost between that and the bid accepted of \$3,135.

"The advantages of a concrete steel standpipe over a steel standpipe are:—

"First. The cost would be \$3,135 less.

"Second. No cost of maintenance.

"Third. There seems to be no limit to the life of such a structure; or, in other words, is as nearly indestructible as a structure could be made.

"The maintenance of a steel sandpipe of that size with our quality of water would be \$400 per annum if kept coated on the inside and painted on the outside, and the probable life only twenty years. It would also be necessary to empty the tank annually to clean out the rust and do the painting, which would probably take at least two weeks. During that time water would have to be supplied by indirect pumping, which means continuous expense of not less than \$100 per annum. You can see, by this comparison, that there was much in favor of the concrete steel standpipe over the steel standpipe. It seemed to us, in our judgment, it was far better to accept the concrete proposition."

The standpipe in question is 118 ft. high by 50 ft., inside diameter, with an adjoining gatehouse 18 x 18 x 16 ft. high. The walls are 18 inches thick at the ground level and 8 inches thick at the top. At a depth of 7 ft. was found a good, hard bottom on which to rest the concrete foundation. A reinforced fillet of generous proportions connects the walls and bottom pan. Extending entirely around the base of the tower is a reinforced concrete curbing 1 1/4 ft. thick by 3 ft., rounded at the top.

The concrete used was of the proportion one part cement, two parts sand and four parts crushed stone.

Horizontal reinforcement consists of round bars, varying in diameter from 1/4 inch to 1 1/2 inches. It was originally intended to use 5/8 inch twisted bars for vertical reinforcement, but as the difficulty of keeping the horizontal members in place was met with, channels were substituted, there being fifteen in number, equally spaced. These were drilled at intervals for the reception of short 1/2 inch bars upon which to rest the horizontal bars. This method of holding the latter members in place was all that could be desired. The horizontal bars were delivered in lengths of 56 1/2 ft.,

necessitating the use of three to span the circumference with an overlap of each of 30 inches with which to clamp them together. The bottom pan and fillet is reinforced by 1/4 inch bars spaced 6 inches, running at right angles to each other.

In the final design the horizontal steel reinforcement consisted of 1 1/2 inch plain round bars in double vertical rows extending from the ground to a height of 60 ft. Above this a single row was used, which at 81 ft. was reduced to 1 1/8 inches diameter. The steel is protected throughout by from 2 1/2 to 3 inches of concrete. The spacing of the double horizontal steel members varies from 3 3/4 inches, centre to centre, to 8 inches; that of the single 2 1/2 inch row 4 1/2 inches to 6 inches, and that of the 1 1/8 inches row 3 1/2 to 6 1/2 inches on centres.

In order to make the standpipe thoroughly tight, alternate coats of a solution of castile and alum were applied



to the interior, the first 33 ft. with eight and the remainder with four coats.

Circulation of water is insured by discharging into the standpipe through a pipe 40 ft. from the base and withdrawing through a 24 inch pipe at the bottom of the tank.

The top of the tower is covered by a Gustavino tile roof and ornamented by concrete pendants.

The Faculty of Applied Science of Manitoba University are holding their first annual examination. This year two departments were open, Civil and Electrical. These will be added to as occasion requires. The equipment of this Faculty has been improved by the gift of a reversable level from Cooke & Sons, also one from W. F. Stanley. E. R. Watts have presented a 5-inch transit; D. L. S. Pattern and Buff and Buff have presented an Avery testing machine.

A laboratory equipped for the testing of material will shortly be added to these departments.

ELECTRIC PLANT OF NORTH MOUNTAIN POWER COMPANY.

By Frank C. Perkins.

Electric current is supplied for lighting the city of Eureka, California, which is one of the chief coast cities of the northern part of the State, from the power station of the North Mountain Power Company, located two miles from Junction City, at a point where Trinity River is joined by Canon Creek. The current is also utilized at Eureka for power service as well as at numerous points along the transmission line.

The current is transmitted on a pole line 65 miles in length through a mountainous country to the Eureka sub-station where the current is reduced in pressure from 30,000 volts to 352 volts by means of volt transformers of 190 kilowatts each. These water-cooled transformers, three, in number, supply current to a rotary converter of 500 kilowatts' capacity operating at a speed of 500 revolutions a minute. There is a 6-pole Bullock machine supplied with a three-phase current of 25 cycles and supplying a current of 550 volts pressure.



Section of Ditch.

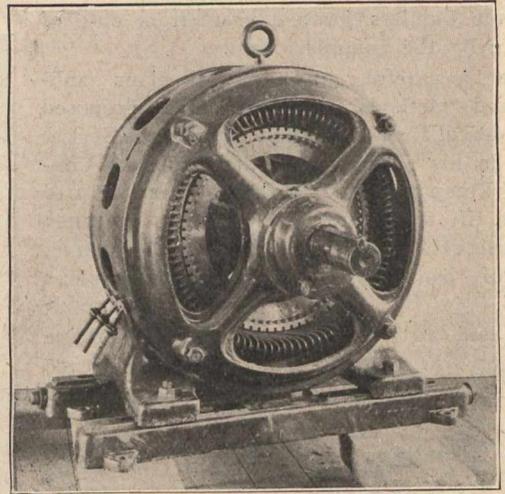
In these sub-stations for local distributing system there are also three step-down transformers of the water-cooled General Electric type having a capacity of 400 kilowatts. A three-phase 60 cycle alternator is provided operated by the rotary converter acting as a synchronous motor, the 60-cycle current being utilized for the arc and incandescent lighting circuit of Eureka. The sub-station is about 130 feet long and 30 feet wide, and is located at the water front in the city of Eureka a trifle above the sea-level, the current being received at this sub-station from the power transmission line at 30,000 volts. The transmission circuits rise from the sea-level to an altitude in several places a mile in height where they pass over various mountain summits to the power station located 1,480 feet above the sea-level. At Eureka a number of 60 cycle motors are employed of the Allis-Chalmers type of induction machines, the 40 horse-power motors operating at a speed of 900 revolutions a minute.

At the power-house there are two hydraulic units each consists of an Allis-Chalmers three-phase alternator directly coupled to a pair of 44-inch Pelton water-wheels installed under one foot steel hoisting. These water wheels are provided with self-aligning bearings of the ring oiling type, the nozzles being of the deflecting design and when provided with the largest tips are capable of developing an overload of 25 per cent. without difficulty. Lombard oil governors are employed for regulation, belt-driven oil pumps receiving power from the wheel shaft being used for maintaining the necessary power and vacuum. The water is carried away from the water-wheels to the Trinity River by a tail race excavated through the bed rock for a distance of 280 feet, the width of the same being over 6 feet.

The three-phase alternators are driven at a speed of 500 revolutions per minute being directly coupled to the water-wheels by flexible leather link couplings. These machines are 6 pole and of the revolving field type supplying a current of 2,200 volts and having a frequency of 25 cycles per second, with a normal output of 750 kilowatts. The field coils are excited by two 45 kilowatt Allis-Chalmers dynamos, belt-driven from the main generator. These exciters operate at a speed of 900 revolutions, and supply a continuous current of 125 volts' pressure.

The power-station is 51 feet long and 36 feet wide. It is constructed of concrete, and steel trusses are utilized for supporting the roof which is of corrugated iron.

The water is supplied to the turbines from the two penstocks 1,165 feet long, the working pressure being 260 pounds per square inch, with an effective head of about 600 feet.



40 Horse-Power Motor.

From the power-house the current is conducted to the transformer building which is about 51 feet long and 13 feet wide, located a short distance from the power-station. In this building there are two banks of 3 step up transformers in each group with an additional transformer held in reserve. They are of the Allis-Chalmers water-cooled oil insulated type of 19,050 volts in the secondary and 2,320 volts, in the primary, receiving the current from the alternators at 2,220 volts. These 25 cycle water-cooled step-up transformers each have a capacity of 300 kilo-volt-amperes. These transformers are mounted on rollers and rest on three rails set into concrete piers, the transformers being interchangeable without difficulty, the water and electric connections being easily made at a moment's notice.

This is one of the most interesting and up-to-date power stations in California. It was constructed with the greatest difficulty on account of the heavy machines, including both alternators and water-wheels having to be hauled over 60 miles of mountain road from the nearest railroad station. The lower half of the starter of the alternator required an 18-horse team for hauling the same to the power-station.

THE CEMENT INDUSTRY IN JAPAN.

Only a few years ago the manufacture of cement in Japan was making very slow progress, the monthly supply throughout the country scarcely exceeding 600,000 barrels. Of late, with the increase of various enterprises, such as railway construction, waterworks, water-power, electric works, etc., the demand is described as growing by leaps and bounds, and pressing the mills for more output and greater facilities. At present the total output throughout the country reaches about 1,300,000 barrels per month. The foreign-made product has diminished under the competition until last year, when it went from 23,000 yen in 1905 to 10,000 yen in 1906, and to 95,000 yen in 1907. The production of cement is, however, becoming an industry suited to this country, and the home manufactured article will occupy the market.

CORRESPONDENCE.

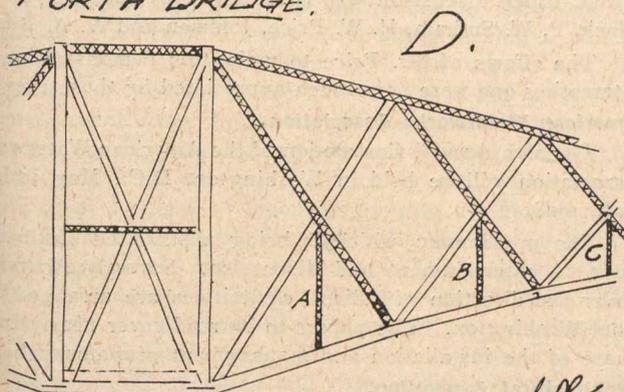
[This department is a meeting-place for ideas. If you have any suggestions as to new methods or successful methods, let us hear from you. You may not be accustomed to write for publication, but do not hesitate. It is ideas we want. Your suggestion will help another. Ed.]

FORTH BRIDGE.

Sir,—Replying to letter of enquiry from R.E.D., dated the 27th April last, published in your issue of 1st inst.

The buckling tendency of lower chords is well taken care of in the finished structure, as indicated by lattice members, or vertical ties. A.B.C. sketch D. enclosed.

FORTH BRIDGE.



May 1st 1908

“These vertical ties although not attached exactly midway between members, junctions serve to prevent undue deflection in these members.” Yours truly

Walter P. Chapman, M.C.S.C.E.

Toronto, May 1st, 1908.

PRODUCER GAS ENGINES.

Sir,—In these days there is being a great deal said about producer gas power plants, both for and against their commercial efficiency. As yet the public who are interested in the power business are hardly well enough informed on the producer gas developments.

Below is given some expert evidence from very reliable sources, which should be valuable to those interested in this subject:—

“Recent developments point very positively to two factors of great importance in the economical production of power for manufacturing and transportation purposes.

These two factors are the replacing to a marked extent of the steam boiler and steam engine by producer gas plants with their accompanying internal combustion engines and the centralization of power development and distribution.

It was during the latter part of the nineteenth century that the gas engine found its way on to the market, and, although many types have been produced in the past twenty or thirty years, it is only within the past five or six years that the development of large engines has been noted. This development started in Germany, Belgium and England some eight or ten years ago, but marked progress has been limited to the past half dozen years

For many years the natural fuel of these internal combustion engines was city gas, but even this was too expensive except for engines of small capacity. It was seldom found feasible to operate engines of more than seventy-five horse power on this fuel.

Cheap gas was essential for the development of the gas engine, but the early attempts in this direction were some-

what discouraging, and for a time the probabilities of encroaching to any extent upon the field occupied by the steam engine were very remote.

The theoretical possibilities of the internal combustion engine operated upon cheap fuel promised so much that the practical difficulties were rapidly overcome with the result that steam boilers and engines in many plants were replaced by gas engines, and at the present time the internal combustion engine is rapidly becoming a serious rival of the steam engine in many of its applications.

The rapid advance of the large gas engine has been made possible by the great strides that have been made in the production of cheap gas directly from fuel through the aid of the gas producer. The early form of producer first introduced in Europe, and one that is in very general use to-day both abroad and in the United States, is known as the suction producer, named from the fact that the engine develops its charge of gas in the producer by means of its own suction stroke. Extract from a recent address by Professor R. H. Feruuld, Engineer in Charge of Producer Gas Tests, United States Geological Survey Fuel Testing Plant.

A short time ago a gas engine was tested by Dr. Nicholson, Professor of Engineering at the Municipal School of Technology, Manchester, an extract of his report being as follows: ‘The engine speed varied only from 119.4 to 121.4 revolutions per minute, when the horse power was instantaneously dropped from about 600 to 50, the total variation was therefore 1 2/3 per cent. of the mean speed. The full load was then thrown on again as quickly as possible, and so on in succession. The speed of the engine under such circumstances never varied more than the above percentage.’

Yours,

X. Y. Z.

Toronto, May 1st, 1908

ENGINEERING SOCIETIES.

CANADIAN RAILWAY CLUB.—President, W. D. Robb, G.T.R.; secretary, James Powell, P.O. Box 7, St. Lambert, near Montreal, P.Q.

CANADIAN STREET RAILWAY ASSOCIATION.—President, E. A. Evans, Quebec; secretary, Acton Burrows, 157 Bay Street, Toronto.

CANADIAN INDEPENDENT TELEPHONE ASSOCIATION.—President, J. F. Demers, M.D., Levis, Que.; secretary, F. Page Wilson, Toronto.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—413 Dorchester Street West, Montreal. President, J. Galbraith; Secretary, Prof. C. H. McLeod. Meetings will be held at Society Rooms each Thursday until May 1st, 1908.

QUEBEC BRANCH OF THE CANADIAN SOCIETY OF CIVIL ENGINEERS.—Chairman, E. A. Hoare; Secretary, P. E. Parent, Po. O. Box 115, Quebec. Meetings held twice a month at Room 40, City Hall.

TORONTO BRANCH OF THE CANADIAN SOCIETY OF CIVIL ENGINEERS.—96 King Street West, Toronto. Chairman, C. H. Mitchell; Secretary, T. C. Irving, Jr. Traders Bank Building.

MANITOBA BRANCH OF THE CANADIAN SOCIETY OF CIVIL ENGINEERS.—Chairman, H. N. Ruttan; Secretary, E. Brydone Jack. Meets first and third Friday of each month, October to April, in University of Manitoba.

ENGINEERS' CLUB OF TORONTO.—96 King Street West. President, J. G. Sing; secretary, R. B. Wolsey. Meeting every Thursday evening during the fall and winter months. May 14th paper on “Manufacture of Malleable Iron,” by Mr. S. D. Chadsey.

CANADIAN ELECTRICAL ASSOCIATION.—President, R. S. Kelsch, Montreal; secretary, T. S. Young, Canadian Electrical News, Toronto.

CANADIAN MINING INSTITUTE.—413 Dorchester Street West, Montreal. President, W. G. Miller, Toronto; secretary, H. Mortimer-Lamb, Montreal.

NOVA SCOTIA SOCIETY OF ENGINEERS, HALIFAX.—President, R. McColl; Secretary, S. Fenn, Bedford Row, Halifax, N.S.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, TORONTO BRANCH.—W. G. Chace, Secretary, Confederation Life Building, Toronto.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—29 West 39th Street, New York. President, H. L. Holman; secretary, Calvin W. Rice.

SOCIETY NOTES.

Toronto Branch Canadian Society Civil Engineers.

The regular meeting was held in the Chemistry and Mining Building of Toronto University Building. A large audience was present to hear Mr. J. Galbraith's lecture on the Quebec Bridge.

Some two hundred slides were shown, but for the reasons stated below no reference was made to the cause of failure, nor was there any criticism of the design used.

Mr. Galbraith said in part:

"I am sure I am very much pleased at the kind and flattering way in which the chairman has introduced me. With regard to what he said before taking his seat, I think, perhaps, I had better say a few words. The report of the Quebec Bridge Commission has not yet been distributed in Parliament; it is not yet out of the printer's hands. The Government gave the engineering papers a report, and parts of it are being published. You have no doubt seen what has appeared in the engineering papers. But, I think, our Society, that is, the Toronto branch of the Canadian Society of Civil Engineers, all know that it is very questionable whether or not we can discuss the subject before it has been discussed in Parliament. It might appear rather strange in Ottawa for this Society holding a discussion before the members.

"The views I am presenting were used in Montreal at the annual meeting of the Canadian Society of Civil Engineers. The chairman presented them with the leave of the Government, but with the understanding that he was to say nothing about them, and he presented the views you will see to-night with a very few words. That was before the formal presentation of the report on the 20th February, when only the findings and conclusions were presented. All the appendices came afterwards, and the last were signed not more than two weeks ago, so, I think, you will agree with me that it will be better to defer discussion to a later date. I do not feel free to say more than has appeared in the engineering papers, and should not care about discussing what has appeared there. The main thing is to see the bridge from one end to the other."

Slides showing the progress of erection and important details of the bridge—important connections, and complicated intersections. Some of these and other details showing history of erection of bridge were shown, which were followed by a series showing the state of the wreck and nature of the material in the wreck.

American Institute of Electrical Engineers.

The regular meeting of the Toronto Section of the American Institute of Electrical Engineers was held on the evening of Friday, April 24th, in the Lecture Room of the Engineering Building of the University of Toronto, twenty-four members and eleven visitors being present. Seventeen were present at the luncheon at the St. Charles Cafe held prior to the meeting.

The chair was taken by Vice-Chairman W. A. Bucke, and the subject of the evening was introduced by Mr. H. W.

Price, Lecturer in Electrical Engineering at the University. Mr. Price discussed the Oscillograph, showing by means of slides the essential characteristics of manufacture and operation. Slides were also shown of oscillograph records of current and voltage taken on the occasion of sundry operations with direct and alternating current motors. Quite a number of oscillograph records taken on the line of the Ontario Power Company at Niagara Falls were then shown and explained by Mr. Johnson, assistant engineer to that company. Amongst these records were shown the current in a neutral ground lead of a transformer bank; the phenomena resulting from the use of open fuses as lightning arresters; the operation of an expulsion fuse; charging current of one hundred and sixty-five miles of line. One interesting record showed the use of the oscillograph for comparing the speed of two machines.

Mr. Price then placed an instrument in service, and those present were enabled to see its operation in many interesting circumstances.

A short discussion on the uses of the instrument then followed, which discussion was partaken in by Messrs. R. G. Black, P. W. Sotham, H. W. Price, Johnson and W. A. Bucke.

The efforts of Mr. Price to make this demonstration an interesting one were very much appreciated by those present.

American Waterworks Association.

The 28th Annual Convention of the American Waterworks Association will be held in Washington, D.C., May 11th to 16th, 1908.

The programme which is being distributed outlines a week of entertainment and discussion. Several excursions under the direction of ladies' committees are arranged for from Washington. The papers to be read cover nearly every phase of the installation and management of waterworks.

Architectural Exposition.

The first annual National Architectural Exposition will be held during the week of September 14th to 19th at Madison Square Garden, New York City, which building is the ideal and appropriate place for this project—the most famous amusement structure in America and of rare architectural beauty.

By the combination and co-operation of all departments in Architecture, Engineering, Painting, Sculpture, the Trades, Manufacturing and Craftsmanship pertaining to the construction, equipment and decoration of buildings as well as landscape and garden effects, this coming function will be a radical departure from the usual form of exhibitions.

It will be the first exhibition of its kind held in this country, and by its attractiveness and importance should arouse the attention of the nation and bring visitors, especially the professions, the manufacturers, the trades, students, lovers of art and science from every section of the United States, and will be of special interest to people of wealth and culture—the purchasing public.

Application blanks and floor space diagrams can be had from Alfred Chasseaud, General Manager, No. 1 Madison Avenue, New York City.

The Detroit Foundrymen's Meeting.

On Thursday, April 30th, the newly-formed Detroit Foundrymen's Association held a meeting which was devoted mainly to a consideration of the coming Convention of the American Foundrymen's Association at Toronto. H. M. Lane, secretary of the Foundry Supply Association, was present, and gave an address on Foundry Association work, stating what the various Associations had done, and also giving an account of the development of Convention matters to date. The Detroit members expect to have a very large attendance at Toronto, and to extend an invitation to the Associations to meet in Detroit in 1910.

The Weber Steel Concrete Chimney Company of Chicago has widened its field of operations considerably, and is now contracting for heavy, plain and reinforced concrete work. Their Canadian office is situated at rooms 36-36A Guardian Building, 160 St. James Street, Montreal.

The Foundry Supply Association Convention.

The work of installing the exhibit at Toronto is already well under way. Very nearly all of Machinery Hall has been reserved, and the temporary building will be full to overflowing. The Process Building is also filling rapidly.

The cupola which is now being installed by J. D. Clercy, of Montreal, is sure to be a centre of attraction, as iron will be melted and poured every day. It will be located in the temporary building, where visitors will also find the oil melting furnaces and the core ovens.

Machinery Hall will contain moulding machine exhibits by ten or twelve different firms, and core making exhibits by two firms, and possibly more. The moulds made on these machines will be poured with metal from the cupola. This melting installation is of special interest, on account of the fact that it is planned to run for an hour or two in the morning, to shut the cupola down until after lunch without dropping the bottom, and then to continue melting iron for two hours.

A plant of this kind demonstrating twice daily will be the mecca for manufacturers who desire a small amount of iron at intervals throughout the entire day to take care of the output of the new varieties of moulding machines, which fill up the floor so rapidly that, with the system now in general use of pouring all the moulds late in the afternoon, the men have to carry the product of the machine a long way to fill the floor or else the machine must stand idle a considerable portion of the time. All foundrymen will appreciate the great economy of labour in pouring the moulds continuously. A small cupola which can be run for the entire day, giving a steady output of hot metal is something which has long been desired; then, too, the advantage of being able to shut down during the noon hour or any desired period is a point not to be overlooked.

The moulding machine and core machine exhibits will be large, and many of the machines will be in operation.

Procuring moulding sand of a suitable grade, and then keeping the sand in condition are two difficulties which fall to the common lot of foundrymen. There will be two exhibits of machines designed to overcome these difficulties by mixing and tampering sand; one by the Standard Sand and Machine Company, and the other by E. H. Mumford Company. The latter will show one of the French Sand Mills, which has travelled from France, especially to appear at this exhibit.

In the Process Building will be installed several gas engines of recent design, and the increasing use of gas power will make this exhibit of particular interest.

Many of the firms showing in both buildings are preparing special features for the entertainment of visitors, and a description of these would make interesting reading, but as they wish the mutual pleasure of an agreeable surprise for their friends, they have requested us not to publish in advance their plans. We may say, however, that everyone coming will be interested and pleased.

Admission to the buildings will be free to all members of the visiting associations, who will be admitted by badge and ticket furnished at the registration desk.

The arrangement by which meetings will be held in the auditorium of the Dairy Building, which is located near the exhibit buildings, make it possible for the members to spend the entire day on the grounds, as there will be ample facilities for lunch furnished by a high-class catering company

Some noteworthy castings are being produced by Reid & Brown, founders, etc., Toronto, in pursuance of a contract with the city for waterworks pipe to the extent of 70 or 80 tons. There are quarter bends of 20 inches internal diameter and T pipes 20 by 8, or 10, or 12, for supplying the northwest part of town around Bathurst and Dupont Streets, and a quantity of cylindrical large water pipes. These pipes are, it is claimed, of unusual quality, being made of iron, a piece of which, 1 inch square by 12 inches, subjected to a test of 2,880 pounds deflected ¼ inch before it broke. Different inspectors, we are told, have pronounced these castings the best ever known in city work. The waterworks department, at all events, is much pleased with them.

PRECIPITATION FOR APRIL, 1908.

The table shows for 15 stations included in the report of the Meteorological Office, Toronto, the total precipitation at these stations for the month.

Ten inches of snow is calculated as being the equivalent of one inch of rain.

Station.	Depth in inches.	Departure from the average of twenty years.
Victoria, B.C.	0.63	-1.24
Kamloops, B.C.	0.30	-0.09
Edmonton, Alta.	0.60	-0.20
Swift Current, Sask.	0.50	-0.35
Winnipeg, Man.	1.60	+0.05
Port Stanley, Ont.	1.80	+0.24
Toronto, Ont.	2.33	+0.24
Parry Sound, Ont.	1.70	-0.25
Ottawa, Ont.	1.70	-0.17
Kingston, Ont.	1.40	-0.55
Montreal, Que.	2.8	+0.53
Quebec, Que.	2.50	+0.39
Chatham, N.B.	2.7	-1.62
Halifax, N.S.	6.40	+2.14

PRINCE RUPERT.

Impressions of a Reliable Observer—The Pacific Port to Be is as Yet Much in Embryo.

(From Our Own Correspondent.)

An arrival from Prince Rupert this week gives his impressions of things as they actually exist. He spent some weeks there. "The building of the terminus has been advertised too much in advance," he says. "Since the location was decided upon a couple of years ago, there has been one constant stream of publicity, until now the people are flocking there only to be turned away. This week the announcement is made that no more tent room on the townsite will be granted, and transportation companies are requested to advise people not to go there.

"Prince Rupert townsite has been cleared to a large extent, but that does not say that it is ready to be built upon. Great cones of rock and earth dot the landscape, and an expenditure of a vast amount will be required to level them to make the site available for city purposes. On all sides are tents, occupied by people who went north to see what is to be done, and to be ready for the first rush to the new townsite. The G.T.P. has allowed a few to establish places of business there. This accumulation of interests has led to the belief that the terminus was ready for settlement. I think that the lots will not be on the market this year.

"I have not the slightest doubt that Prince Rupert will be a big city, as termini on the Pacific coast of transcontinental lines are bound to be, but it will take time to build it. Cities are not erected in a day, and in my opinion it would have been better to have allowed things to have taken their natural course instead of advertising so continuously. This boom may mean a setback for the place. It may be that the rush there will be sufficient to overcome this setback. I hope so. Every boat coming south is bringing back a large number who spent good money going up expecting something. They found nothing. These people will not give a good report, for there is practically nothing on which to give a good report. The policy seems to have been one of exclusion, and instead of a welcome at the northern end, with an intimation that nothing was doing, all they received was rebuff.

"Prince Rupert is the only good location for a terminus in that section, and for that reason when activity has really commenced it ought to go ahead. But to expect to have a model city from the start, with everything complete, is leading people to think that by next summer the older cities will be duplicated. Every city starts in frame, and progresses from that to brick and then to stone buildings, and I do not see that this city will be any exception. Before large expenditures are warranted, there will have to be something there, and at present there is nothing. I hope for the best and really expect it. But the preliminary policy will prove a detriment."

CONSTRUCTION NEWS SECTION

Readers will confer a great favor by sending in news items from time to time. We are particularly eager to get notes regarding engineering work in hand and projected, contracts awarded, changes in staffs, etc. Printed forms for the purpose will be furnished upon application.

RAILWAYS—STEAM AND ELECTRIC.

Quebec.

MONTREAL.—The LaTuque branch of the Quebec & Lake St. John Railway, now controlled and operated by Canadian Northern interests, was formally taken over May 1. This branch is 39 miles long and goes through the Laurentian Mountains, reaching LaTuque on the St. Maurice, about 60 miles north of Grand Mere, and where there is a waterfall of about 60,000 horse-power, and large pulp and paper mills will shortly be located.

MONTREAL.—Considerable interest has been awakened here since it has been practically promised that the Government will dredge Victoria harbour, thus meeting the C.P.R. half-way in employing that place as the great grain board of Georgian Bay. It appears the C.P.R.'s plans at Victoria harbour are on a grand scale. They provide for an elevator of ten million bushels capacity constructed in five units, five millions each. The company's existing road of 262 miles in length is being double tracked and further extension of 97 miles to Victoria harbour, will be completed.

Ontario.

FORT FRANCES.—The first train over the Duluth, Rainy Lake and Winnipeg Railway has reached Fort Frances, Ont., from the East, and in a short time a regular service will be in operation from Winnipeg to Duluth.

TORONTO.—The board of arbitration has awarded Robert Davies \$30,000 land damages against the C.N.R. for passing through his farm in the Don Valley for about half a mile. The claims of the Emily Taylor estate and Mrs. Davies have not yet been adjudicated upon.

Manitoba.

WINNIPEG.—Hon. Robert Rogers, Prime Minister of Manitoba, has returned from his recent trip east. He stated there that while in Montreal he had obtained from Messrs. Mackenzie & Mann an agreement to build three new lines in Manitoba during the coming summer. These will include an additional ten miles to the Turtle Mountain branch, a spur of 25 miles from the Roseburn line through Rapid City into the Viola Dale country, and a line ten miles north of Virden across the C.P.R. tracks. All of these extensions are promised for the coming summer.

WINNIPEG.—Assistant Engineer A. M. MacGillivray, has just returned to St. Boniface from a trip along the Transcontinental construction work east of the city. His inspection extended more particularly to the work of the Eastern Construction Company, immediately west of Superior Junction. Mr. MacGillivray reports that on the 45 miles of this contract full gangs of workmen are being employed, and that the work is progressing with all despatch.

Alberta.

EDMONTON.—Once more the terms on which the street railway franchise of this city should be sold were discussed at a recent council committee meeting. The general opinion of the council appears to be that the construction and operation of a complete street railway system would be too much of a burden at present.

EDMONTON.—The Grand Trunk Pacific Railway has contracted for 600,000 ties to be supplied by sellers and sub-contractors west of Edmonton at an average price of 40 cents per tie. In this way they have secured sufficient ties for the road west as far as McLeod River. In the line east of Edmonton the ties are being secured from the Prince Albert and Rainy River districts.

MEDICINE HAT.—Inspector Prettie, of the C.P.R., who has charge of the company's gigantic scheme of tree planting throughout its western right-of-way, is now on a general tour of Manitoba, Saskatchewan and Alberta, with a view to securing all information possible. The policy of planting trees along the right-of-way has been fully adopted by the company, and there will be no cessation of the work. This year Mr. Prettie will make his headquarters in Medicine Hat. Much of the work will be of an experimental nature, little being actually known of the possibilities of tree growing on a large part of the area traversed by the railway. One of the objects to be attained will be to protect the track from snow. It is believed that in the course of years a supply of timber for various purposes such as railway ties, etc., may be secured from these plantations.

British Columbia.

VANCOUVER.—Four G.T.P. survey parties are now doing location work between Hazelton and Kitselas canyon. This would seem to indicate that the Skeena and Bulkley River route had been finally decided upon as against the easier and longer grade of the Copper River.

SEWERAGE AND WATERWORKS.

Ontario.

LONDON.—The City Council have decided to send the Mayor's water scheme to a vote of the people. It provides for a filtration plant and the taking in of Kilworth springs at a cost of \$560,000.

LONDON.—The water commissioners have decided to ask the council to submit a by-law for over half a million dollars for the extension of the water system of the city.

Manitoba.

PORTAGE LA PRAIRIE.—There was not a very large vote polled on the by-law providing for the expenditure of \$50,000 to secure an auxiliary waterworks system, but the measure carried by a majority of 158. A conduit line will be laid to the Assiniboine River and a series of filtration basins and sedimentation beds constructed. Water will also be supplied to the local railway companies.

SHOAL LAKE.—A scheme is on foot to construct a dam at the Narrows to raise the lake level. The C.P.R. is interested in the matter and may carry out the intention of sending an engineer to take levels and make estimates. At the lake's present depth the intake pipe would freeze solid next winter, and this would undoubtedly prove a loss to the company.

WINNIPEG.—The high pressure system of fire protection, when completed, will have cost over \$1,000,000, according to estimates. The expenditure to March 31 had reached a total of \$777,000, while there is still \$226,000 due the machinery contractors, William Jacks & Company, outside of some extras which that firm is claiming. The original estimate of the cost of the plant was \$560,000 which was increased, by extensions, by \$593,000.

CONTRACTS AWARDED.

New Brunswick.

WOODSTOCK.—Willard Kitchen Company of this city has been awarded the contract for building thirty-two miles of the Grand Trunk Pacific between the Tobique River and Grand Falls.

WOODSTOCK.—Messrs. Power & Brewer, of Woodstock, have been awarded heavy concrete contracts on the G.T.P. construction on the Kitchen Company's section between Grand Falls and the Tobique River. Their contract covers about 75,000 cubic yards of concrete, and will be worth \$350,000. The same firm has a contract for the C.P.R. bridge at Upper Woodstock, where they will put in eight piers of cement and reinforced concrete, the contract price being \$125,000.

Quebec.

MONTREAL.—The contract for the new reinforced concrete coal pocket for the firm of Hart & Adair, Montreal, has been given out to Messrs. Byers & Anglin, the successful tenderers. The pocket will be built at Mile End, Montreal, and the cost will be in the vicinity of \$30,000. The building will be 175 feet long and 70 feet wide. The columns supporting it, and giving access to the delivery vehicles, will be 15 feet high. The building will then rise 25 feet above the columns, and on the top will be an elevation of eight feet to accommodate the machinery, making a total height of 48 feet. It is expected that the building will be completed in about three months.

Ontario.

MOUNT FOREST.—Contract for the steel bridge over the Saugueen River has been awarded. The tenders for both the steel structure and the mason work were numerous. Dickenson Bros., of Northumberland County, were awarded the contract at \$5,760. The highest tender being \$7,140. The mason work, with taking down the bridge, was awarded to H. Lyle Bros., at \$4.98 per cubic yard, and \$100 for taking down the bridge.

NEW DUBLIN.—The Elizabethtown Council accepted the tender of J. D. Truesdale for crushing stone. Price to be \$2.70 per cord.

PORT ARTHUR.—Tenders for building the extension of the Onion Lake dams resulted as follows: Pease Bros., \$7,700; E. T. Ross & Dumont, \$7,004.50; Seaman & Pennaman, \$8,002; Stewart & Hewitson, \$7,450; S. J. McCutcheon, \$7,300. The contract was let to Messrs. Ross & Dumont.

ST. THOMAS.—The contract for 116 foot concrete arch over Kettle Creek, estimated concrete 1,600 cubic yards, was awarded A. E. Ponsford. Price, exclusive of steel of reinforcing \$9,399. The 75 foot-arch at Catfish Creek, estimated concrete 540 cubic yards, went to G. A. Ponsford, exclusive of reinforcing for \$3,700, and the 40-foot beam bridge at Mapleton went to J. W. Shivers of Belmont.

Manitoba.

WINNIPEG.—The City of Winnipeg has placed an order for 15,000 barrels of superior brand cement with the Superior Portland Cement Company, of Orangeville, Ont.

British Columbia.

VICTORIA.—The contract for repairing the Mahon block, which includes the stores of Sea & Gowen and Ogilvie, as well as a number of offices situated on the second storey, all of which were more or less seriously damaged by the recent fire, has been let to Contractors Dinsdale and Malcolm. Tenders were based on plans and specifications prepared by Architect Wilson. They were opened on Thursday afternoon. To put the building in thorough shape, which practically means the reconstruction of the entire second flat, will cost over \$20,000.

TENDERS.

Ontario.

BRANTFORD.—Tenders will be called for until May 21st, 1908, for furnishing and laying 5,450 feet sewer pipe. T. Harry Jones, city engineer. (Advertised in the Canadian Engineer.)

GUELPH.—Tenders will be received until May 18th, 1908, for high duty pumping engine, water tower and foundation and 3,000 feet cast-iron pipe. Davis & Johnson, Berlin, engineers; J. J. Hackney, manager of Waterworks. (Advertised in the Canadian Engineer.)

NIAGARA FALLS.—Tenders will be received until May 18th, 1908, for furnishing and erecting one three million gallon electrically-driven turbine pump. J. H. Jackson, A.M.C.S.C.E., City Engineer; H. J. Spencer, Secretary. (Advertised in the Canadian Engineer.)

OTTAWA.—The time for receiving tenders for the British Columbia Fishery Cruiser will be extended from the first of May until the first of June next. F. Gourdeau, Deputy Minister of Marine and Fisheries.

OTTAWA.—Tenders, addressed to the undersigned and endorsed "Tender for Dredging," will be received until Friday, May 15th, 1908, at 4.30 p.m., for dredging required (at various places) in the Province of Ontario. Fred. Gelinas, Secretary Department of Public Works. (Advertised in the Canadian Engineer.)

ST. THOMAS.—Tenders will be received until May 15th for: (1) A reinforced concrete bridge two arches, each 75-foot span, over Kettle Creek; (2) a reinforced concrete bridge, two arches, each 80 feet, over Kettle Creek. James A. Bell, City and County Engineer. (Advertised in Canadian Engineer.)

TORONTO.—Sealed tenders, endorsed "Tender for Work" addressed to the undersigned will be received up to noon, on Tuesday, May 12th, 1908, for the construction of Administration Building Residence for Superintendent and two Cottages at the Fruit Experimental Station near Jordan Harbor, County of Lincoln. H. F. McNaughten, secretary, Public Works Department.

Manitoba.

VIRDEN.—Tenders will be received up to 10th day of May 1908, for the building of such telephone lines and the installation of such telephones as will be required in the telephone system in the rural municipality of Wallace. James F. C. Menlove, Secretary-Treasurer.

WINNIPEG.—Tenders will be received up to the 10th day of May, 1908, for material and telephone instruments to be used in the construction of Manitoba Government Telephones during the season of 1909.

Alberta.

EDMONTON.—Tenders are asked for the following work in connection with a bank building at Cranbrook for the Imperial Bank of Canada by May 23rd. 1. Excavating, concrete, brickwork, marble work, carpenter and joiner's work, roofing, plastering and painting. 2. Electric light. 3. Plumbing, heating and sheet metal work. R. P. Barnes, architect, Edmonton.

LETHBRIDGE.—Tenders will be received until Saturday, May 16th, for the erection of a twelve room and auditorium brick and stone school building for the Board of Education here.

Saskatchewan.

MEDICINE HAT.—Tenders will be received at the office of the city engineer up to 17k May 18th, 1908, for the drilling of an 8-inch gas well to a depth of 1,100 feet more or less. W. P. Morrison, city engineer.

MOOSE JAW.—Tenders will be called for until May 11th, 1908, for 500 k.w. Turbo-Alternator, etc., for the town of Moose Jaw. John D. Simpson, city clerk. (Advertised in the Canadian Engineer.)

British Columbia.

VANCOUVER.—The date for receiving tenders for the bridge over False Creek, Vancouver, has been extended until May 16th, 1908. Waddell and Harrington, consulting engineers, Kansas City, Mo. (Advertised in the Canadian Engineer.)

VICTORIA.—Tenders will be received until Tuesday, the 26th May, 1908, for the supplying of certain Gate Valves for the Victoria Works. W. W. Northcott, purchasing agent.

VANCOUVER.—Tenders will be received on Thursday, May 14, 1908, for the following: 5,000 feet 2½-inch fire hose; an 800 U.S. gallon steam fire engine, to be fitted with rubber tyres. William McQueen, city clerk, Vancouver, B.C.

VICTORIA.—Tenders will be received up to Monday, the 18th of May, 1908, for supplying to the Victoria Waterworks seventy tons of pig lead. Wm. W. Northcott, purchasing agent.

LIGHT, HEAT, AND POWER.

Quebec.

MONTREAL.—The directors of the Montreal Light, Heat and Power Company have reduced the rates for gas and electric lighting. In gas there is to be a reduction of five cents per thousand cubic of lighting gas consumed. The price henceforth will be \$1.15 per thousand feet. With electric light, all current consumed in residential service on one year contracts during first 30 hours use per month of lamp installation will be charged at 15 cents per kilowatt hour, with a rebate of ten per cent. All current consumed in excess of 30 hours use per month of lamp installation, 15 cents per kilowatt hour, with a rebate of 50 per cent. On five year contracts all current consumed during first 30 hours use per month of lamp installation, 15 cents per kilowatt hour, with a rebate of 20 per cent., or an increased rebate on present rates of five per cent.

Ontario.

TORONTO.—The City Council have accepted the estimate of the Hydro-Electric Commission for electric energy, and have authorized the Mayor to sign the contract. The estimated cost is \$18.10 for 10,000 horse-power, but as the amount increases the price will go down. The interest, sinking fund, etc., remained the same. For 12,000, average cost, \$16.20; for 15,000, only \$15.

British Columbia

NEW WESTMINSTER.—The British Columbia Wood, Pulp & Paper Company, of Vancouver, has posted an application in Water Commissioner Fisher's offices here for a record of twenty thousand inches of water from the Cowholm River on Howe Sound. The water will be used for the purpose of generating power to operate its pulp and paper mill. The water will be diverted from the river above the rapids, and will have a fall of over a hundred feet to tidewater, where the plant will be located. The application for the water record is signed by Greely Kolt for the company.

MISCELLANEOUS.

Ontario.

BROCKVILLE.—Captain Deroche, Government Engineer, Ottawa, visited Brockville in connection with the construction of new rifle ranges on the McCrea farm. He laid out the work, and the contractor, William Leacy, will start operations with a force of men.

HUNTSVILLE.—Mr. G. T. Clark, C.E., of Galt & Smith, consulting engineers, Toronto, has completed surveys and made estimates for some 12,000 lineal feet of concrete sidewalk for the town. The walks will vary in width from 4 to 10 feet, and it is expected the work will be done this summer.

PORT ARTHUR.—The Pigeon River Lumber Company have announced that they will open their big sawmill shortly, giving employment to three hundred men. The Atikokan Iron Company blast furnaces, which are to be started shortly, will employ three hundred, and as the opening of navigation has given employment to about a thousand men about the docks, the summer outlook in Port Arthur is decidedly bright.

Manitoba.

WINNIPEG.—In order to facilitate the handling of their western business, Peter Lyall & Sons, the contractors who built the C.P.R. station and hotel here, have organized a company to control the work west of the great lakes. The capital stock will be \$250,000, and the officers, Peter Lyall, Sr., president; George A. Mitchell, vice-president and general manager; Peter Lyall, Jr., secretary and treasurer.

WINNIPEG.—The first installment of the new locomotives for the G.T.P. arrived from Montreal recently, and have been sent west for construction on the line from Portage la Prairie west. They are uniform 61-ton locomotives, and of the latest model for work on prairies.

Saskatchewan.

SHEHO.—Four bridges will be erected in this district this spring by the Provincial Government Bridge Department.

PERSONAL.

MR. H. P. THOMAS has been appointed manager of the Electric Department of the town of Kenora.

CECIL B. SMITH arrived in Winnipeg Sunday last, and reports steady progress in connection with the civic power plant.

MR. J. DIX FRASER, of Pictou, N.S., has been appointed manager of the Atikokan Mining Company's iron works at Port Arthur.

MR. E. C. RUTHERFORD, of Toronto, has been appointed manager of the Goldschmidt Thermit Company's new office opened at 103 Richmond Street West, Toronto.

MR. W. A. GALLIHER, M.P., has been offered the position of western solicitor and legislative agent for the G.T.P., with headquarters in Vancouver. It is stated he will accept.

MR. W. K. GREENWOOD, B.A.Sc., is now at Thorold, Ont., where under the direction of Willis Chipman, consulting engineer, he is completing the town waterworks extension commenced last year.

HERBERT C. BURCHELL, manager of the North Sydney Cement Company, and a native of Sydney, B.C., has been offered by the British Colonial Office the appointment of director of works for Jamaica.

CITY ENGINEER RUTTAN, of Winnipeg, is inspecting the latest improvements in softening plants. He will visit Columbus, O., Philadelphia, and other points. The engineer is following instructions of council in making the trip, the fire, water and light committee making the recommendation.

PROFESSOR BRYDONE-JACK, of the University, informs the Canadian Engineer that in the near future considerable extension work will be done in the scientific testing department, which will call for the installation of various machines for cement and material testing. The progress made during the past term in the civic and electrical engineering departments has been most gratifying and augurs well for the future.

MR. H. G. PERRING, secretary of the Engineers Club of Philadelphia, and formerly engineer with the Keystone Fireproofing Company, has been secured by the General Fireproofing Company of Youngstown, Ohio, as district manager at Philadelphia, with offices in the Drexel Building.

P. S. ARCHIBALD, C.E., of Moncton, N.B., formerly Chief Engineer of the I.C.R., has been made one of the commissioners to manage the New Brunswick Central Railway. Since 1897, when Mr. Archibald resigned from the I.C.R., he has been engaged as a consulting engineer and expert in railway work.

MR. A. L. BURTON, late inspector of services, has been appointed subscribers' agent for the Manitoba Government telephones. This is a new position in the offices here. In this position Mr. Burton will act on behalf of the subscriber who thinks he is not getting justice when he reports to the "Trouble Department."

SARAGUAY COMPANY GET EXTENSIVE POWERS.

A private bill has been passed by the Quebec Legislature granting to a new electric light and power company very extensive powers. This concern, known as the Saraguay Electric & Water Company, with head office at Montreal, has been created for the purpose of taking over the undertaking and property of the Saraguay Electric Light & Power Company, and to meet the constantly increasing demands upon this company for electric light and power and water supply. The authorized capital of the new concern is \$3,000,000, and the directors are W. M. Ramsay, Esq., director, Molsons Bank and Standard Life Assurance Company; ex-Mayor H. Laporte, president the Provincial Bank of Canada; E. Champagne, ex-Ald. Gaspard de Serres, and Charles Brandeis, C.E., all of Montreal.

The powers of the company extend over a very large territory, embracing the entire Island of Montreal, including the City of Montreal, the Island Bizard, and the counties of

Two Mountains, Laval and Terrebone. Among the rights obtained is that to pass with its wires and pipes across any municipality in order to reach another municipality from which it may have obtained a franchise or contract. The franchise obtained by the Saraguay Electric Light & Power Company from various municipalities have been ratified by the Legislature and declared to be exclusive in the cases in which the municipal corporations have so declared them, notwithstanding any want of power in such corporations. A number of rapidly growing municipalities surrounding Montreal have approached the company with a view of extending the company's lines to such places, which offers are at present under consideration.

The company intends during the present year to increase its power facilities by several thousand horse-power. Its present plant is at Cartierville, but it may be decided to erect the new power-house elsewhere in view of the largely extended territory of operation. At present, there are about 40 miles of electric lines in operation and the company supplies water to Cartierville and St. Laurent. Mr. C. Brandeis, C.E., of Montreal, is the Consulting Engineer.

MARKET CONDITIONS.

Toronto, May 7th, 1908.

Judging from the nature and extent of orders for building material there is more activity of construction in Toronto than outside in the province. Some merchants look to warmer weather, and its effect in drying country roads to stimulate trade; others believe that we need not expect general activity until the fall crop is assured. Several different trades tell the same story, viz., that orders received are all small.

Accounts from abroad are to the effect that the pig iron market in Britain is firm, but that demand for structural steel is much behind production, and that shipbuilding is dull. In the United States it looks as if prices of iron and steel will have to come down, although herculean efforts are being made by the Steel Trust to keep steel up. There is no getting away from the lessened building all over the States.

The following are wholesale prices for Toronto, where not otherwise explained, although for broken quantities higher prices are quoted:

American Bessemer Sheet Steel.—Fourteen-gauge, \$2.45; 17, 18, and 20-gauge, \$2.60; 22 and 24-gauge, \$2.65; 26-gauge, \$2.80; 28-gauge, \$3.

Antimony.—Numerous small orders received, 9½ to 10c. is present price.

Bar Iron.—\$2 base, from stock to the wholesale dealer.

Beams and Channels.—Active demand from Toronto builders; prices continue to be \$2.50 to \$2.75, according to size and quantity; angles, 1¼ by 3-16 and larger, \$2.55; tees, \$2.80 to \$3 per 100 pounds. Extra for smaller sizes.

Boiler Plates.—¼-inch and heavier, \$2.50. Fair supply, prices steady. Boiler heads 25c. per 100 pounds advance on plate.

Boiler Tubes.—Lap-welded, steel, 1¼-in., 10c.; 1½-in., 9c. per foot; 2-in., \$9.10; 2¼-in., \$10.85; 2½-in., \$12; 3-in., \$13.50; 3½-in., \$16.75; 4-in., \$21 per 100 ft.

Building Paper.—Plain, 32c. per roll; tarred, 40c. per roll. Much has gone out on May 1st, which went out last year at April 1st. Orders are all small.

Bricks.—Common structural, \$9 to \$10 per thousand, wholesale; small lots, \$12; there is a good demand. Red and buff pressed are worth \$18 at works.

Cement.—Price of Canadian makes to the dealer in 1,000 barrel lots and up is \$1.75, in cotton bags, on car, Toronto. The dealers' price to the contractor up to car-load lots without package price, are general at \$1.80 per barrel in cotton bags and \$2 in wood, weight in each case 350 pounds. April demand was good; prospect for May is fair; prices are unchanged.

Detonator Caps, 75c. to \$1 per 100; case lots, 75c. per 100; broken quantities, \$1.

Dynamite, per pound, 21 to 25c., as to quantity.

Felt Paper—Roofing Tarred.—Market steady at \$2 per 100 pounds. A good many small orders.

Fire Bricks.—English and Scotch, \$32.50 to \$35; American, \$25 to \$35 per 1,000. Demand, moderate.

Fuses—Electric Blasting.—Double strength, per 100, 4 feet, \$4.50; 6 feet, \$5; 8 feet, \$5.50; 10 feet, \$6. Single strength, 4 feet, \$3.50; 6 feet, \$4; 8 feet, \$4.50; 10 feet, \$5. Bennett's double tape fuse, \$6 per 1,000 feet.

Galvanized Sheets—Apollo Gauge.—Sheets 6 or 8 feet long, 30 or 36 inches wide; 10-gauge, \$3.25; 12-14-gauge, \$3.35; 16, 18, 20, \$3.50; 22-24, \$3.70; 26, \$3.95; 28, \$4.40; 29 or 10¼, \$4.70 per 100 pounds. Stocks very low.

Ingot Copper.—Trading is in small volume; 13¾ to 14¼c. continues to represent the market here.

Iron Pipe.—Black, ¼-inch, \$2; ¾-inch, \$2.25; 1-inch, \$2.72; 1¼-inch, \$3.68; 1-inch, \$5.28; 1¼-inch, \$7.20; 1½-inch, \$8.64; 2-inch, \$11.50; 2½-inch, \$18.40; 3-inch, \$24.15; 3½-inch, \$30.40; 4-inch, \$34.55; 4½-inch, \$38; 5-inch, \$43.50; 6-inch, \$56. Galvanized, ¼-inch, \$2.85; ¾-inch, \$3.05; 1-inch, \$3.57; 1¼-inch, \$4.83; 1-inch, \$6.93; 1¼-inch, \$9.45; 1½-inch, \$11.34; 2-inch, \$15.12.

Lead.—Steadily receding in price: we quote \$4.

Lime.—In plentiful supply and moderate movement. Price for large lots at kilns outside city 21c. per 100 lbs. f.o.b. cars; Toronto retail price 35c. per 100 lbs. f.o.b. car.

Nails.—Wire, \$2.55 base; cut, \$2.70; spikes, \$3.15.

Pitch.—Fair demand at 75c. per 100 lbs.

Pig Iron.—More pig is selling; Summerlee quotes: No. 1, \$25.50; No. 3, in car load lots, \$22 to \$23 here; Glengarnock, \$25.50; Clarence, No. 3, \$19.50 to \$20; No. 1 Cleveland, \$20 to \$22; Old Country market firm.

Steel Rails.—80-lb., \$35 to \$38 per ton. The following are prices per gross ton; Montreal, 12-lb. \$45, 16-lb. \$44, 25 and 30-lb. \$43.

Sheet Steel.—In moderate supply; 10-gauge, \$2.65; 12-gauge, \$2.70.

Tar.—There is some activity in a small way; \$3.50 per barrel the ruling price.

Tank Plate.—3-16-in., \$2.65.

Tin.—Firmly held abroad by speculative interests; price here steady at 33 to 34c.

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Montreal, May 7th, 1908.

The situation continues almost unchanged in the United States. There is a slight improvement in the general tone of business, and the opening of spring work naturally exerts an influence for activity, but, when compared to a year ago, trade seems very dull indeed. Stocks are not at all large, and any resumption in demand would have to be met with an increased output. The whole trade is waiting on the crop, to know what to do in the matter of resumption of business.

There is very little change to note in the English market. Demand continues dull, when compared with the usual spring business, but there is a slight improvement in trade, and producers are holding prices fairly firm.

Locally, there is quite a little activity in progress. The first ships are now in and iron is being landed and re-shipped to different points in the interior in response to orders booked, for the most part, some weeks since. It will be some little time before these orders have been filled and stock begins to accumulate here. Meantime prices hold steady to firm. Importers are naturally not ordering as freely as usual, thus protecting themselves against an almost certain lack of activity in demand for the near future. The blowing-out of blast furnaces of the Algoma Steel Company plant, following the closing of the steel rail mill a few weeks ago or so, has not contributed to buoyancy in the iron and steel trade, although this act should be welcomed by rival producers, the Algoma mills being the second largest in Canada.

In iron and steel products, trade has not been active, though dealers generally report improvement and a better outlook.

Antimony.—The market holds steady and sales are being made at 9½ to 10c. per lb.

Bar Iron and Steel.—Prices continue unchanged and business is only fair. Bar iron, \$1.90 per 100 lbs.; best refined horseshoe iron, \$2.15; forged iron, \$2.05; mild steel, \$2.05; sleigh shoe steel, \$2.05 for 1 x ¾-base; tire steel, \$2.05 for 1 x ¾-base; toe calk steel, \$2.50; machine steel, iron finish, \$2.15.

Boiler Tubes.—The market holds steady, demand being fair, prices are as follows:—2-inch tubes, 8 to 8¼c.; 2½-inch, 11c.; 3-inch, 12 to 12¼c.; 3½-inch, 15 to 15¼c.; 4-inch, 19¼ to 19½c.

Building Paper.—Tar paper, 7, 10, or 16 ounce, \$2 per 100 pounds; felt paper, \$2.75 per 100 pounds; tar sheathing, No. 1, 60c. per roll of 400 square feet No. 2, 40c.; dry sheathing, No. 1, 50c. per roll of 400 square feet, No. 2, 32c.

Cement—Canadian and American.—Canadian cement, \$1.70 to \$1.75 per barrel, in cotton bags, and \$1.95 and \$2.05 in wood, weights in both cases 350 pounds. There are four bags of 87½ pounds each, net, to a barrel, and 10 cents must be added to the above prices for each bag. Bags in good condition are purchased at 10 cents each. Where paper bags are wanted instead of cotton, the charge is 2½ cents for each, or 10 cents per barrel weight. American cement, standard brands, f.o.b. mills, 85c. per 350 pounds; bags extra, 10c. each, and returnable in good condition at 7½c. each.

Cement—English and European.—English cement is steady at \$1.85 to \$1.90 per barrel in jute sacks of 82½ pounds each (including price of sacks) and \$2.20 to \$2.30 in wood, per 350 pounds, gross. Belgian cement is quoted at \$1.75 to \$1.85 per barrel in bags, and \$2.05 to \$2.20 per barrel, in wood.

Copper.—The market is steady at 14 to 14½c. per pound. Demand continues limited.

Iron.—The steamships are now arriving at Montreal with iron from Great Britain, and as a result the spread between the prices quoted for spot business and business to arrive has disappeared, the latter prices now prevailing. The following are quotations for pig-iron now arriving:—No. 1 Summerlee, on cars, Montreal, \$20.50 to \$21 per ton; No. 2 selected Summerlee, \$20 to \$20.50; No. 3, soft, \$19.50 to \$20; Cleveland, \$18.50, and No. 3 Clarence, \$18; No. 1 Carron, \$22 to \$22.50; Carron special, \$20.25 to \$20.75; Carron, soft, \$20 to \$20.50.

Lead.—Trail lead is weak and prices have declined to \$3.70 and \$3.80 per 100 lbs., ex-store.

Nails.—Demand for nails is moderate, but prices are steady at \$2.30 per keg for cut, and \$2.25 for wire, base prices.

Pipe—Cast Iron.—The market shows a slight improvement in demand, now that spring is opening up, but prices are easy at \$34 for 8-inch pipe and larger; \$35 for 6-inch pipe; \$36 for 5-inch, and \$36 for 4-inch at the foundry. Gas pipe is quoted at about \$1 more than the above.

Pipe—Wrought.—The market is quiet and steady at last week's range:—¾-inch, \$5.50, with sixty-three per cent. off for black, and 48 per cent. off for galvanized; ¾-inch, \$5.50, with 59 per cent. off for black and 44 per cent. off for galvanized. The discount on the following is 68 per cent. off for black and 58 per cent. off for galvanized; ½-inch, \$8.50; 1-inch, \$16.50; 1¼-inch, \$22.50; 1½-inch, \$27; 2-inch, \$36; and 3-inch, \$75.50; 3½-inch, \$95; 4-inch, \$108.

Spikes.—Railway spikes are in fair demand, \$2.60 per 100 pounds, base of 5½ x 9-16. Ship spikes are steady at \$3.15 per 100 pounds, base of 5½ x 10 inch and ¾ x 12 inch.

Steel Shafting.—Prices are steady at the list, less 25 per cent. Demand is on the dull side.

Steel Plates.—Demand is good, and the market steady. Quotations are: \$2.55 for 3-16, \$2.40 for ¼, and \$2.30 for ⅜ and thicker, in smaller lots.

Tar and Pitch.—Coal tar, \$4 per barrel of 40 gallons, weighing 575 to 600 pounds; coal tar pitch, No. 1, 75c. per 100 pounds, No. 2, 65c. per 100 pounds; pine tar, \$4.35 to \$4.50 per barrel of about 280 pounds; pine pitch, \$4.25 per barrel of 180 to 200 pounds.

Tin.—The market is firmer at 34 to 34½c. per pound.

Tool Steel.—Demand is light, but the market is firm. Base prices are as follows: Jessop's best unannealed, 14½c. per pound, annealed being 15½c.; second grade, 8c., and high-speed, "Ark," 60c., and "Novo," 65c.; "Conqueror," 55 to 60c.; Sanderson Bros. and Newbould's "Sabon," high-speed, 60c.; extra cast tool steel, 14c., and "Colorado" cast tool steel, 8c., base prices. Sanderson's "Rex A" is quoted at 75c. and upward; Self-Hardening, 45c.; Extra, 15c.; Superior, 12c.; and Crucible, 8c.; "Edgar Allan's Air-Hardening," 55 to 65c. per pound.

Zinc.—The market is unchanged, at 5¼ to 5½c. per pound.

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Winnipeg, May 5th, 1908.

Engineering work of all kinds is being proceeded with and projected very generally through the North-West. Many of the municipalities have committed themselves to certain improvements which will call for a large amount of machinery, to say nothing of the large number of private enterprises.

The demand for contractors' machinery around Winnipeg has been very good, one supply house reported a very remarkable volume of sales.

Much interest was centred last week in the test before a number of influential fire insurance underwriters of the city's new high pressure system.

In an early issue of the Canadian Engineer we propose to present an illustrated description of the most interesting installation.

Bar Iron.—\$2.50 to \$2.60.

Beams and Channels.—\$4 to \$4.50 per 100 up to 15-inch.

Building Paper.—4½ to 7c. per pound. No. 1 tarred, 84c. per roll; plain, 60c.; No. 2 tarred, 62½c.; plain, 56c.

Bricks.—From \$11 to \$12 per 1,000, three grades.

Cement.—\$3.25 to \$3.50 per barrel.

Dynamite.—\$11 to \$13 per case.

Roofing Paper.—60 to 67½c. per roll.

Nails.—\$4 to \$4.25 per 100. Wire base, \$2.85; cut base, \$3.20.

Tool Steel.—15 to 20c. per pound.

Lumber.—No. 1 pine, spruce, tamarac, British Columbia fir and cedar—2 x 4, 2 x 6, 2 x 8, 8 to 16 feet, \$27.25, 2 x 20 up to 32 feet, \$38.

Timber.—Rough, 8 x to 14 x 16 up to 32 feet, \$34; 6 x 20, 8 x 20 up to 32 feet, \$38; dressed, \$37.50 to \$48.25.

Boards.—Common pine, 8 in. to 12 in. wide, \$38 to \$45; siding, No. 2 white pine, 6 in., \$55; cull red or white pine or spruce, 6 in., \$24; No. 1 clear cedar, 6 in., 8 to 16 ft., \$60; Nos. 1 and 2 British Columbia spruce, 6 in., \$55; No. 3, \$45.

Flooring.—No. 2 red pine, 4 in., \$43; No. 3 red, 4 in., \$38; No. 4 red and white pine or spruce, 4 in., \$28; ceiling, No. 2 white pine, 4, 5, and 6 in., \$55; No. 3 red pine, \$38.

Lath.—No. 1 red and white pine mixed, \$5.50; No. 2, \$4.75.

Shingles.—No. 1 British Columbia cedar, \$4.25; No. 2, \$3.75; band sawn, \$6.

SECOND-HAND FOR SALE

Hoisting Engines, double cylinders & drums, 6x8" & 7x10" with boilers
Robinson Steam Shovel, 2½ yards capacity.
Saddletank Locomotive, 36" and standard gauge.
Concrete Mixers, Smith, Ransome, Champion, all sizes.
Crushers, gyratory and jaw, various sizes, some portable.
Switch Engine standard gauge.
Pumps, Derricks, Engine Boilers, &c., &c.

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