

PAGES

MISSING

The Canadian Engineer

WEEKLY

ESTABLISHED 1893

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The Canadian Engineer

ESTABLISHED 1893

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1907 INDEX READY.

Index for Volume 14 (1907) of the Canadian Engineer is now ready. Subscribers desiring copies will kindly drop us a postal to that effect.

CONTENTS OF THIS ISSUE.

Editorial:	Page.
Aim of a College Course	37
Ontario Power	37
Georgian Bay Canal	37
Leading Articles:	
Foundation Work for Six Lift Bridges	38
Cores and Core Sand	40
Correspondence:	
Forestry in Ontario	39
Concrete Specifications	39
Running a Lot Line	39
Concrete Heater	39
Construction News	41
Market Conditions	44

THE AIM OF A COLLEGE COURSE.

From the various Provinces there will return to the universities a great body of students. A large per cent. of these men will be registered in the Faculties of Applied Science, expecting there to find a key that will open doors to wealth, opulence and ease.

The industrial expansion of this decade required technically trained men. The Science departments of the universities attempted or were forced to attempt to supply the demand. Men came up to the university to learn how to make a living. The success of some of the graduates appeared to emphasize this view, until it is hard to convince

the undergraduate that the aim of a university should be to teach not how to make a living but how to live.

To assist in reaching this ideal some have suggested that the Applied Science Departments pay more attention to English and French ethics and economics. These are studies of great importance and undoubted culture value. You may arrange courses without number; you may add new subjects and discard the old, but unless the problems are approached in the right spirit, unless the atmosphere of the classroom is that of honor and justice; unless the lecturer is true to right ideas and altogether just, the true aim of a university course will be lost.

The sooner the student learns that it is not what he studies, but how he studies; that the training he receives is of more value than the information stored, the sooner he learns the value of a college course.

POWER IS ON.

In many Ontario municipalities the selection of council boards was of secondary importance. The power by-law was the all-important topic of municipal politics. Cheap power was the cry, and the voting left no doubt as to what the people wanted.

Each district had its own peculiar conditions; existing plants, distance of transmission, uncertainty as to the demand there would be for electric energy. Some municipalities face all these difficulties and more, but the people have demanded power, and they must have it.

The various municipalities have expressed confidence in their ability of distribute. The Hydro-Electric Commission will find means of generating and transmitting. The question is now a business one. No doubt it involves many difficulties. Some experiments must be carried out, that large expenditures may not be wasted. Existing plants must be used as far as possible, that wasteful competition shall not result. Intelligence and public spirit must be brought to bear on the working out of this tremendous question. The days of excitement and hysterics are past. Cool, aggressive, and statesmanlike methods must now be adopted to secure, unhampered, for the people of the Province, the great gift of Nature—many waterfalls.

THE GEORGIAN BAY CANAL.

The next great construction work in Canada will probably be the Georgian Bay Ship Canal. For many years the problem of cheaper transportation from Western Canada to the ocean has been a topic of discussion. The railways have failed to furnish it. The growth of trade between Western and Eastern Canada has been much greater than the improvement in railway transportation. The hope of the situation has been lake shipping; but this, too, has become congested. The accommodation at lake ports is inadequate; the transshipping is expensive. To secure more rapid transportation and reduce transportation charges, the Georgian Bay Canal is suggested.

The canal is to be 425 miles long, and will follow the French River from the Georgian Bay to Lake Nipissing. From Lake Nipissing, by Trout River to Trout Lake and Talon Lake, and from here will drop by way of the Mattawa River to the Ottawa and St. Lawrence.

The natural advantages of this route are notable. Canal navigation is usually slow, the wash from the vessels making impossible a speed greater than five or six miles per hour, or even less, but in the proposed route great

bodies of water will be available, and the cuttings will be short.

A private corporation holds a charter allowing them to construct the canal, but it is very doubtful if the Government will allow such an undertaking to be controlled by private capital. The Government have spent \$500,000 on surveys and investigation, and it is just probable that now they are considering the advisability of appointing a Commission to report on the whole question.

* * * *

Who was the knocker that commenced this hard-time cry? Canada is just as rich in natural resources in 1908 as she was in 1907. They must be developed to be valuable. They will give as good returns in 1908 as ever before. The cheerful, optimistic engineer can do much to allay the present condition, which is neither a panic nor a calamity, but just an uneasiness.

FOUNDATION WORK FOR SIX LIFT BRIDGES.

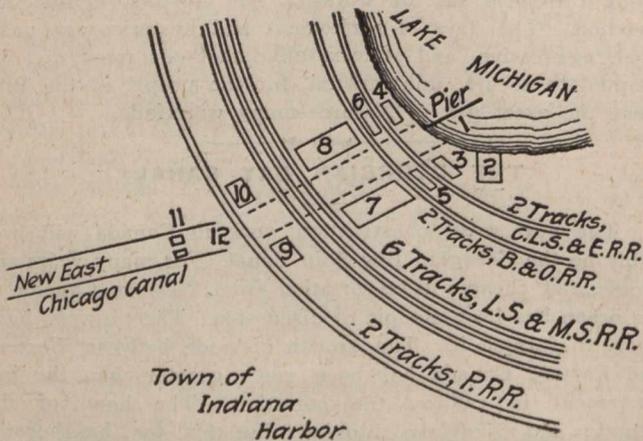
By C. M. Ripley, New York City.

A Description of the Excavation Work.

The running of the new East Chicago Canal from the inland to its junction with the Lake Michigan at Indiana Harbor, Ind., where it connects with the ore unloading slip of the Inland Steel Company's plant, makes necessary lift bridges in the tracks of all those railroads which skirt the southern lake shore on their way east. The P.R.R. is farthest from the shore of the lake with two tracks, the L.S. and M.S. with six tracks is next, the B. and O.R.R. is next with two tracks, and the C.L.S. and E.R.R. with two tracks is the one closest to Lake Michigan.

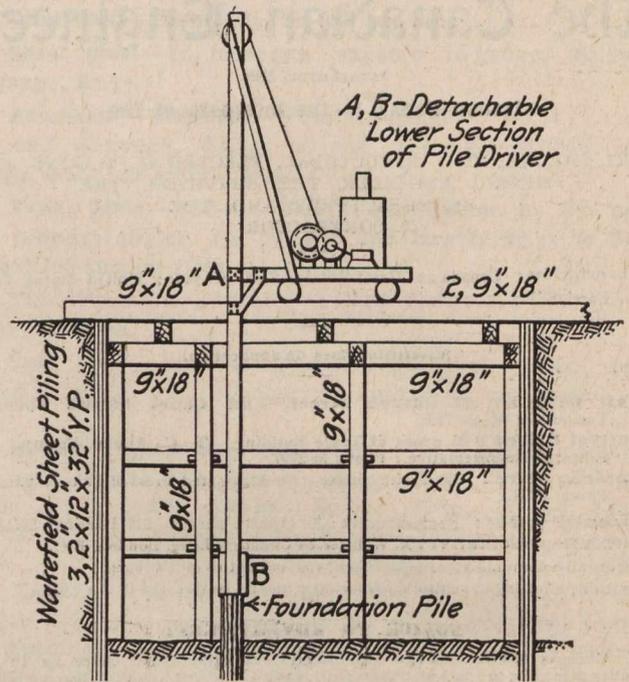
The average amount of excavation for the piers of these lift bridges is about 5,000 cubic yards for each two-track lift bridge. The work on the Lake Shore and Michigan Southern is three times as large as that of any of the other roads here, and will be considered more in detail than the other three jobs. Since three double-track bridges are to be built side by side on this job, the excavation work is obviously less in amount per double track than is the case with the other three separate jobs, which have only one double-track bridge each.

At the beginning of the work the Lake Shore people drove and jetted Wakefield sheet piling of 2 x 12 yellow pine 32 ft. long. These were so overlapped as to make three feet of piling measured horizontally for every foot of periphery around the cofferdam, which is 42 x 105 feet. One 2,000 pound drop hammer with a gang of twelve men at



an average of \$2.45 per day, drove fifteen peripheral feet of the sheet piling on an average each day. Since jetting was employed the piling generally sank under the weight of the hammer, and very little driving was needed in this portion of the work. From about the middle of September until the first week in November the excavation work had been carried down 26 ft. and foundation pile-driving started. Ten men at \$1.60 per day, one hoisting engineer at \$3 per day, and two men at the gondola car, dumping the one-yard cylindrical buckets, constituted the gang for this work. As the work progressed onward through eight feet of dry sand, 9 x 18 in. walling pieces, with the flat sides against the sheet piles, were run at a depth of six feet below the top of the

sheet piling all the way round the cofferdam. Cross bracings of 9 x 18 timbers longest dimension vertical were then strung across the cofferdam at intervals of every fifteen feet, measuring along the longest dimension and every fourteen feet along its shortest dimension. Two different lengths of these cross pieces were used, namely, 14 and 28 ft., approximately, and, as shown in the accompanying diagram, they were employed alternately or staggered. Vertical posts were set in at the junction of the longitudinal and transverse bracing as shown, and a one-half by four-inch forged angle, each leg five inches long and containing two



holes, were used in connection with eight-inch log screws to join a longitudinal or the transverse bracing, as the case may be, to the vertical uprights.

As the excavation was carried down new walling pieces were added at intervals of approximately five feet each until the full depth of 28 feet was reached. These lower walling pieces, however, were composed of two 9 x 18 in. timbers, lagged together and placed with their narrowest dimension against the sheet piling in order to gain additional strength, since the earth pressure increases at the lower depths. Beneath those points where the walling pieces and the cross bracing intercepted, vertical 8 x 16 in. timbers were lagged on, with the flat side against the sheet piling, as shown.

At a depth of about eight feet below the surface the excavation became wet, and two type B Emerson Junior pumps, 180 G.P.M., each with 4-in. suction and 3-in. discharge pipes, were hung from the upper timbers. These sufficed for unwatering the excavation down to its lowest level, 25 ft. below the water line, and during the time the foundation piles were being driven. Two other Emerson pumps were used also in the cofferdam for the smaller pier. These only weighed 250 pounds each, the superintendent said. A total of 1,200 piles were driven in the main and minor excavations, and twenty-four men, averaging \$2.45 per day, with one 2,800-pound and one \$2,000-pound drop hammers in 65-foot leads, drove an average of 30 piles per day, each pile approximately 45 feet long.

Mounting of the Pile Driver.

The method of mounting the pile drivers is shown in the sketch attached herewith. Two chords, 9 x 18 in. each, were lagged together, with joints staggered, and in lengths of approximately 30 feet, so as to make an 18 x 18 in. girder 60 feet long. Two of these girders spaced about 10 feet apart rested upon the transverse and vertical cross bracing of the upper tier. Across these two girders were laid two 10 in. wrought iron pipes, extra heavy, which served as rollers for the D.C.D.D. hoisting engine, which operated the drop.

Since the piles were not driven until the excavation had reached its lowest level there were, therefore, four different

(Continued on Page 40.)

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.]

FORESTRY IN ONTARIO.

Sir,—Mr. A. Knechtel, lately forester for the Forest, Fish and Game Commission of New York State, has joined the forestry branch of the Interior Department at Ottawa. He is a perfect one, by all accounts, and, being a Canadian by birth, will be able to bring forward his splendid knowledge in the encouraging of forestry, not only in this Province, but also throughout the Dominion of Canada. The subject of forestry is a very important one—equally as important as mining, as the country is becoming denuded of the trees to such an extent that before twenty-five years have passed away it will have very few left. Looking at the Old World, and the forestry there, Great Britain, Germany, and France carry the same to perfection. Spain, at one time a magnificent country for its woods, is now nearly a complete desert. Why? Because their fountain heads of trees have all been cut away; consequently the rivers are lower, and ere long the Government of that country will have to resort to irrigation through the instrumentality of artesian wells. It is nearly as bad in our Province, for I remember in my earlier years streams close to this city which were rapid and deep waters. They are now dried up, in a great measure because their fountain heads, the trees, have all been cut away. The Duke of Sutherland and many other of the Scottish nobility have plantations of larch, which, I believe, can be used for buildings when about the age of twenty years, and most of that variety of trees are grown upon very arid land. Why not try them on some of the same sort of soil which we have in Canada, and also in some of the played-out timber limits, of which we have a very large number? Our Provincial Government has now grasped the situation, employing the best of men in their service, and ere long our country will be redeemed and restored to its at one time pristine beauty and usefulness.

Yours, etc.,

George Hawkesworth Armstrong.

44 Pearl Street South,
Hamilton, Ont.

CONCRETE SPECIFICATIONS.

Sir,—In your issue of January 3, 1908, "Associate" enquires regarding the apparently loose method in which concrete specification is drawn up, only the proportions by volume of cement, sand and crushed stone being given.

With few exceptions concrete specifications are worded similar to this in even the largest work, in order to simplify and clearly define the proportions for the contractor. The proportioning depends upon the percentage of voids in the sand, gravel or crushed stone. The engineer or architect in charge has no doubt determined this by experiment previous to drawing up the specifications. The percentages of voids in materials might have been made more uniform by having the sand and gravel screened and the stone specified not to exceed a certain size.

Where specifications err is in the case of a railroad company whose engineers have standardized the proportions by volume of sand and crushed stone without determining by experiment in each case the percentages of voids in the materials. The contractor may, if he wishes, check the

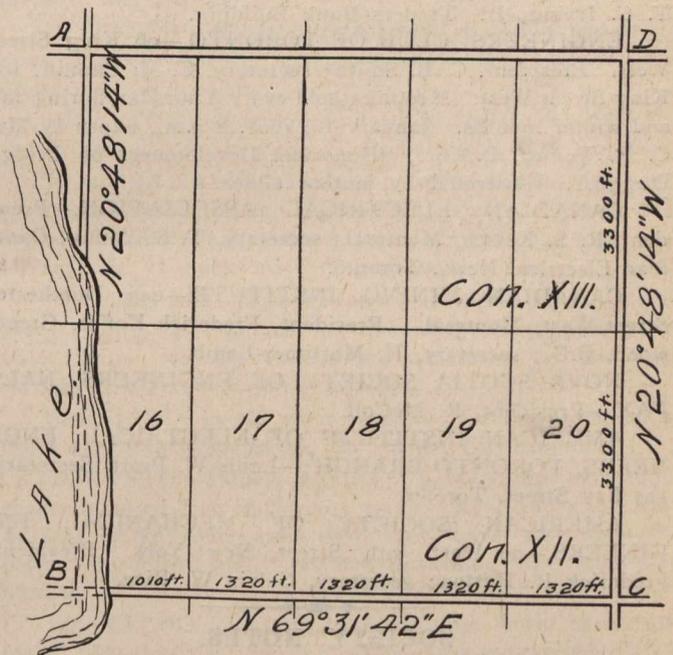
correctness of the proportions by volume as follows: Determine the percentage of voids in a cubic foot of the sand to be used. This may be done by finding the per cent. by volume of water required to fill the voids of a box of the sand which capacity is one cubic foot. For example, the percentage may be about 35; then the proportions of the cement to sand in a mortar should be one part cement to three parts sand. The percentage of voids in the crushed stone or gravel may be determined in a similar manner. For example, the percentage of voids may be 50, and it requires one part mortar to fill the voids in two parts crushed stone or gravel. The correct mixture with these percentages of voids should then be 1—3—6. In all cases the proportion of cement should slightly exceed the voids in the sand, and the proportion of the mortar should exceed the voids in the stone or gravel.

R.

Toronto, Jan. 7, 1908.

RUNNING A LOT LINE.

Sir,—The bearing of A B found by picking up the blaze is N. 20° 40' 15", while on the original plan it is given as N. 20° 48' 14".



The line C D can be followed out, and the bearing is the same as on the plan, but the corner stakes and bearing trees, if there ever were any, are lost. How shall I proceed to run the line between Lots 16 and 17, Con. 12?

Yours sincerely,

A. B. C.

CONCRETE HEATER.

Sir,—We expect to carry on our concrete work all this winter. The work we are engaged on will not allow of mixing the concrete in large batches; in fact, we are hand-mixing all the concrete on this job. We would be pleased if you, or some of your readers, could tell us of a cheap method of heating the gravel so that the concrete will not freeze before setting.

Yours truly,

CONCRETE.

Georgian Bay, Jan. 1, 1908.

(Continued from Page 38.)

tiers of cross bracing which interfered with the lateral movement of the pile driver leads; instead, therefore, of lifting the entire 65-foot leads out of the excavation whenever the progress of the pile-driving made it necessary to cross a longitudinal or transverse bracing timber, the following expedient was resorted to: The lower 30 feet of the pile-driver leads was made detachable, according to the sketch herewith, and by merely taking out eight bolts the hoisting engine lifted this lower section above the upper tier of cross bracing, and the engine was pushed over into the next shaftway, where the lower section was again dropped into place and the pile-driving resumed, a change requiring little over five minutes time to consummate.

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, 33 Melinda 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, W. McLea Walbank; secretary, Prof. C. H. McLeod. Meetings will be held at Society Rooms each Thursday until May 1st, 1908. January 16, 1908, monthly business meeting. Toronto Branch of Canadian Society of Civil Engineers, 96 King Street West, Toronto. President, E. H. Keating; secretary, T. C. Irving, Jr., Traders Bank Building.

ENGINEERS' CLUB OF TORONTO.—96 King Street West. President, C. B. Smith; secretary, C. M. Canniff, 100 King Street West. Meetings held every Thursday during fall and winter months. January 16, 1908, 8 p.m., paper by Mr. C. R. Young, B.A.Sc., "Historical Development of Bridge Design." Illustrated by lantern slides.

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, Frederick Keffer, Greenwood, B.C.; secretary, H. Mortimer-Lamb.

NOVA SCOTIA SOCIETY OF ENGINEERS, HALIFAX.—President, R. McColl.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, TORONTO BRANCH.—Louis W. Pratt, Secretary, 123 Bay Street, Toronto

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—29 West 39th Street, New York. President, Frederick R. Hutton; secretary, Calvin W. Rice.

SOCIETY NOTES.

The regular monthly business meeting of the Engineers' Club, Toronto, was held on 2nd inst., Mr. C. B. Smith, president, presiding. The most important discussion of the evening was as to the possibility of securing new quarters for the club. Of members present a large majority favored securing rooms in the vicinity of College Street at the expiration of the present lease. A committee was appointed to report on available property.

CORES, CORE SAND AND CORE-MAKING MACHINERY.*

By C. H. Wadsworth.

A common fallacy among foundrymen is to think that one core mixture will suit a wide range of foundry conditions. Now, the facts of the case are that in a single

* Extracts from a paper read at the Lewis Institute, Chicago.

foundry it may be profitable to have a number of separate and distinct core mixtures, using entirely different grades of core sand and binders. From this it is clear that each class of cores must receive separate consideration; and this consideration must cover the core-room, the foundry, and the finishing department portions of the problem. It is necessary on the one hand to take account of what we have to deal with, and on the other, what the results are which we hope to achieve.

A CORE DEFINED.

The term core, as it is used by the foundryman, has been defined as a body of sand projecting into an opening left in the mould so as to form a hollow in the casting. Later, however, the term has come to have a broader significance, and the portion of it which we have to deal with covers only such cores as are made by the core-maker and delivered to the moulder for insertion in the mould. In accordance with this we may define a core as a body of sand which is made and baked and then introduced into a mould, either to form a hollow in the casting or to form one face in the mould, as in the case of covering cores.

CORE CONSTITUENTS.

A core must be porous as to provide a ready passage for the gases as they escape when the metal is being poured about the core. At the same time it must have sufficient strength to resist the wash of the metal. The composition of the core must be such that it will burn brittle when exposed to the metal, so as to crush as the metal shrinks about it, thus relieving the casting from unnecessary strains. This is especially true in the case of cores used for brass and aluminum castings. The core must also burn brittle enough so that it will clean from the casting easily, and in some cases it is important that the surface be of such a nature that it will give a perfectly true, clean, parallel hole, free from rough scale. One great objection to many core mixtures is that they contain material which, when exposed to the heat of the metal, gives off gases which are injurious, or if not, at least troublesome to the moulders, and no matter what advantage binders of this kind may possess, the foundryman will always try to supplant a binder giving trouble from gas by one giving a practically odorless gas. Another point which must be considered is that the core mixture must be cheap; but a cheap mixture may mean a dear casting, and, as stated above, not only the core-room, but the foundry, cleaning-room and machining department should all be taken into consideration when selecting core-room materials. In all core mixtures which come under the scope of this paper sharp sand forms the principal portion of the body of the core, the remainder of the material being known as the bond. Water in a core mixture only plays the part of an agent for rendering the bond active previous to the baking of the core.

BONDS.

Bonds may be divided into two classes, natural and artificial. The natural bonds practically all belong to the clay class; that is, they are some alumina product. Sand frequently contains a certain amount of alumina or clay, which is frequently known as loam. For some classes of work this forms an efficient core bond, but in the case of brass, aluminum or grey iron work it often burns so hard during casting as to make it very difficult to remove the core when the clay is present in large quantities. Some of the modern dry core compounds have pitch for a base, and they also contain powdered coke or other material to cut down the sticky nature of the pitch. Such binders will be found exceedingly useful in the case of large cores, but for machine-made cores dry binders have not proved very successful. The machine-made cores fill the gap between the exceedingly small and delicate cores and the very large cores.

The large cores are rarely wanted in such quantity as to warrant the use of a machine in their production, while the very small cores, and particularly those which are of irregular shape, require special treatment, and when wanted in quantities must be made in metal boxes, and frequently provided with carefully fitted core wires.

(To be Continued.)

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.

LIGHT, HEAT, AND POWER.

Ontario.

GANANOQUE.—A by-law authorizing the town to issue \$10,000 of debentures to complete and pay for debts contracted for electric light works carried.

GODERICH.—A by-law to transfer the guarantee of the bonds of the Maitland River Power Company to the Ontario West Shore Railway, amounting to \$150,000, carried.

HAVELOCK.—The Healey Falls power by-law carried.

NAPANEE.—A by-law authorizing the town to issue \$10,000 debentures to complete and pay the debt of electric light works was carried.

ORANGEVILLE.—In the hottest municipal contest in the town's history, a fight for a franchise on the streets between the Watson and Deagle Electric Light Companies was the main issue. A council favorable to Watson and the dual system was returned.

PORT HOPE.—A by-law authorizing the town council to proceed with the erection of a municipal lighting plant was carried.

WATERLOO.—The power by-law, voted on here, was carried by a big majority, about 3 to 1, as were also by-laws to extend the sewer farm, to install a sanitary system in the schools, and to enlarge the gas plant.

MUNICIPAL POWER.—The power by-laws were carried in the various Ontario municipalities by very large majorities. A year ago the people expressed confidence in the scheme. This week they assumed a liability. The Hydro-Electric Commission have now a definite request from the various municipalities, and they will doubtless prepare to meet the request speedily. Thirteen municipalities in Ontario yesterday voted on power by-laws. This is how the vote resulted:—

	For.	Against.
Hamilton	3,038	1,673
London	2,809	941
St. Thomas	1,295	191
Brantford	1,131	734
Stratford	1,053	372
Guelph	968	98
Galt	756	510
Woodstock	865	154
Waterloo	437	115
St. Mary's	x 292
Hespeler	x 82
New Hamburg	152	31

x-Majority.

British Columbia.

REVELSTOKE.—Anchor ice interferes with the present power plant. During the coming season the town purposes installing a 400 horse-power gas engine and a suitable gas producer plant; also a 150 kw. dynamo for the supplying of electric energy for power. The present plant will be used for lighting only. C. H. B. Topp, City Engineer.

VANCOUVER.—The new 10,000 horse-power unit of the British Columbia Electric Railway Company at Lake Buntzen power house has been given its trial spin, and is now put permanently into commission.

(Contemplated Work.)

Ontario.

HAVELOCK.—The Northumberland-Durham Power Company are about to make application to the Dominion Government for permission to develop power at the Upper Healey Falls. It is said fourteen thousand horse-power can be developed here.

PORT ARTHUR.—The Pigeon River Lumber Company have applied to the city for 50,000 horse-power electrical energy to be used in the operation of large pulp mills they purpose erecting.

Nova Scotia.

LONDONDERRY.—The Londonderry Iron and Mining Company purpose developing power at Nixteaux Falls. From these proposed works they expect to secure the necessary power to operate their mines.

Alberta.

VEGREVILLE.—A private company are contemplating the installation of an electric light plant for both street and house lighting.

SEWAGE AND WATERWORKS.

Ontario.

GODERICH.—Two by-laws to authorize the town council to expend \$18,000 in the improvements of the town water supply and sewer extensions are defeated.

GUELPH.—A by-law for \$125,000, to remodel the waterworks and bring pure water from springs about four miles from the city, instead of direct from the River Speed, as at present, was also carried.

HESPELER.—Hespeler ratepayers passed a by-law to raise \$12,000 for the extension of a pipe line for fire protection.

KINGSTON.—A by-law to raise \$3,800 for building the Queen Street sewer carried. E. R. Beckwith, City Engineer.

NIAGARA FALLS.—By-laws to spend \$15,800 on waterworks improvements and \$5,800 on garbage disposal, and \$23,000 in additional schools were carried by large majorities. H. H. Jackson, City Engineer.

PETERBORO'.—Two by-laws were voted upon, one to assess water rates against all vacant property passed by water mains, whether owners are consumers or not, was carried by a large majority.

SARNIA.—A by-law to raise \$6,000 for the extension of the waterworks was carried. J. Turner, City Engineer.

TORONTO.—Haney & Miller have completed about eleven hundred feet of the new water tunnel under the Bay. As was stated some time ago, they have discarded the boring machine, and are now loosening the shale by blasting.

WATERLOO.—By-laws to extend the sewer farm and install a sanitary system in the schools were carried.

WHITBY.—The by-law to abolish the Water and Light Commission and merge the work in the town council was defeated.

WELLAND.—The following by-laws were carried: Waterworks Commission, sidewalks, frontage, Bemis Bag Company sewer.

British Columbia.

REVELSTOKE.—Plans and specifications have been prepared and tenders will soon be called for a complete sewerage system costing upwards of \$90,000. C. H. B. Topp, City Engineer.

Saskatchewan.

PRINCE ALBERT.—The ratepayers of this place passed the by-law to raise \$50,000 for the extension of the light and waterworks system and extra fire-fighting equipment. F. A. Creighton, City Engineer.

Alberta.

VEGREVILLE.—The town council purpose installing a complete sewerage system during the coming summer.

TENDERS.

Ontario.

TORONTO.—Tenders will be received until January 14, 1908, for the erection of a public bath-house. Plans and specifications may be seen at City Architect's office. E. Coatsworth, Chairman Board of Control.

Nova Scotia.

HALIFAX.—Tenders will be received until January 13, 1908, for electric lighting equipment, Lawlor's Island Quarantine. Fred. Gelinas, Secretary Department of Public Works, Ottawa.

New Brunswick.

WELLINGTON.—Tenders for stone abutments for steel bridge over the Black River will be received until February, 1908, by Hon. C. H. Labillois, Commissioner of Public Works, Fredericton, N.B.

British Columbia.

VICTORIA.—The time for accepting tenders for the superstructure metal for swing bridge over north arm Fraser River has been extended to January 31st, 1908. F. C. Gamble, Public Works Engineer.

Saskatchewan.

REGINA.—Tenders will be received until January 20, 1908, for the installation of a new heating system at the Government House. F. J. Robinson, Deputy Commissioner.

CONTRACT AWARDED.

Quebec.

MONTREAL.—The city council has awarded a ten-year contract for street lighting to the E. A. Robert Syndicate at the following prices: Arc lamps on wooden poles, \$55 per annum; arc lamps on ornamental poles, \$57.50. For the citizens of Montreal, incandescent lights, 10 cents per kilowatt hour. Cash discounts of 5 per cent. for payment within ten days on contracts of one year or over, and 10 per cent on contracts for five years. The Montreal Light, Heat and Power Company's tender was said to be irregular, and was not considered.

RAILWAYS—STEAM AND ELECTRIC.

Ontario.

BERLIN.—The street railway by-law was carried by a vote of 154 to 81.

The Canadian Pacific, Toronto to Sudbury branch, have steel laid from the south within five miles of Byng Inlet.

Quebec.

MONTREAL.—The C.P.R. earnings for 1907 total \$75,254,000, being \$8,000,000 more than any previous record. In 1906 the gross earnings were \$67,142,000, and in 1905 \$54,137,000.

Alberta.

The Canadian Pacific Railway are storing material at Peterboro' and Havelock for the Georgian Bay grain route. Work from Havelock to Peterboro' will likely open next spring.

The concrete work is about completed for the large C.P.R. bridge over the Belly River, near Lethbridge, Alta. This bridge will be 5,320 feet long, and is being erected in spans placed at 67½-foot centres.

(Contemplated Work.)

Ontario.

KINCARDINE.—The surveys for the West Shore Electric Railway will be commenced shortly from Kincardine. Construction is expected to commence in May.

British Columbia.

KAMLOOPS.—Incorporation will be sought at the next session of Parliament for a company to build a railway from Nicola Lake to Vancouver. The proposed route follows the Nicola, Coldwater, Coquihalla and Fraser River valleys to the railway bridge across the Fraser at New Westminster.

VICTORIA.—At the coming session of Parliament application will again be made to incorporate the Southern British Columbia Railway Company. This Company propose building a line from a point six miles east of Kamloops, on the main line C.P.R., thence running south-easterly through Grand Prairie and Salmon River valleys to the east line of Township 18, Range 11, west of sixth meridian.

BUILDINGS.

Ontario.

BARRIE.—A by-law to give a loan of \$20,000 to the Fleming Aerial Ladder and Motor Vehicle Company was carried by a majority of 760. Another by-law providing for the expenditure of \$10,000 on cement sidewalks was defeated by 67.

GODERICH.—The by-law to loan the Doty Engine Works Company \$30,000 for the building of a boiler factory carried by a substantial majority.

KINCARDINE.—The by-law to grant \$8,500 for improvements to the Central School was carried.

LONDON.—A by-law to expend \$19,000 on a new fire hall and \$6,000 on a new tuberculosis hospital was carried.

MEAFORD.—The by-law to build a town hall to cost \$15,000 was carried by 295 to 143, and that to grant Seaman, Kent Company a \$10,000 bonus by 362 to 97.

OWEN SOUND.—By-laws to loan the Tedd Shoe Company \$12,000 and the Owen Sound Granite Company \$15,000 were carried by large majorities.

TILLSONBURG.—The by-law regarding Borden's Condensed Milk factory had 406 votes, against 43; Pork Packing Company by-law, for 405, against 47.

TORONTO.—Despite the falling off in building operations during the past three months, the annual returns from the City Architect's Department show an increase of over \$1,000,000 in the value of buildings erected during 1907 as compared with the record of last year. The statement is as follows:—

Approximate value of buildings,	1906.	1907.
January 1st to December 31st....	\$13,160,398	\$14,225,800
Approximate value of buildings for		
month of December	969,783	607,015

Nova Scotia.

HALIFAX.—The Children's Hospital Trust have secured \$25,000 towards a building fund. Plans for the new institution will be commenced at once.

MISCELLANEOUS.

Ontario.

DURHAM.—The bridge by-law was carried by 178 majority.

KINGSTON.—Two by-laws were carried, one granting \$12,000 for road improvements, and one for \$3,800 for building the Queen Street sewer.

PELHAM TOWNSHIP.—The good roads by-law was carried by 228.

ST. THOMAS.—A by-law to spend \$18,000 on a subway under the M.C.R. tracks at Ross Street carried by 814 to 647.

WELLAND.—The Ontario Iron and Steel Company are building large additions to their plant. The furnace building alone will be 200 feet long, with wings 380 feet long.

Manitoba.

The Manitoba Telephone Commission has been appointed. F. C. Peterson, formerly manager of the North-West department of the Bell system, chairman; W. H. Hayes, late assistant manager of the Bell system, will be the member of the Commission directly responsible for the engineering work; and H. J. Horan, former auditor of the North-West Department of the Bell system.

New Brunswick.

ST. JOHN.—It is announced that the Dominion Government purpose extending the present wharf, built by the city, to the harbor line. This extension will make three more steamer berths. The estimated cost is \$300,000.

Nova Scotia.

TRURO.—Mr. Frank Stanfield has bought the Truro Foundry and Machine Company works.

British Columbia.

NEW WESTMINSTER.—Mr. Joseph Crane will commence at once the building of large ship ways on Lulu Island. These ways when completed will be the largest on the Fraser.

PERSONAL.

MR. E. S. PENNIMAN, railway contractor, has moved to Fort Frances, Ont.

MR. GRANT HALL has been appointed assistant superintendent of motive power for C.P.R. Western lines.

MR. E. F. HETHERINGTON, of the Goldie & McCulloch Co., Ltd., Galt, spent a few days in Toronto this week on business connected with his firm.

MR. I. N. GRAY, C.E., and at one time president and manager of the Portland, Vancouver and Yahima Railway, died in Vancouver, Wash., December 16, 1907.

MR. A. KNECHTEL, until lately employed by the New York Forest, Fish and Game Commission, has been secured by the Forestry Branch of the Interior Department, Ottawa.

MR. J. FRANCIS LE BARON, of Cleveland, Ohio, has been secured by the New Westminster Board of Trade to survey and report on a scheme for deepening the river channel to the sea.

MR. SAMUEL FORTIER, B.S.A.M.E.D.Sc., a graduate of McGill University and a native of Megantic, Que., has been appointed chief of the United States Irrigation Investigation Bureau.

MR. JAMES B. HUNTER, who has been for some seven years private secretary to the Minister of Public Works, Ottawa, assumed with the first of the year his new position as Assistant Deputy Minister.

MR. W. A. CARLYLE, the first Provincial mineralogist of British Columbia, and more recently manager of the Rio Tinto mines in Spain, has been appointed consulting engineer of the Le Roi mine, British Columbia.

MR. F. M. SPIDDELL, who has been superintendent of the Canadian Northern Ontario Railway, Toronto-Parry Sound Division, has been appointed superintendent of the Canadian Northern Railway, Quebec Division. Mr. A. J. Hill succeeds Mr. Spiddell as superintendent of the Ontario line.

MR. B. J. HARPELL, manager of the Filer & Harpell Co., of Winnipeg, is now in the East on a business trip. The Filer & Harpell Company are selling agents for the following well known concerns:—Brodesser Elevator Manufacturing Company, Milwaukee; Mechanical Appliance Company, Milwaukee; Federal Electric Company, Chicago; Adams Laundry Machinery Company, Troy, N.Y.; Canadian Buffalo Forge Company, Montreal; and the Warren Electric Company, of Sandusky, Ohio. Mr. Harpell reports a steady increasing demand in the West for practically all the lines carried by the company.

OBITUARY.

GEO. P. REYNOLDS, a leading mechanical engineer of the United States, died at Maudfield, Conn. Mr. Reynolds was connected with several of the large construction firms of Connecticut and New York, and was responsible for many of the improvements in passenger elevators.

NEW INCORPORATIONS.

Ontario.

Dart Union Company, Limited, Toronto, \$40,000. E. M. Dart, J. B. Goff, J. M. Goff, G. B. Champlain, G. S. Champlain.

The International Fence Company, Limited, London, \$300,000. F. W. McLaren, C. B. Hillier, E. Meredith, J. M. Ellis, and R. Riley.

The B. Greening Wire Company, Limited, Hamilton, \$750,000. S. O. Greening, H. B. Greening, R. H. Merriman, C. A. Herald, and F. J. Maw.

The St. Lawrence Lumber and Mining Company, Limited, Cornwall. W. R. Hitchcock, H. B. Chase, G. A. Chase, L. A. Chittenden, H. A. Reed, G. W. Minpler.

Quebec.

Lymburner, Limited, Montreal, \$75,000. L. M. Lymburner, H. N. Lymburner, J. River, J. Atiste, Montreal.

Dominion Petroleum Company, Montreal, \$150,000. Z. Perreault, E. Donahue, V. Morin, H. Daw, D. McLellan, Montreal.

Belleville Iron and Horseshoe Company, Belleville, \$10,000. P. Pare, D. Wardrobe, W. M. Laurie, J. A. Hebert, Montreal.

Walbridge Manufacturing Company, Mystic, \$20,000. L. A. Knight, Manchester, N.H., B. W. Guthrie, A. S. Walbridge, Mystic.

Utica Shale Pipe Company, St. Lambert, \$20,000. W. K. Lowden, S. St. Lambert, J. Rodger, D. G. Wardrobe, W. M. Laurie, P. Pare, Montreal.

Manitoba.

The Argyle Buildings, Limited, \$95,000. D. R. Woods, J. J. Quinn, E. Piggot, J. E. Robertson, K. Metcalfe, Winnipeg.

Northern Iron Works, Winnipeg, \$75,000. D. L. Bastedo, H. A. Burbidge, W. W. Kennedy, R. C. McPherson, and T. B. Monk, Winnipeg.

Imperial Theatre, of Winnipeg, Limited, \$100,000. T. B. Campbell, John Hoffner, W. Manahan, Winnipeg; D. B. Flaggar, W. J. Gillman, New York.

The Van-Bergh Electrical and Manufacturing Company, \$250,000. Hon. Hugh J. Macdonald, H. Polson, A. Kennedy, W. McMillan, H. R. Hollinshead, J. Dodson, E. E. Yates, W. D. Pettigrew, J. MacKenzie, Winnipeg.

Fort Alexander Lumber and Manufacturing Company, \$100,000. W. F. Hepburn, St. Thomas, Ont.; J. Suggitt, F. L. Palmer, J. A. Collier, R. A. White, H. D. Clark, P. M. Swenson, W. White, J. F. Ferguson, Minneapolis, Minn.

New Brunswick.

Winterport Coal Mining Company, St. John, \$99,000. J. S. Gibbon, C. S. Gibbon, W. E. Vroom, N. S. Springer, St. John; C. M. Larkin, Newcastle.

British Columbia.

Queen Charlotte Islands Development and Mining Company, Victoria, \$100,000.

TRADE INQUIRIES.

From the Department of Trade and Commerce, Ottawa: Tiles and Bricks.—A Belgian manufacturer of tiles and building bricks, wants to come in touch with Canadian importers of those articles.

Nickel.—A Manchester firm invites correspondence from Canadian exporters of nickel.

Mica.—A Manchester firm asks for samples and prices of mica rough trimmed, and rectangular trimmed, from Canadian exporters.

Steel Rails.—A London firm can supply steel rails.

Motor Cars.—A Glasgow firm wishes to hear from Canadian buyers of motor cars.

Hoop Iron.—A Liverpool firm can supply hoop iron all sizes.

Antimony Ore.—A London firm is desirous of being placed in touch with Canadian producers of antimony ore, with a view to purchasing supplies.

Steel.—An English firm of steel manufacturers desires to hear from firms in Canada interested in the purchase of drill and chisel steel.

Tubes and Fittings.—A London firm manufacturing sanitary tubes and fittings; also dressed granite for docks, harbours and buildings and street works would like to get into correspondence with Canadian importers.

LATE NEWS NOTE.

PORT ARTHUR.—Harbor improvement is again talked of, the Board of Trade and City Council have agreed upon united action. Their plan involves the removal of the present breakwater and the construction of a new work one thousand feet farther out in the bay. This plan would carry the extension for which a contract has been let farther out from the southern shore in deeper water. But compensation to some extent would be had in lessening the length of this section of the breakwater. This enlarged plan, when completed, would solve the question of harborage for all time, as ample room would then be afforded any vessel to move about under her own steam.

The new warehouse being erected for Samuel, Benjamin & Co., metal dealers, on the corner of Spadina Avenue and King Street, Toronto, will be an imposing and substantial structure. Its dimensions are to be 75 by 122 feet, the storeys five in number, the material pressed brick for the front and walls, mill construction. Ingot metals and heavy goods will be stored in the basement floor, whose area is 12,000 feet. Messrs. Burk & Horwood are the architects, and it is expected that the building will be ready for occupation by the early summer.

MARKET CONDITIONS.

Montreal, January 9th, 1908.

The American pig iron market has shown some weak spots during the past few days. Enquiries have been broadly distributed and it was found that producers or dealers who were anxious to dispose of the material, had accepted lower figures than had previously prevailed. Neither demand nor sales are of sufficient volume to establish a market, so that prices are dependent upon the urgency of buyers or sellers, as the case may be. There has been a little better demand for steel making iron, but, so far as has been possible to learn, only a small tonnage has actually been sold. The general situation is practically unchanged, as compared with a week ago. Finished material has followed the reduction in pig iron by reaching lower prices in several lines. This is only to be expected under existing circumstances.

Reports from Great Britain are of a rather discouraging nature. The home demand has fallen off, as has also the demand from Germany and the Continent, the consequence being that stocks in store have again accumulated. As, however, numerous furnaces are out of blast, stocks are comparatively small and are likely to continue so, unless furnaces resume operations. It is hardly likely, however, that furnaces will start up again unless the cost of ore and coke shows some reduction, so as to allow pig iron being made at a profit, the present price of these raw materials being such as to make pig iron cost more than it can be sold for.

In the local market, demand is just moderate. Small lots only are changing hands and prices are holding about steady.

Antimony.—There would seem to have been a shortage in the city during the past few weeks, as enquiry has been very good indeed. As a result, prices have been firm at 13 to 13½c. per lb.

Bar Iron Steel.—Dealers in Montreal still demand the following figures: though purchases may possibly be made at lower figures: Bar iron, \$2.15 per 100 pounds; best refined horse-shoe iron, \$2.55, and forged iron, \$2.40; mild steel, \$2.20 per 100 pounds; sleigh shoe steel, \$2.20 for 1 x ¾-base; tire steel, \$2.30 for 1 x ¾-base; toe calk steel, \$2.05; machine steel, iron finish, \$2.30.

Boiler Tubes.—The market shows a strong tendency and dealers do not expect to see any declines in price, as boiler makers are very busy. Prices are as follows:—Two-inch

tubes, 8 to 8¼c.; 2½-inch, 11c.; 3-inch, 12 to 12¼c.; 3½-inch, 15 to 15¼c.; 4-inch, 19¼ to 19½c.

Cement—Canadian and American.—Canadian cement is steady, being still quoted at \$1.90 to \$2.00 per barrel, in cotton bags, and \$2.20 to \$2.30 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 is steady at \$1.10 per 350 pounds, basis Lehigh mills, conditions being the same as in the case of Canadian mills, save that when the cotton bags are returned in good condition, only 7½ cents is allowed for them. American cement sold at \$2 to \$2.10 on track.

Cement—English and European.—English cement is unchanged at \$2 to \$2.10 per barrel in jute sacks of 82½ pounds each (including price of sacks) and \$2.10 to \$2.20 in wood, per 350 pounds, gross. Belgian cement is quoted at \$1.75 to \$1.90 per barrel, in wood. German is \$2.52 to \$2.55 per barrel of 400 pounds for Dyckerhoff.

Copper.—Manufacturers who are the greatest users of copper are not very busy at this time of year, so that the demand for copper is anything but brisk. Purchases may be made at fully ½c. per lb. less than recently, prices being about 15½c. to 16c. per lb.

Iron.—Canadian dealers have reduced their prices slightly and they make the claim that they will not accept less than the following for carload lots: Londonderry is only offering for future shipments, and is quoted at \$24 f.o.b. Montreal for No. 1. Toronto prices are about \$1.25 more. Summerlee iron is arriving, and is quoted at \$24 f.o.b. on cars, Montreal, for No. 2 selected, and \$25 for No. 1. No. 1 Cleveland is unobtainable at the present time, and Clarence at \$20 to \$21. Carron special, \$24; soft, \$23.75, to arrive.

Lead.—Demand for lead is reported to be fair and the market is steady at the recent decline, quotations being \$3.75 to \$3.85 per 100 lbs.

Nails.—The market is steady and demand is dull. Cut nails are quoted at \$2.50 and wire at \$2.55, base prices.

Pipe—Cast Iron.—The market is next thing to dead, as nothing is used during the winter. Prices are steady at \$36 for 8-inch pipe and larger; \$37 for 6-inch pipe, \$38 for 5-inch, and \$39 for 4-inch at the foundry. Gas pipe is quoted at about \$1 more than the above.

Pipe, Wrought.—Trade continues on the dull side. Quotations and discounts for small lots, screwed and coupled, are as follows: ¼-inch to ¾-inch, \$5.50, with 53 per cent. off for black and 38 per cent. off for galvanized. The discount on the following is 66 per cent. off for black and 50 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.

Spikes.—Railway spikes are not in very good 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 5½ x 12 inch.

Steel Shafting.—At the present time prices are steady at the list, less 25 per cent. Demand is very dull.

Steel Plates.—Demand is quite dull. Prices are steady at \$2.75 for 3-16, and \$2.50 for ¼ and thicker, in small lots.

Tin.—Demand is reported to be just fair. The tendency of prices is downward, however, and purchases may now be made at 31 to 32c. per lb.

Tool Steel.—The situation is fairly active and firm. Base prices are as follows: Jessop's best unannealed, 14½c. per pound, annealed being 15½c.; second grade, 8½c., and high-speed, "Ark," 60c., and "Novo," 65c.; "Conquerer," 55 to 60c.; Sanderson Bros. and Newbould's "Saben," 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.

• • • • •

Toronto, 9th January, 1908.

A continuance of the quietness which usually prevails at this season is all that can be reported this week. Few changes are to be noted in prices of materials, one we note is that of bar iron from \$2.30 base to \$2.20 base. In wood, brick and cement we have no alteration to make of price.

The iron and steel situation in the United States is rather more satisfactory. Producers are no longer piling up construction material in over supply, but are rather trying to proportion the production to the demand. This has had the result of steadying the market. The improved feeling in copper continues; tin, while hardly to be called steady, is active; and lead is firmly held.

Among the machinery houses there is no marked activity, although enquiries come along and an occasional customer drops in. Cutting machines, and pipe machines, and lathes are asked for. The feverish rush that prevailed in some months of last year no longer exists. The set-back came, when people absolutely refused to buy, and since that time the output from warehouses has been limited.

Of the lumber market it is to be said that while some concessions are being made on hemlock and on Southern as well as Norway pine, the market for white is holding its own at last year's prices. So greatly do prices of pine vary nowadays in proportion to description and quantity that it is difficult to select qualities or sorts for quotation. Dressing pine, however, may be quoted \$32 to \$35 per M for usual lengths and dimensions, and as high as \$40 for special lengths; common can be had at \$30. Hemlock is no longer plentiful, and has commanded steady prices for a long while; we quote now, wholesale, \$19 to \$21.50, according to size. Shingles—British Columbia—are now selling at a concession of 25 to 30c. off list, but it is impossible to say what day the Western Association may change this price. Laths are quiet; No. 1 selling at about \$4.40 on track, and No. 2 at 50c. less.

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

Antimony.—Quiet at 11½ to 13c. New York opinions are that the present low prices cannot continue.

Bar Iron.—\$2.20 base, from stock to the wholesale dealer. A moderate supply on hand.

Boiler Heads.—25c. per 100 pounds advance on boiler plate.

Boiler Plates.—¼-inch and heavier, \$2.50. Supply probably adequate and quotations still firm.

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. There is no reduction in price.

Bricks.—Common structural \$10 per thousand, as before, and the demand fairly brisk. Same may be said of red and buff pressed, which are worth \$18 at Don Valley Works.

Cement.—Star brand, Toronto, 1,000 barrel lots, \$2.25 per barrel, 350 pounds net, including bags, or \$1.85 ex-package, small lots cost \$2.10 warehouse, \$2.15 delivered. National and Lakefield prices are identical; English, Anchor, \$3 per barrel in wood. Demand has relaxed.

Felt Paper.—\$2.25 per 100 lbs.

Fire Bricks.—In steady request; English, \$32 to \$35; Scotch, \$30 to \$35; American, \$25 to \$40 per 1,000.

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, \$4.37½; 29 or 10¼, \$4.70 per 100 lb.

Ingot Copper.—Market shows improvement, quiet, with firm prices. Our quotation is 15 to 16½c.

Lead.—Active and firmly held, prices tending to advance; 4½c. now the local price.

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

Pig Iron.—Summerlee No. 1, always in demand, generally for small lots, quotes now, nominally, \$27; Gleggarnock, \$26.50; No. 2, \$26; Cleveland, No. 1, \$23.50, \$24; Clarence, No. 3, procurable in Montreal, price here \$23 to \$24. Not much doing at the moment, but a buying movement is expected soon.

Steel Rails.—80-lb., \$35 to \$38 per ton.

Sheet Steel.—In moderate supply; 10-gauge, \$2.65; 12-gauge, \$2.75.

American Bessemer.—Fourteen-gauge, \$2.65; 17, 18, and 20-gauge, \$2.75; 22 and 24-gauge, \$2.85; 26-gauge, \$2.95; 28-gauge, \$3.20.

Tank Plate.—3-16-in., \$2.65; Tees, \$2.90 to \$3 per 100 pounds; angles, 1¼ by 3-16 and larger, \$2.75 to \$3. Extras for smaller sizes.

Tin.—Price has advanced in New York. Fluctuating and active. We still quote 31 to 32c. here.

Tool Steel.—Jowitt's special pink label, 10½c. per pound; Capital, 12c.; Conqueror, highspeed, 70c. base.

Wrought Steam and Water Pipe.—Trade prices per 100 feet are: Black, ¼ and ¾-in., \$2.59; ½-in., \$2.89; ¾-in., \$3.90; 1-in., \$5.60; 1¼-in., \$7.65; 1½-in., \$9.18; 2-in., \$12.24; 2½-in., \$22.15; 3-in., \$30.00. Galvanized, ¼ and ¾-in., \$3.41; ½-in., \$3.74; ¾-in., \$5.06; 1-in., \$7.26; 1¼-in., \$9.90; 1½-in., \$11.88; 2-in., \$15.84; 3½-in., black, \$39.00; 4-in., \$42.85. Prices firm but unchanged, stock light.

Zinc.—The market is more active and price steady. Toronto, slab, \$5.50; sheet, \$7.50.

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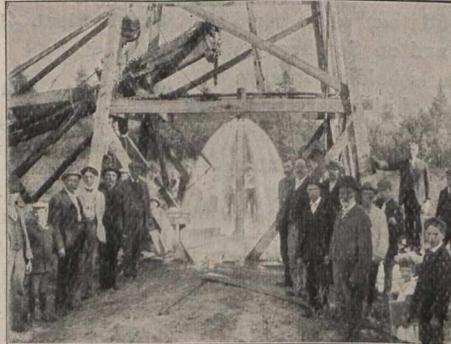
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GRAPHITE.

A report on the mineral graphite, written by Mr. Fritz Cirkel, the well-known mining engineer, of Montreal, and issued by the Department of Mines, contains some interesting information regarding the production of this mineral in Canada, and also of its adaptability for commercial purposes. Mr. Cirkel, who has made a special study of this mineral for the last fifteen years, places the world's production for 1903 at 73,855 tons, valued at \$4,343,691, in which Canada participates only with about

\$24,000. However, for the last three years renewed activity is shown in the mining of this mineral in Canada. The mines and mills in close proximity to the town of Buckingham are producing now a grade of graphite which is of as fine a quality as that mined in Ceylon, and it is anticipated that with the latest apparatus and designs introduced in the refineries, the output will now steadily increase. The monograph is accompanied by many illustrations, and covers 310 pages; this is the fourth book on Canadian economic minerals Mr. Cirkel has written, and a fifth one is in preparation.



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