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# The Canadian Engineer

WEEKLY

ESTABLISHED 1893

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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 29th, 1908.

## CONTENTS OF THIS ISSUE.



## TORONTO LABOR CONDITIONS.

Speaking of the condition of the skilled labor market in Toronto in the present month of May, a merchant of that city said:—

"When you talk of plumbers and steamfitters and their relations to their employers, and of the latter to the public, the word you ought to use is warfare. The investigation of 1906-7 showed how the employing plumbers made war on the public and bled them freely. In 1907 the workmen of the plumbers showed themselves equally grasping, and went on strike for rates of pay that were unreasonable. It was warfare all the same; the men were defeated, and many of them are 'on their uppers' now."

Referring to the plumbers' strike, matters are taking a new turn. It is true that the Employing Plumbers' Association has kept a stiff upper lip, and by hard struggling maintained the open shop, until now we are told they can get all the men they want, and at their own prices; also, that the leading plumbers' shops are as busy as they can be.

Another Association has been formed, however, composed mainly of employers who did not join the first formed. They are more friendly disposed towards the strikers, and not averse to considering Union conditions. That is, the new body were, a week or two ago, tolerably unanimous upon a number of essential points, and numbered fifty-four shops. At a meeting of the body called last week, however, only nineteen were present, and there was a lukewarmness about the gathering that did not augur well for continuity. Facing both ways as to the employee is not the way to either attract him or control him.

## CONSUMPTION OF SMOKE.

Some years ago a crusade against the "smoke nuisance" of our cities was launched. The campaign was successful in at least one particular: by-laws were passed in several municipalities prohibiting the emission of dense smoke from the chimneys and smokestacks within their boundaries. An official was appointed to enforce the by-law, but very little real progress has been made towards abating the nuisance.

The cause of the smoke is well known. The hydrocarbons are volatized by the heat, the hydrogen unites with the oxygen of the air, the carbon is set free. If there is a sufficient supply of oxygen and enough heat, combustion will be complete. If not, some of the carbon will escape up the chimney as smoke.

Properly designed furnaces are necessary if this waste is to be prevented, but good furnaces alone will not prevent the escape of smoke. Intelligent firemen must be employed, and some means must be found to so interest them in fire-feeding that a uniform supply of coal and air will be secured. Without intelligent firing good furnace construction will be of little avail.

If the municipalities expect to do much towards lessening the smoke evil they must be the first to live up to the requirements of their by-law. In some cities which now and again attempt to enforce the smoke by-law the municipal buildings and schools are among the most noticeable violators of the smoke by-law. This should not be. The city officials should demonstrate that thick, black smoke is not necessary, that it can be avoided, and that economically. When they demonstrate this they will have little trouble to enforce the law—until they do they cannot expect to succeed.

## MAY BE BIG STRUGGLE.

According to late reports the C.P.R. is preparing to fight to a finish the demands for a reinstatement of the old schedule of wages for machinists and mechanics. Employees of the road in the East are not affected financially, but are determined to stick to the Western men, and fight it out with the company along with the Western employees.

## ENGINEERING SOCIETIES.

CANADIAN RAILWAY CLUB.—President, L. R. Johnson; 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.

CANADIAN ELECTRICAL ASSOCIATION.—President, R. S. Kelsch, Montreal; secretary, T. S. Young, Canadian Electrical News, Toronto. The Eighteenth Annual Convention will be held in Toronto, June 17th to 19th, 1908.

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.

### Engineers' Club, Montreal.

The annual general meeting of the members of the Engineers' Club was held at the Club building, Phillips Place, Wednesday evening, the 20th inst. There was a large attendance of members. Mr. Percival W. St. George, the president of the Club, presided. The chairman of the Finance Committee submitted the annual report and financial statement for the year, which was of a satisfactory character. The election to replace the retiring members of the committee resulted as follows: Mr. Frank Thompson, J. S. Archibald and R. S. Kelch. The Engineers' Club in its new quarters on Beaver Hall Square now easily ranks as one of the best of the Montreal social clubs, and has a membership of something over 400. It is said that extensive improvements are contemplated in the near future in order to meet the Club's growing requirements.

### Engineers' Club, Toronto.

At the regular meeting on May 21st Vice-President A. B. Barry presided. Mr. A. B. Lambe presented an interesting paper on "Electric Heating Devices." These small electric devices are such as electric distributing companies are likely to encourage as they call for power at a time when the load is not great.

The speaker exhibited a large number of household utensils and explained their construction and the methods used to convert as economically as possible electricity into heat.

During the evening Mr. J. G. Sing, president of the Club, invited the members to inspect on May 25th the construction work under way in Toronto and Hamilton harbors.

A large number of the members accepted Mr. Sing's invitation to spend Victoria Day on the launch Otonabee, and enjoyed thoroughly both the outing and the opportunity that was allowed to inspect harbor improvements.

### American Foundrymen's Convention.

The Machinery Hall and Process buildings at Toronto Exhibition Park is being rapidly fitted up for the Foundrymen's Convention, to be held there from June 8th to 12th.

Exhibits are arriving daily and will soon be in place.

The official programme will soon be issued and will be very much as follows:

Monday night, June 8th, meeting of the foundry foremen; Tuesday morning, June 9th, registration; Tuesday afternoon, formal opening of meeting and exhibit; Tuesday evening, reception at City Hall; Wednesday morning, session for the reading of papers; Wednesday afternoon, session for the reading of papers; Wednesday evening, moonlight excursion; Thursday morning, session for the reading of papers; Thursday afternoon, Thursday evening, and Friday morning, free; Friday afternoon, trolley ride; Friday evening, smoker.

At these meetings papers will be read dealing with questions of interest to foundrymen.

Among the papers promised are the following:

"Shop Betterment," H. F. J. Porter, New York, N.Y.; "Specifications for Castings to be Machined," H. E. Diller, Chicago, Ill; "Titanium in Cast Iron," Dr. R. Moldenke, Watchung, N.J.; Report of the Cost Committee, discussed by the members, Messrs. Falconer, Taylor and Emerson; Proposed Change in Standard Specifications for Foundry Pig Iron, discussion; "The Electrochemical Cleaning Metals and Its Application to Commercial Uses," Chas. H. Proctor; "The Manufacture and Use of Injectors and Ejectors," Homer S. Johnson.

## THE MIXING OF CONCRETE.

"The question is sometimes asked," so says Mr. Leonard C. Wason, president of the Aberthaw Construction Company, of Boston, "when to use a mixer. The answer is, when the cost of setting up, taking down, and transportation equals the difference in cost of mixing by hand or machine. It has been the writer's experience that under ordinary conditions concrete can be measured and mixed by hand for $1.30 per cubic yard, and by machine for 85 cents per cubic yard for the simplest method of setting up. The difference between these, 45 cents, times the number of yards to be mixed, will give the saving to be used in paying the general expenses of setting up a mixer, which for teaming a distance of three or four miles, setting up, dismantling, and returning, together with allowance for wear and tear amounts to $70. The cost of operating is included in the above cost of mixing. It will thus be seen that a job using 155 yards will be as cheap machine-mixed as by hand, and, of course, any larger job should invariably be mixed by machine. The size to use should be determined by the size of the job, and the amount which must be placed in one day. It is always best, however, to err on the safe side by having too large a machine than too small a one. Have one that is capable of mixing the day's work in three-quarters of a working day.

"The economy with which concrete may be mixed depends upon handling it in large masses without the requirement of much labor. It is possible, however, as the writer has learned by experience, to spend so much in the installation of an economical mechanical plant that the incidental costs of installation offset the saving in the cost of the mixing of a comparatively small volume of concrete over the cost of a very simple set up, with higher labor cost of operating. Therefore, trained judgment is always the best guide in the long run."

## IRON ROLLING INDUSTRY IN THE WEST.

The Manitoba Rolling Mills, which started operations in Winnipeg recently, is the only concern of its kind west of Lake Ontario in Canada. Their plant is situated in the western portion of the city close to the C.P.R. shops in a suburb known as Weston. It was opened for a short time last fall, but was closed down temporarily for the purpose of making extensive alterations and additions, which would so increase the capacity of the plant as to enable the company to take care of the immense amount of work which they found in the Western field.

The president of the company is L. A. McElroy, of Erie, Penn., who is also president of the American Horse Shoe Company. Associated with Mr. McElroy in the Manitoba

**Corner in Shipping Room.**

Rolling Mills Company are a number of other United States capitalists of Erie, Pa., who have for years been connected with similiar enterprises in the United States. The field for the establishment at Winnipeg, Man., of a manufacturing plant of this kind was observed a few years ago by T. M. Kirkwood, of Toronto, who began the erection of the buildings now owned by the Manitoba Rolling Mills Co. and controlled by the Erie, Pa., capitalists. Mr. Fred. Ziegahn, an experienced and practical "iron mill" man, is general manager of the new mills at Winnipeg and the men employed in the works are among the best paid workmen in the West classified in technical form, as rollers, heaters, roughers, stranders, hookers, straighteners, builders, roll-turners, machinists, engineers and firemen.

There are features in this plant which make it distinctive, and on which the company relies for a superior grade of iron. The raw material used is scrap iron, collected at large throughout the West from the railroad and scrap iron dealers. This scrap is carefully sorted, the steel being shipped East and all cast iron or thin sheet going to the local foundries to be smelted. The iron which is used at the plant is of high grade, and the process is such as to add to its quality. The plant is now turning out about 25 tons of finished material, sizes ranging from ⅜ to 1½ inches in rounds and squares, and ⅛ to 1 inch thickness by ¾ to 5 inches wide in flats, and is running to its limit with day and night shifts.

### Reduced to Convenient Form.

The larger pieces are sheared in a heavy press to a size convenient for handling, and then in the hands of experienced men are stacked in piles of about 250 pounds each. These piles are three feet in length and about ten inches square, and when completed are bound together with wire. These bundles are then placed in a furnace and heated to a welding heat and then rolled into rough flat bars called muck bars. These bars are cut and again built up and heated in a second series of furnaces for the rolls, where they are given the final finish for the market. This gives what is known in the market as a double refined iron, and it is claimed that the quality is greatly improved by the repeated handling to which it is subjected.

When this plant was first put into operation it was designed on a rather small scale, but under the present management it has been considerably enlarged, and it is the intention, when the business guarantees such a step to remove to a point farther out, where there is still more space available. At the present time they have six acres of ground and buildings covering two acres. In the scrap heap there are 3,500 tons of old iron of all sorts. making a conglomeration impossible to describe. The main building is 100 by 180 feet, and in it are the two series of furnaces, two trains of rolls and a quantity of machinery of various sorts, including planers and lathes. The office and bar iron warehouse are in a building 60 by 80 feet, and the scrap house is 60 by 100 feet. In it are the stacking benches and heavy shears.

### Smelting Facilities.

Through the buildings are series of narrow gauge tracks on which are operated small trucks, while in the main mill are overhead trolleys for carrying the billets from the furnaces to the rolls. The furnaces are coal fired and when the billets are heated to the proper temperature they are removed by long tongs swung from the overhead trolley. The rolling trains consist of a sixteen-inch train with two sets of housings and a nine-inch train with six sets of housings. The heated billet is carried to these rolls, and passed through them till reduced to the desired size and shape, then passed out on a cooling bed and finally cut to market lengths ready for shipping or storing. There is a switch running directly into the shipping rooms as shown by the accompanying illustration, and in this building there is stored ready for shipments stacks of finished rounds, squares and flats.

The power plant consists of a 100 horse-power Corliss engine in the mill, an 80 horse-power Skinner engine in the scrap house and a 40 horse-power engine for running the fans. The boilers, 400 horse-power capacity, are heated from the waste heat from the furnaces. The buildings are all metal clad and spur tracks from the C.P.R. give ready access for raw material, fuel and the shipping of the finished products.

## UNIFORMITY IN CONCRETE MIXTURES.

In a recent paper on reinforced concrete it was stated that a rich mixture was used in the columns and a leaner mixture in the floors. In discussion of this method from the contractor's standpoint, Mr. Leonard C. Wason, president of the Aberthaw Construction Company, of Boston, Mass., made it evident that if this rich column mixture is not carried through the thickness of the floor there will be a line of weakness at the point of junction which is so considerable that it should not be overlooked. The writer of the paper was asked what measures were taken while rushing a building at high speed and pouring the floors, to build up the columns with a rich mixture and to fill in the leaner mixture in the floor, and what method was used to make sure that each particular batch of rich mixture was traced from the mixer to the proper point in the column. In answer it was admitted that no provision was made, and that in fact the lean mixture was carried throughout the area of the floor, including that portion of the column contained within the thickness of the floor, thereby supporting Mr. Wason's contention of the undesirability of this method.

Building permits to the value of $150,000, and including twenty-six dwellings were issued by the city architect from May 16 to May 23.

## AMERICAN BRIDGE TO CROSS RIVER NILE AT CAIRO, EGYPT.

Cable advices from Cairo, Egypt, state that the contract for the construction of a new bridge to cross the Nile River at Cairo, which will cost more $1,500,000, has been let by the Ministry of Public Works of the Egyptian Government to the Compagnie de Fives-Lille of France, after an international competition in bidding for its construction. The new bridge, which will be located at the deepest part of the Nile River, and will lead direct to the site where the Boulac Museum stood, is to be built in accordance with plans prepared by the late Sir Benjamin Baker, of London, the engineer of the great Forth Bridge, Scotland, and the Scherzer Rolling Lift Bridge Company of Chicago, the latter company also furnishing consulting engineering services during erection. The entire work is to be executed under the charge of the Ministry of Public Works of the Egyptian Government and it is expected that the new bridge will be completed and in service before the end of the year 1910.

This large modern bridge will be in striking contrast to some of the old types of slow moving bridges across the Nile. It has a total length between abutments of 274.5 meters. The total width of the bridge will be 18 meters divided into two foot-paths of 3 meters each, a tramway track of 5 meters to carry double lines of electric tramway of 1 meter gauge, and 7 meters of road clearance. The structure will consist of a Scherzer Rolling Lift Bridge with 4 fixed approach spans. On the Boulac side of the Nile quay walls will be constructed on masonry wells. The south end of the abutment on this side of the river will join the existing quay wall and the north end will ultimately be joined to the quays under construction. The piers and abutments which will be of Assouan granite are to be built on foundations to be sunk by compressed air. The Scherzer Rolling Lift Bridge will have a movable span of 30 meters to allow the passage of boats.

In order to facilitate the heavy water and land traffic at this site, which is in the most prominent part of the Egyptian metropolis, the Scherzer Rolling Lift Bridge is designed to operate very rapidly, the time required to open or close the bridge being less than 30 seconds. This result is accomplished by the use of the most modern electric equipment.

## INSPECTION OF TIRES ON LOCOMOTIVE ENGINES.

In view of the very frequent breakage of rails on the various railway systems operating in Canada, and the numerous accidents resulting therefrom, the Board of Railway Commissioner's Inspectors have made a careful examination of the driving tires of the locomotive engines used on different railways; and they report that, on the tires of quite a large number of the engines there are skids, or flat spots, three to four inches in length and in some cases even longer.

It has not been represented to the Board that these flat spots on the tires have been responsible for the rail breakage referred to; but instances are known where engines with "skidded" tires have left broken rails behind them, and the Board therefore recommends that railway companies, subject to its jurisdiction, adopt some system for a more careful and rigid inspection of tires on locomotive engines, especially during the winter months, in order to prevent, as far as possible, the running of engines with defects of the kind mentioned.

## NEW USE FOR MANGANESE STEEL.

A good example of how the development of one industry helps another is found in an order for managanese steel discs recently placed by the Culter-Hammer Clutch Co., of Milwaukee. This company, in addition to manufacturing magnetic clutches, makes a specialty of lifting magnets for handling pig iron and scrap metal. The growth of this latter business and the natural desire of the manufacturers to perfect every detail of their product has led to the adoption of manganese steel for coil shields, the coil shield being the flat disk fastened to the under side of the lifting magnet for the double purpose of protecting the magnetizing coil and interposing between the two poles of the magnet an area of non-magnetic material. Brass, which is non-magnetic, has heretofore been used for this purpose. Ordinary steel will not do because it is a magnetic metal and would serve to conduct the magnetic lines of force from pole to pole instead of compelling them to seek a passage through the material to be lifted. Manganese steel seems to be the ideal metal for this purpose. It is non-magnetic, like brass, and infinitely harder; so hard, in fact, that the continued hammering of the pig iron or other metal on the under surface of the magnet makes not the slightest impression on it. The 50-inch magnets recently furnished by the Cutler-Hammer Clutch Company to a number of steel mills in the Pittsburg district are all equipped with manganese steel coil shields instead of with the brass coil shields formerly used.

## ORDER OF THE RAILWAY COMMISSIONERS OF CANADA.

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

4725—May 13—Authorizing the Windsor, Essex and Lake Shore Rapid Railway to erect, place and maintain its wires across the track of the Pere Marquette Railway at Main Street, east of Kingsville, Ont.

4726—May 13—Authorizing the Windsor, Essex and Lake Shore Rapid Railway to erect, place and maintain its wires across the track of the Pere Marquette Railway at Pelton, Ont.

4727—May 13—Authorizing the Windsor, Essex and Lake Shore Rapid Railway to erect, place and maintain its wires across the tracks of the Pere Marquette Railway at Lansdowne Avenue, Kingsville, Ont.

4728—May 13—Authorizing the Commissioners of the Transcontinental Railway to expropriate and use a portion of the right-of-way and lands of the New Brunswick Railway Co, near Theriault, County of Madawaska, Province of New Brunswick.

4729—May 13—Authorizing the G.T.R. Co. leave to cross with its second track the track of the United Counties Railway Co. (operated by the Q.M. and S. Railway) at St. Hyacinthe Junction, P.Q.

4730—May 13—Authorizing the C.P.R. to construct certain branch lines or spurs in the city of Montreal, P.Q., from its Lachine Canal south bank branch to and into the premises of the Consumers' Cordage Co. and Dominion Bag Co.

4371—May 11.—Authorizing the Provincial Light, Heat, and Power Company to carry its 40,000 volt transmission line across the tracks of the Grand Trunk Railway at Dorval, P.Q.

4732—May 13.—Authorizing the Provincial Light, Heat, and Power Company to carry its 44,000 volt transmission line across the tracks of the Grand Trunk Railway at a point ¼ mile east of Rockfield Station, P.Q.

4733—May 19.—Recommending to the Governor-in-Council for sanctioning an agreement between the Vancouver, Victoria, and Yukon Railway and the Vancouver, Victoria and Westminster Railway and Navigation Company, dated March 26th, 1908, for the sale of certain portion of its undertaking and property.

The New York offices of the American Spiral Pipe Works have been removed from 39 Cortlandt Street, to larger and better equipped offices in the Hudson Terminal Buildings, 50 Church Street, New York. Mr. F. B. Sanborn is in charge, and is prepared to furnish complete information of "Taylor's Spiral Riveted Pipe" for hydraulic mining, exhaust steam, and all other water supply work. This pipe is furnished 3 to 40-inch diameter up to ¼-inch in thickness, and for pressures up to 500 lbs. This company is also prepared to furnish forged steel flanges for all classes of pipe and other purposes, including welding flanges, boiler flanges and high pressure steam pipe flanges.

# AS SEEN BY OTHERS

**Returning Confidence.**

The American Artisan.—That confidence is fast being restored in the various branches of business enterprise throughout the country, is becoming more and more apparent with the dawn of each succeeding day. Optimism is supplanting pessimism, and a spirit of satisfaction is dissipating the cloud of anxiety which for a time threatened to work dire results. Stocks are going up in value and with this the hoards of money are being unlocked. The securities of American railroads and corporations are now said to be on a sounder basis than they have been within a quarter of a century.

**An Overcrowded Profession.**

Toronto Telegram.—Civil engineering is not riding the crest of any wave of prosperity in Canada just at present. A vacancy in the office of city engineer of Hamilton, salary $3,000, attracts over fifty applicants. A comparison of the number of candidates for the office with the size of the salary thereto attached suggests that the engineering profession must be somewhat overcrowded.

**Industrial Education.**

American Machinist.—From whichever standpoint the matter (industrial education) is viewed, the magnitude of the problem is the same, but if the opening of the schools must be preceded by a preparatory educational process in which the boys and their parents are brought to realize their aims and value, it would clearly be folly to establish the schools in number very much in excess of the demand. In spite of the enthusiasm behind this movement it is quite possible that financial and other difficulties will prevent this, and there is probably no reason for sounding an alarm. There is, however, ample time to go slowly and avoid the ultimate setback which a false start will certainly bring upon the movement.

**More Lessons from Quebec Bridge.**

Concrete and Constructional Engineering.—The principal lesson to our mind is that every structure of importance requires either a highly-trained, responsible engineer or architect permanently or at least regularly on the spot. To leave important structures to representatives lacking high technical training and experience is wrong. No matter how practical and experienced the clerk of works may be, his horizon is, with but few exceptions, necessarily not a wide one. Had there been a man on the spot of the technical training we claim is necessary he would have immediately realized that the faults observed in the Quebec Bridge were of extreme importance; he would have stopped the progress of the works, and at least no lives need have been lost, for there was ample time for the necessary precautionary measures. . . . Loads and dead weights were taken too finely, stresses and strains that should have been provided for were underestimated, and the result has been that both designer for contractor, and consulting engineer are held responsible for the disaster, with its fearful loss of life and property.

**Municipal Ownership.**

The Montreal Gazette.—The Kingston municipal plant is making gas at a cost of $1.26 per thousand feet and selling it for $1.09. These are the official figures. The practice is defended because the city sells electricity to the street railway on a less than cost basis. Municipal ownership frequently develops wonderful excuses. Kingston should rank high in the prize list.

**Letting of Contracts.**

The London Times.—During the past few years there have been several illustrations of the advantages and defects of the system of assigning contract work by the method of lowest tender. The inherent merit of the system is that it is the fairest means yet devised for the selection of a contractor from a number of competitors; and although instances have been before the public of bribery and corruption arising from abuse of trust by authorities in making the selection, the system itself has proved to be satisfactory in principle, and it is likely to be continued. The inherent defect of the system is that it conduces gradually to lowering the quality of the work. In the case of yearly tenders such as are invited by railway companies, prisons, and asylums, this aspect of the matter is perhaps most manifest. Firms possessed of plant for turning out the various kinds of supplies demanded must keep their plant employed, and, if they are unsuccessful one year, they have scarcely an alternative to lowering their price on the next occasion.

**Auto Men a Bar to Good Roads.**

The Weekly Sun.—The fears expressed in many quarters of Ontario that the good roads movement is intended chiefly for the benefit of auto drivers appears to have found lodgment in New York as well. The sum of $50,000,000 was some time since appropriated by the Legislature of New York for road building, and of this amount $42,000,000 is still unexpended. The State engineer says that $40,000,000 of the balance left will be required to construct proposed trunk lines connecting the leading cities. These trunk lines, the engineer says, are wider and heavier than ordinary traffic calls for, and are being made so for the purpose of enabling those who own autos to enjoy a fast ride from one city to another while the interests of farmers, who desire a greater mileage with a lessened width of track, are being neglected. An American journal says the views expressed by the engineer appear to be generally held by farmers in the State.

**Grand River Freshets.**

The Globe.—The spring freshets have become dangerous from three causes: the drainage of the swamps, the destruction of the forests, and the removal of fallen and sunken timber from the beds of the small tributary streams. The natural dams having been taken away, artificial ones should be constructed. The swamps, which formerly acted as sponges, can never be restored to their original condition, nor can expansive areas of good agricultural lands be reforested; but it should be possible to secure the forestation of much land that does not lend itself to farming operations, especially along the branches of small streams. The retention of freshet water in hundreds of reservoirs all over the plateau would undoubtedly improve its climate and help to counteract the tendency to aridity from which these high lands suffer every summer. . . . The suggestion to appoint a commission of inquiry is a good one. If its work were thoroughly done it would probably give a much-needed impulse to practical forestry by imparting to farmers everywhere clearer ideas of the great benefits nature is ready to confer on those who endeavour to work intelligently with her, instead of persistently endeavouring to thwart her beneficent efforts for the pleasure as well as the advantage of short-sighted human beings.

## COBALT AND ITS CONCENTRATORS.

(From a Correspondent.)

The narrow seams of ore, and wall rock impregnated with leaf silver, suraltite, chalcopyrite, and other minerals carrying silver values, is bound to make a product too low in value (owing to excessive freight rates, sampling, and smelter charges) to permit of direct shipping to the smelter.

This product can, in the most of cases be concentrated from fifty tons of ore to one of concentrates, the resulting product being equal in value in most cases to first grade ore from the mine.

The cost of treatment and losses due to concentration being far below the freight, sampling and smelter charges entailed in shipping a low grade product.

At present, three concentrators are in operation, namely, the Buffalo, Cobalt Central and Coniagas, two concentrators are about ready to operate, and three of the large producers are contemplating the installation of extensive plants.

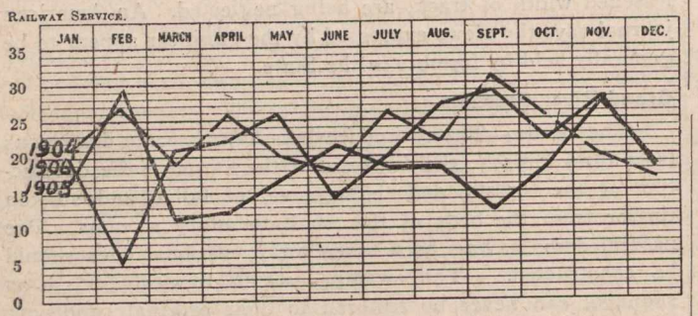
## INDUSTRIAL ACCIDENTS.

The industrial accidents in Canada for the calendar year 1906 as recorded in the Department of Labor show a considerable increase over the number for the preceding year, this being presumably chiefly as a natural consequence of the increased industrial activity during the period indicated, but possibly in part also to a more complete record. The total number of fatalities for 1906, of which a record was obtained, was 1,107, as compared with 931 over the year 1905, an increase of nearly 20 per cent. The non-fatal accidents resulting in permanent impairment of industrial efficiency occasioned by loss of limb or other permanent injury, for the corresponding periods respectively showed also a considerable increase for the later year, but not in the same ratio, the figures being 2,745 for 1906 as against 2,414 for 1905.

It will be seen from an investigation of the accompanying tables of diagrams that the industry entailing the largest number of fatalities is that denoted as railway service, which accounts for 252 deaths during the year, almost a fourth of the total of 1,107; these fatalities, it must be understood, relate only to those incurred in the performance of service in connection with the railways and do not include fatalities to passengers carried or to persons killed when walking or trespassing on the roads.

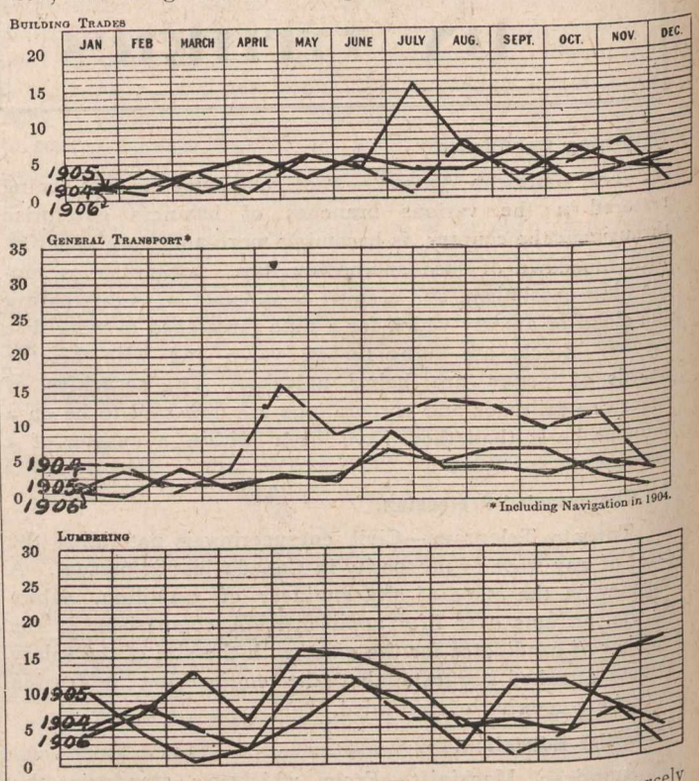
**Railroad Accidents in Britain and Canada.**

It may be interesting to glance for a moment at a similar class of accidents in Great Britain and the United States. In the former country the number of employees officially recorded as killed during the year 1904 was 399, while in the United States according to the report of the Inter-State Commerce Commission, during the year ending June 30th, 1905, no fewer than 3,361 fatalities were recorded. Considering the number of fatalities in connection with the population of these




countries respectively, Canada would appear to be at a disadvantage compared with Great Britain where the fatalities to railway men were about 60 per cent. higher only, though the population is seven times that of Canada; while on the other hand Great Britain's record compares most favorably on the same basis with that of the United States, with a population twice that of Great Britain, the fatalities to railway men are nine times those of the smaller country. A truer test, however, of the relative degree of fatalities in the three countries respectively is found in the railway mileage as compared with the number of such fatalities in each case. In Canada, for instance, a railway system of 20,000 miles represents 252 deaths to employees; in Great Britain a railway system of 23,300 miles represents 399 deaths to employees; and in the United States a railway system of 212,349 miles represents 3,361 deaths to employees. The comparison on the whole is not therefore at first sight to the disadvantage of Canada, especially with regard to the United States, but in the case of Great Britain it must further be remembered that the traffic on its railways is necessarily of vastly greater density than that on the railways of Canada, so that of the three countries Great Britain would appear to make the best showing.

Compared with the building trade, general transportation, lumbering and railroading is a very dangerous occupa-




tion. The maximum in these three occupations scarcely reaching the minimum number in railroading.

A study of the curves does not seem to allow of any general conclusions. In the railway service in two years, February and September were the dangerous months, while in 1906 these were the safe months.

Among lumbermen, May is in all three years a dangerous month, doubtless due to the fatalities on the drives.

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A considerable aggregate of work has been completed for this opening of navigation by the Polson Iron Works, Toronto. They have just completed a speedy stern-wheel packet, 225 feet long by 40 feet beam, for the Hudson Bay Company, for use on the Yukon River. One of a similar kind and dimensions has been built for the Grand Trunk Pacific for river service (light draft), but is not yet in commission. It will be used in British Columbia. The Polson Works have also erected for the Government a steamer at New Westminster, B.C., to be launched this week. They are building a 5 cubic yard dipper dredge. The city yard has just finished a 15-inch suction dredge for the corporation of Toronto. Last month they delivered to the C.P.R. a car ferry boat to be used between Prescott and Ogdensburg.

Among their present contracts is to supply the machinery for two large and powerful tugs to be used on the Kootenay Lakes, where cars are loaded on scows for transport from Proctor to Nelson.

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## MINERAL CANADA.

Canada as a mineral country has staked a big claim on attention. Below is a record, since 1891, of the value of Canadian mineral production:—

| | 1891. | 1901. | 1904. | 1905. | 1906. | 1907. |
|---|---|---|---|---|---|---|
| | $ | $ | $ | $ | $ | $ |
| **Mineral Production—To December 31st.** | 18,976,616 | 65,804,611 | 60,073,897 | 69,525,170 | 80,000,048 | 86,183,479 |
| Metallic Minerals— | 5,421,659 | 41,939,500 | 30,924,897 | 37,400,204 | 42,979,629 | 42,434,087 |
| Copper | 1,149,598 | 6,096,581 | 5,306,635 | 7,497,660 | 10,994,095 | 11,478,644 |
| Gold | 930,614 | 24,128,503 | 16,462,517 | 14,610,395 | 12,023,932 | 8,264,765 |
| Iron ore (exports) | 142,005 | 392,582 | 174,000 | 175,500 | 149,177 | 45,907 |
| " pig from Canadian ore | | 1,212,113 | 1,007,864 | 1,032,116 | 1,724,400 | 1,982,307 |
| Lead | 3,857 | 2,249,387 | 1,617,221 | 2,676,632 | 3,066,094 | 2,532,836 |
| Nickel | 2,775,976 | 4,594,523 | 4,219,153 | 7,550,526 | 8,948,834 | 9,535,407 |
| Silver | 409,549 | 3,265,354 | 2,047,095 | 3,617,675 | 5,723,097 | 8,329,221 |
| Non-Metallic Minerals— | 13,304,957 | 23,565,111 | 28,849,000 | 31,824,966 | 37,020,419 | 43,749,390 |
| Asbestos | 999,878 | 1,259,759 | 1,226,352 | 1,503,259 | 1,988,108 | 2,505,043 |
| Cement | 101,561 | 660,030 | 1,338,239 | 1,924,014 | 3,170,859 | 3,378,871 |
| Coal | 7,019,425 | 12,699,243 | 16,592,231 | 17,520,263 | 19,945,032 | 24,560,238 |
| Coke | 175,592 | ..... | ..... | ..... | ..... | ..... |
| Petroleum | 1,010,211 | 1,008,275 | 935,895 | 856,028 | 761,760 | 1,057,088 |

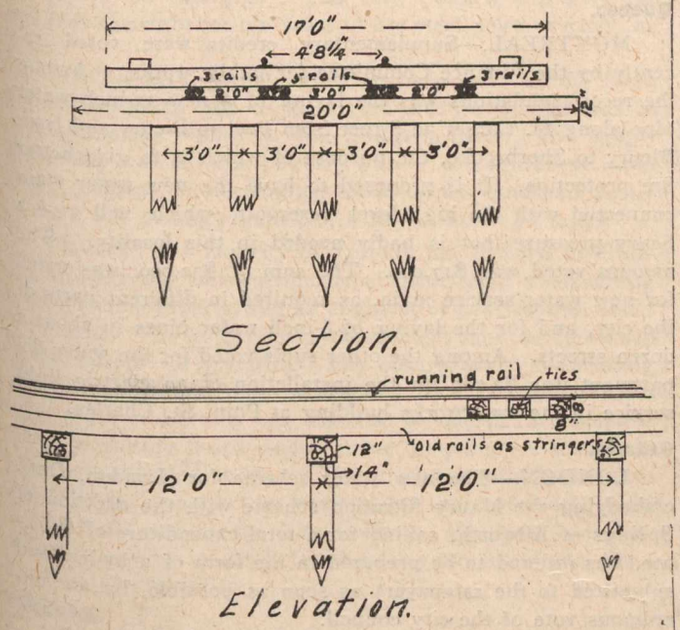
# CORRESPONDENCE

**[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.]**

## OLD RAILS FOR STRINGERS.

Sir,—One of the heavy items on railway maintenance is bridges. Anything that will make a saving in bridge building is appreciated.

Herewith you will please find a sketch showing how one Canadian Railway Company has attempted to deal with the matter.




Section.




Elevation.

On this branch 65 pound rails were being replaced by 80 pound rails, and in renewing the bridges the old rails were used as stringers. Under the running rails a cluster of five 65 pound rails were used, and over the outside piles a cluster of three rails used. By means of spikes and ¾-inch bolts through the fish plate bolt holes the rails are held in place. This bridge has carried for years the heaviest freight engines. Yours truly,

B.

May 22nd, 1908.

## TIDAL POWER PLANT.

Sir,—I would be greatly obliged if you could give me an idea of the general principal of design of the plant referred to in the attached clipping.

"A tidal power plant, capable of supplying 25,000 horse-power, is to be established on the shores of Back Bay, near Portland, Me. The projectors have already experimented with a smaller plant at Thomastown, Me., and it is claimed from the experience gained in this venture that the success of the larger one is assured."

As others than myself on this coast, where there is a considerable tidal range, might be equally interested, I am sure an item in your columns relating to the subject would be read with interest. Yours truly,

Hugh Youdall.

Vancouver, May 20th, 1908.

[Perhaps some of our readers can tell us of this proposition or a similar one.—Ed.]

## SEPTIC PROCESS PATENT SUSTAINED BY RECENT ACTION OF THE SUPREME COURT OF THE UNITED STATES.

**Cameron Septic Tank Co. vs. Saratoga Springs et al.**

Sir,—After five years of litigation, ending in the Supreme Court of the United States, the claims of the Cameron Septic Tank Company have been sustained; existing sewage disposal plants, involving the unlicensed use of the septic process, are, therefore, declared to be infringements of the Cameron patents.

The Cameron Septic Tank Company, desiring to comply with the wishes of its many clients, offer the following alernatives:—

1. To design sewage disposal plants, and take contracts for complete construction.
2. To furnish plans and specifications, and license the use of plants constructed thereunder.
3. To license the construction and use of plants designed by other engineers.

Before the validity of the Cameron patent had been established by the courts, the Cameron Septic Tank Company refrained from any interference with the operation of unlicensed plants, but now that this patent has been so completely sustained by the recent action of the Supreme Court of the United States, the same respect and consideration will be expected for it as has been accorded by the highest court. An invitation is, therefore, extended to municipalities and others owning infringing plants to communicate with the Cameron Septic Tank Company, 352-6 Monadnock Block, Chicago, Ill., for the purpose of effecting settlements, which may be secured on very reasonable terms, provided useless litigation is avoided.

Yours very truly,
H. W. Wyllie,
General Manager.

## OBITUARY.

MR. ARTHUR KOPPEL, founder of the Arthur Koppel Company, died in Berlin, Germany, on May 13th, 1908, in his 57th year.

Mr. Koppel was born in Dresden, Germany, in 1851, and started in business at the early age of seventeen years. He was first interested in a concern in the handling of structural iron and established his own firm in 1876, taking up the problem of transporting all kinds of material for narrow gauge railroads. He made the idea of portable industrial track popular, and this material is to-day known all over the world, in all industrial, agricultural and mining concerns as the Koppel material. The concern, which in 1905 was made a stock company, owns fifty-two branch houses, all over the world, eight plants, of which three are in Germany, one in France, one in Austria, one in Russia, one in Spain, and one in the United States. The American business was established ten years ago, and Mr. Arthur Koppel came to the U.S. and decided to build in 1906 a most modern American plant. He therefore purchased 700 acres of property in Beaver County, thirty miles west of Pittsburg, Pa., where he founded the township of Koppel and erected the most modern plant in this line in the United States. With his family, wife, three sons and one daughter, 6,000 men in the different plants and concerns and 1,500 employees, commercial men and engineers, are mourning the loss of this genius, who always had the welfare of his men at heart.

There will be no change in the concern, which has a board of directors. One of the managers of the New York office is Mr. Kurt Koppel, a son of the late Mr. Arthur Koppel. He is at present on his way to Germany.

# 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.**

HULL.—The City Council of Hull recently received the reply of the C.P.R., which owns the Hull Electric Railway, to the proposition for the double-tracking of the line and the construction of a belt line around the city. All the city stipulations were agreed to save one calling for the payment by the company of $7,500 to assist in lowering street drains.

**Ontario.**

BRANTFORD.—This week witnessed the informal opening of the Brantford and Hamilton Electric Railway Company's system between Brantford and Hamilton. The event marks another link in the electric binding together of Brantford and other important centres.

MUSKOKA.—Muskoka is the new C.P.R. division point on their Toronto-Sudbury line, and with the opening of this new line it will become an important centre. The round house is a concrete structure consisting of eight stalls, which may be increased to twenty-two, fitted up with modern machine shop and central lighting and heating plant. The yards are laid with 72 and 80-pound steel and contain some six miles of track. Oil house, sand house, coal chute, and station are now built and contracts are let for a number of dwellings to be used by railway men.

NORTH BAY.—Arthur Cotton, one of the Government engineers in charge of the Grand Trunk Pacific Railway construction, who has made his headquarters in North Bay for a a considerable time, is leaving for Hudson Bay with a large staff of engineers and Indian guides, going by way of T. & N. O. Railway and Abitibi Lake and River, to survey a line from the great inland sea to a junction point with the Grand Trunk Pacific, in pursuance of Sir Wilfrid Laurier's dream of a far northern seaport. Mr. Cotton will be gone about eight months.

PORT ARTHUR.—The Electric Railway and Light Commissioners were recently authorized to immediately proceed with the double-tracking of the electric railway on the portion lying between Current River Park and the southern boundary of the city.

PARRY SOUND.—Both C.P.R. and C.N.R. have now all the steel laid on their lines connecting Toronto and Sudbury. The bridges are completed, but on both lines much train filling remains to be done. Early in June the C.N.R. will be able to run trains through to Sudbury, but the amount of train fill yet required between Parry Sound and Byng Inlet will doubtless delay the running of passenger trains for some time yet. From Parry Sound to Toronto the C.P.R. have a firm roadbed with easy alignment and light grades, and when they open for traffic will doubtless cut down the running time to Toronto by a couple of hours.

TORONTO.—Mr. A. P. Walker, assistant division engineer of the C.P.R., has been making borings at York, Bay, Yonge, and the other principal crossings over the railway tracks on the Esplanade, for the purpose of testing the nature of the soil at these places in connection with the viaduct scheme. A number of these borings have been made, and the soil found to vary quite considerably. At Berkeley Street a wet, loose sand was struck. It took 18 hours to go 28 feet down. At Yonge Street, on the north side of the tracks, a heavy clay is found, while below the tracks it is quite sandy again. Rock is found at from 18 to 28 feet in depth.

**Manitoba.**

PORTAGE LA PRAIRIE.—This city has decided to make application to the Railway Commission to compel the G.T., C.P., C.N., and Midland Railways to erect an overhead bridge or subway. The present level crossings are extremely dangerous from a public standpoint. The request will urge for an overhead bridge on Campbell Street.

VIRDEN.—A Canadian Pacific Engineering outfit has arrived here to locate the new line to McAuley, and has camped six miles north-west of town. The Canadian Northern Railway party is also surveying a road in the same direction.

## SEWERAGE AND WATERWORKS.

**Quebec.**

MONTREAL.—Supplementary credits were voted recently by the Finance Committee for public works. Among the recommendations was the laying of a new 12-inch water pipe along St. Catherine Street from Peel to Bleury and from Bleury to Sherbrooke, the purpose of which is to give better fire protection. It is proposed to have the new water main connected with the high level reservoir, which will give a heavy pressure that is badly needed in this locality. The amount voted was $17,000. The sum of $32,000 was voted for new water service main, as required in different parts of the city, and for the laying of 8-inch water pipes in about a dozen streets. Among the other sums voted for the water department was $2,200 for the installation of an electric light service in the waterworks building at Point St. Charles.

**Ontario.**

LONDON.—The new water scheme for London, Ont., embodying the Maury filtration scheme with the addition of Springs of Kilworth, calling for a total expenditure of $560,000, was ordered to be prepared in the form of a by-law and submitted to the ratepayers as soon as possible, by an unanimous vote of the city council.

ST. THOMAS.—City Engineer Bell, of St. Thomas, has reported that septic tanks and filter beds for the sewage of that city would cost $30,500.

TORONTO.—City Engineers Fellowes reports that about 1,000 more feet of the water tunnel under the Bay remains to be constructed. Over 4,000 feet is completed.

TORONTO.—The City Council decided unanimously yesterday to submit to the ratepayers on June 27 two by-laws, one for the raising of $2,400,000 for a trunk sewer and sewage disposal plant, and the other for raising $750,000 for a water filtration plant.

WELLAND.—The town council have decided to spend $50,000 on sewers. The work of furnishing accommodation for the Garner survey will be proceeded with at once, and also the factory district over the G.T.R. tracks. The North ward will also be served and 7,300 feet of pipe will be laid in the North ward alone.

**British Columbia.**

PRINCE RUPERT.—In November the Grand Trunk Pacific installed a water system here, bringing the supply from a dam on Hays' Creek on the mountain side, a mile and a half distant and 300 feet above the town. The supply is quite sufficient to meet the requirements of the town at present, but when the place has a population of 5,000 it will be totally inadequate. The Upper and Lower Shawatlans Lakes, two of the finest fresh-water lakes on the coast, five miles distant from the town, will be the natural source of supply, but now it appears that records of 3,000 miners' inches of water from the Upper and 5,000 miners' inches from the Lower Shawatlans Lake were granted to a

company incorporated on June 30th, 1906, and known as the Prince Rupert Power and Light Company, Limited, thus cutting off the water supply of the city-to-be unless the city buys it from the above company at its own terms. A largely signed petition from the business men and residents of Prince Rupert has been forwarded to the Provincial Government protesting against the grant.

**Saskatchewan.**

YORKTON.—Yorkton's new waterworks plant has been tested. Four wells have been sunk, and these were pumped for five hours but the surface was not lowered. The water is of first-class quality and exceeded the expectations both as regards quantity and quality.

## LIGHT, HEAT, AND POWER.

**Ontario.**

KINGSTON.—The Kingston Milling Company have secured the right of developing power at Kingston Mills, six miles east of here, and will transmit power to their mill, which will be enlarged. The City Council will give the company the right for ten years to use steel poles to carry the wires.

NORTH BAY.—Application has been made by the Town Council of North Bay to the Hydro-Electric Commission to develop Smoky Falls, on the Sturgeon River, and supply North Bay with electric power. This is a magnificent water power, capable of developing eight to ten thousand horsepower. The distance from North Bay is about 18 miles.

TORONTO.—The city of Toronto has decided to establish an electrical construction department, with a consulting board of three experts, and an engineer of construction under this board. The construction department may be continued for the purpose of operating a city electric plant and making any extensions that may be deemed necessary. Mr. Alexander Dow, of Detroit, was asked to be one of the members of the consulting board, and to name the other two members. This he consented to do. The engineer who is to have charge of the construction work under the consulting board will be appointed by the City Council. Mr. Dow is to formulate a scheme in detail for the carrying out of the city's share of the enterprise.

**Manitoba.**

WINNIPEG.—The city electrician presents the following statement of electric installations for the three months ending April 30: Permits for wiring, 643; permits for the use of current, 1,011; interior arc lamps installed, 84; horsepower motors and dynamos, 1,300; outlets wired, 3,964; incandescent lamps installed, 16,789.

## TENDERS.

**Prince Edward Island.**

CHARLOTTETOWN. — Tenders for Power House and Chimney will be received up to June 4th, 1908, for the construction and erection of a Brick Power House and Chimney at Charlottetown, P.E.I. D. Pottinger, general manager.

**Ontario.**

CORNWALL.—Tenders will be received up to Friday, 5th day of June, 1908, for the construction of the Casselman Drain Improvement Work, in the township of Finch. Engineer's estimate, $440. James R. Simpson, clerk, Township of Finch.

CORNWALL.—Tenders will be received up to the 5th day of June, 1908, for the construction of the Duff Creek drainage work, in the township of Finch. Engineer's estimate of work, $9,100, as follows: Main drain, $5,428.95; McMonagle Branch, $3,586.25; Spur at William Blair's, $84.80. James R. Simpson, clerk, Finch Township.

GUELPH.—Tenders will be received until June 16th for teaming, excavation, laying and back filling for a 24-inch earthenware water conduit 20,000 feet in length, also for a cast ironpipe. Davis & Johnston, engineers; J. J. Hackney, manager, Guelph Waterworks. (Advertised in the Canadian Engineer.)

MORRISBURG.—Tenders will be received up till June 8, 1908, for the construction of about 900 feet of granolithic walk in the village of Mille Roches.

OTTAWA.—Tenders will be received until July 8th, 1908, for the construction of Movable Dam, Steel Bridge, etc., at St. Andrew's Rapids, Red River, Man. Fred. Gelinas, secretary, Department of Public Works, Ottawa. (Advertised in the Canadian Engineer.)

OTTAWA.—Tenders for steel bridges will be received at the office of the Commissioners of the Transcontinental Railway until 12 o'clock, noon, of the ninth day of June, 1908, for the construction and erection of the steel superstructures and floor system required for bridges at the points named below in District "A":

| Mile. | Bridge. | Date of Completion. |
|---|---|---|
| 21.7 | Canaan River . . . . . | 1st March, 1909. |
| 57 | Salmon River . . . . . | 1st March, 1909. |
| 184.0 | Little Salmon R. Via'ct. . | 1st May, 1909. |
| 197 | Four Mile Brook . . . . . | 1st May, 1909. |
| 207.8 | Grand River . . . . . | 1st May, 1909. |
| 209.8 | Sigas River . . . . . | 1st May, 1909. |
| 213.8 | Quisbia River . . . . . | 1st October, 1908. |
| 220.9 | Green River . . . . . | 1st October, 1908. |
| 227.8 | Iroquois River . . . . . | 1st October, 1908. |
| 230.2 | Madawaska River . . . . . | 1st October, 1908. |
| 243.8 | Baker Brook . . . . . | 1st May, 1909. |

P. E. Ryan, Secretary the Commissioners of the Transcontinental Railway.

PORT ARTHUR.—Tenders will be received to May 29th, 1908, for the supply and delivery of 10,000 ties, in whole or in part standard and culls. Ties to be of good sound Tamarac. J. McTeigur, secretary, E. R. & L. Commission.

TORONTO.—Tenders will be received until June 2nd, 1908, for the complete supply and installation of a 1,000 gallon Underwriters' Duplex Fire Pump in the City Hall, Queen Street West, Toronto.

WELLAND.—Tenders will be received up to and including Saturday, May 30th, 1908, for the laying of a sewer in the town of Welland. Length, about 8,000 feet; pipe from 12 to 22 inches. Separate tenders required for the concrete and vitrified pipe. Plans and specifications may be seen at the office of the town clerk. H. W. Boyd, clerk, town of Welland.

**Manitoba.**

CALGARY.—Tenders for General Hospital, Calgary, will be received up to the 8th day of June, 1908, for all trades in connection with the erection and completion of a New General Hospital Building for the Calgary Hospital Board, Calgary, Alberta. F. J. Lawson, architect, Calgary, Alberta.

DAUPHIN.—Tenders (except for heating and stones for the foundation walls which are delivered) will be received up to June 1st, 1908, for all trades in connection with the erection of a Schoolhouse in the town of Dauphin, Man. W. Smith Jackson, secretary-treasurer.

WINNIPEG.—Tender for St. Andrew's Rapids Works will be received until Wednesday, July 8, 1908, for the construction of movable dam, steel service and highway bridge, repair shop, etc., at St. Andrew's Rapids, Red River, Province of Manitoba. Fred. Gelinas, Secretary Department of Public Works, Ottawa.

**Alberta.**

EDMONTON.—Tender for iron posts will be received at the Department of the Interior up to the eighth day of June, 1908, for the furnishing of forty-five thousand iron posts, small size, and thirteen hundred iron posts, large size, for use on the survey of Dominion Lands, to be delivered in specified lots at Winnipeg, Man., Saskatoon, Sask., and Edmonton, Alta. P. G. Keyes, Secretary Department of the Interior.

EDMONTON.—Tenders for Court House, Edmonton, will be received up to June 13th, 1908, for the supplying of all plant, material, labor and performing all necessary work in the erection of a Court House in the city of Edmonton, Alta., and complete the following: 1st, all necessary excavation; 2nd, all concrete work for basement; 3rd, all stone and brick masonry, concrete floors and roofing, together with certain woodwork; 4th, the supplying of all structural steel. John Stocks, Deputy Minister of Public Works.

**Saskatchewan.**

REGINA.—Tenders will be called for until June 22nd, 1908, for the erection of Legislative and Executive buildings for the Province of Saskatchewan. F. J. Robinson, Deputy Commissioner of Public Works. (Advertised in the Canadian Engineer.)

## CONTRACTS AWARDED.

**Quebec.**

MONTREAL.—Messrs. Peter Lyall & Sons have also given the Dominion Bridge Company the structural steel work of the new Fort Garry Station at Winnipeg, to be occupied by the Grand Trunk Pacific and the Canadian Northern Railways.

**Ontario.**

ELORA.—The County Roads Committee have let the contracts for the new cement arch on the Guelph and Elora road at Ponsonby, and for the new reinforced concrete floor on Victoria Bridge, Elora. The former contract was let to Mr. Wilkie, of Fergus, at $482. Some extras are being counted on for which the contractors will be allowed $4.82 per cubic yard. The contract for Victoria Bridge here was let to the Western Bridge Company, of Chatham, at $675 for the cement floor; $5.70 per cubic yard for extras and 3½ cents per pound for the necessary steelwork.

GANANOQUE.—The Town Council have opened tenders for lead pipe. Two Montreal firms quoted $5.50 per hundred, another $4.94, and Bennett & Son a fraction over $4.92. The order was given to Bennett & Son for the quantity required.

OTTAWA.—A contract has been awarded to Peter Lyall & Son, of Montreal, for the construction of the new Union Passenger Station in Winnipeg. The station will cost, exclusive of furnishings, $886,000.

OTTAWA.—The contract for the new million dollar Union Station in Winnipeg, to be used by the C.N.R., G.T.P. and National Transcontinental Railway, has been awarded to Peter Lyall & Sons, of Montreal. The contract for the building alone, exclusive of furnishments, amounts to $886,000.

TORONTO.—Mr. J. G. Sing, the Government Engineer, has written to the Mayor stating that the contract for the groynes to protect the island shore has been awarded to Miller & Cummings, of Toronto, and suggests that the city proceed with its part of the work so that there would be no delay.

TORONTO.—Several important contracts were awarded by the Temiskaming and Ontario Railway Commission recently. Several concrete culverts and abutments will be constructed by Demens & Fraser, of New Hamburg. H. C. Dunbar, of Haileyburg, will build the freight shed there, and R. R. Woods, of Latchford, will build the icehouse at Englehart. About $80,000 will be spent by the commission this season in new buildings and improvements. The work was eagerly sought after by contractors, and in all sixty-nine tenders were considered.

**Manitoba.**

VIRDEN.—The contract for the construction of the municipal telephone lines in Wallace municipality has been awarded to John Reid, of Virden, at approximately $11,000. This figure is for the labor only, as the material will be supplied to the municipality by the Government at a cost of $24,000. There will be 200 miles of wire put up, the galvanized iron wire for rural lines being used.

WINNIPEG.—The Provincial Telephone Department has let the following tenders for supplies to be used in construction work this year. In each case the lowest tender has been accepted: The contract for the wood side brackets was let to the Northern Electric Company, of Winnipeg. Cross-arms, E. Vessel & Sons, Toledo, O., and Northern Electric Company. Top-pins, Northern Electric Company. Insulators, Northern Electric Company. Copper Wire, Wire & Cable Company, Montreal. Copper Sleeves, F. B. Cook, Chicago. Weather Proof Iron Wire, Canadian General Electric, Montreal. Steel Strand Wire, W. E. Skinner, Limited, Winnipeg. Pole Line Hardware, Northern Electric Company.

**Alberta.**

LETHBRIDGE.—The School Board awarded the tenders for the construction of a new school. They totalled eighty-three thousand dollars. Smith Bros. & Wilson got the building, the William Head Company, the plumbing and heating, and McKenzie & Roy the electric wiring—all local firms.

**British Columbia**

VANCOUVER.—A large contract has just been received from the city of Vancouver by the Dominion Bridge Company. It is for the superstructure of the Granville St. and West Avenue Bridges over what is known as False Creek. The weight of both bridges will be in the neighbourhood of 2,800 tons, and the cost, sub-structure and all, will be about three-quarters of a million dollars.

## RECENT FIRES.

**New Brunswick.**

MONCTON.—The John Abrams & Sons' machine shop was completely destroyed on May 22nd. The machinery in the building would probably cost about $10,000, and it is understood there was only a small amount of insurance. That the machinery would suffer considerably there is no question, but it was thought that the fire having been kept under control may have prevented heavy damage.

**Ontario.**

BROCKVILLE.—The worst fire in the history of the town occurred on May 26th, when the largest coal hoist of the George E. Shields Coal Company was totally destroyed, with several other buildings adjoining. The flames spread to the coal barge Mary Lyons, tied up at the dock, and she was burned to the water's edge. The loss will be $30,000.

MORRISBURG.—The large plant of the Imperial Stone Works was almost completely destroyed by fire on May 26th. The large main building, the polishing rooms, nickeling room and mounting rooms are a mass of debris. This establishment has been running for two years as the Howard Stone Works, but last winter became a stock company under the name of Imperial Stone Works, Limited.

## MISCELLANEOUS.

**Quebec.**

MONTREAL.—The Canadian Bank of Commerce, Montreal, have recently ordered a 67-inch by 18 feet return tubular boiler from the Robb Engineering Company, of Amherst, N.S.

MONTREAL.—A large number of new sleeping and dining cars will be put in commission by the Canadian Pacific Railway shortly. Eighteen new sleepers and six new dining cars are now being built for the western lines in the shops of the company in Montreal. All of these cars are being built according to the latest plans, and no expense will be spared in their furnishing or equipment. They will be used on the main line between Montreal and Vancouver.

**Ontario.**

OWEN SOUND.—A number of residents of Sydenham whose properties are reached by travel along Staveley Street and then by the road running east and west across the Canadian Pacific Railway tracks at Murray's Cut, are making application to the Dominion Railway Commission for the erection of an overhead bridge at that point.

ST. MARY'S.—The by-law to loan the St. Mary's Smallware Manufacturing Company $20,000 was carried by a majority of 470 recently.

TORONTO.—The Board of Harbour Commissioners have decided to take out the old wooden cribbing at the Queen's Wharf and replace it with concrete masonry at a cost of about $10,000.

WELLAND.—M. Beatty & Son launched on Saturday another steel scow, 146 feet long, capable of holding 500 cubic yards of mud. It is for the Dominion Dredging Company of Ottawa. A four pocket steel dump scow is now on the way for M. J. Hogan.

## PERSONAL.

MR. W. H. LAURIE, of Laurie & Lamb, Montreal, is now on a business trip to Great Britain.

MR. H. CARRY, C.E., formerly of Vancouver, is now with the C.P.R. survey party at Merritt, B.C.

MR. C. F. B. ROWE, C.E., has removed from Montreal to 133 St. Francois Street, Quebec.

MR. J. N. WALLACE, D.L.S., Calgary, Alta., is now located at Porcupine, Alaska.

MR. EBE. B. KNIGHT, superintendent of construction for the White Valley Irrigation and Power Company, has removed from Savonas, B.C. to Vernon, B.C.

MR. A. F. MACALLUM, consulting engineer, Continental Life Building, Toronto, has been granted by the University of Toronto, the professional degree of C.E.

MR. C. J. FENSOM, consulting engineer, Aberdeen Chambers, Toronto, has been granted M.E. by the same university.

MR. DONALD T. BLACK, of Montreal, has been appointed municipal engineer of Campbellton, N.B. Mr. Black has studied engineering both in Canada and England, and has had a wide experience.

MR. H. C. KRAFT will represent the Arthur Koppel Company at the American Foundrymen's Convention in Toronto, and will have charge of the Koppel exhibit of Industrial Railways.

MR. GUY C. DUNN, district engineer on the A. or New Brunswick district of the Transcontinental, resigned a fortnight or so ago. It is understood that since leaving the Transcontinental he has been employed by the Grand Trunk.

DR. ROBERT BELL, assistant director of the Geological Survey, and a member of the survey staff for over forty years, has received notice of his superannuation, to take effect from June 1st. Dr. Bell is a man of high attainments and has been honoured by nearly every scientific body in the world.

## MARKET CONDITIONS.

Toronto, May 28, 1901.

A dispute in the shipbuilding industry in Britain has greatly curtailed demand for structural material. Apart from shipbuilding the demand for structural steel is fair. Steel rails are steady in the United Kingdom. Buyers of manufactured iron delay placing orders, thinking that the future of the market is in their favour.

According to Kidston's latest circular, the cash prices of Cleveland pig was higher (May 16) than for the three former months, because of some pressure on bear sellers; Cumberland hematite was weaker and dull of sale, not much being asked for by steel makers; stock on hand, 6,500 tons. Scotch pig steady at 56s. 6d.; stock in public stores, 73,018 tons.

A slight rise in cement was made known in Ontario last week; the price is now $1.80 per barrel for 1,000 barrel lots. The movement is active, one mill having shipped in May 33 per cent. more than in same period of 1907. Bricks, too, are moving actively. Lumber is steady in price with a moderate movement. The tone of business generally shows more buoyancy, but it cannot be said that any remarkable activity characterizes trade. The sunshine is doing much for the roads, and seems also to mend people's hopes.

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.**—Not a great deal doing, 9½ to 10c. is present price. Crude material advancing.

**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 sile and quantity; if cut, $2.75 to $3; angles, 1¼ by 3-16 and larger, $2.55; tees, $2.80 to $3 per 100 pounds. Extra for smaller sizes of angles and tees.

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

**Boiler Tubes.**—Demand limited. Lap-welded, steel, 1¼-in., 10c.; 1½-in., 9c. per foot; 2-in., $8.50; 2¼-in., $10; 2½-in., $10.60; 3-in., $12.10; 3½-in., $15.30; 4-in., $19.45 per 100 ft.

**Building Paper.**—Plain, 32c. per roll; tarred, 40c. per roll. Orders confined to small quantities.

**Bricks.**—Common structural, $9 to $10 per thousand, wholesale, and the demand is quite brisk. Red and buff pressed are worth, delivered, $18; at works, $17.

**Cement.**—Price of Canadian makes to the dealer in 1,000 barrel lots and up is $1.80, in cotton bags, on car, Toronto. Retail price is $2 per barrel, 350 pounds. The quantity delivered from mills is much larger than in 1907.

**Copper, Ingot.**—Believing that consumption must increase, holders show much firmness. Consumption has greatly increased in Europe. Business here quiet; price, 13¾c. for large purchases and 14¼c. for small.

**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 continues fair.

**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 10¾, $4.70 per 100 pounds. Moderate supply.

**Iron Pipe.**—Black, ¼-inch, $2; ⅜-inch, $2.25; ½-inch, $2.72; ¾-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; ⅜-inch, $3.05; ½-inch, $3.57; ¾-inch, $4.83; 1-inch, $6.93; 1¼-inch, $9.45; 1½-inch, $11.34; 2-inch, $15.12.

**Lead.**—The market may be described as firm, but quiet; quotation, $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.

**Lumber.**—A moderate movement of pine is reported, and the supply is adequate. The price holds its own. Dressing, we quote, $32 to $35 per thousand for usual lengths (12, 14, and 16 ft.) and stock sizes of boards, and $38 to $40 for special lengths, common stock boards, as to grade, $24 to $28; culls, $22. Southern pine and Norway pine are somewhat easier. Hemlock moves more freely and quotes at $19 to $21.50, according to size. Much spruce comes from the East and is in better demand; the price asked for flooring is $27 wholesale and $30 retail. Shingles, B.C., in more active demand, retailing at $3.75 per thousand. Laths are quiet, No. 1 quote at $4.25 on track, No. 2 at $3.75.

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

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

**Pig Iron.**—Scotch pig steady, and Middlesboro' higher in Britain. Prices here practically unchanged. Summerlee quotes: No. 1, $25.50; No. 3, in car lots, $22 to $23 here; Glengarnock, $25.50; Clarence, No. 3, $19.50 to $20; No. Cleveland, $20 to $22.

**Steel Rails.**—80-lb., $35 to $38 per ton. The following are prices per gros 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. steady at $2.65.

**Tin.**—Continues very firm, price here continues at 33 to 34c. The price in England has gone up £2.

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Montreal, May 28th, 1908.

At a meeting of the representatives of the leading iron and steel interests of the United States, the present arrangement for supporting prices was confirmed. The meetings, which occur at regular intervals, have now adjourned for the summer months, on the understanding that prices will be maintained on their present basis. However, the agreement, in some ways, is not of great importance, as southern furnaces have recently been selling at almost any price they could get. At least a quarter million tons have recently been sold, the orders for the bulk of this going to Alabama furnaces. One company made a cut of 50 cents per ton in order to get business, and sold some 60,000 tons at the low price. Subsequently, the firm has again gone back to prices previously existing. It looks as though there might be a considerable tonnage turned over at around present prices, very shortly. There is little likelihood for higher prices for some time to come, as any attempt to obtain higher figures would only result in furnaces which are now out of blast being blown in again and adding their product to the present supply.

The English market is a weak spot just now, and lack of demand there is likely to occasion a weakening of prices, should it continue very long. The situation is practically unchanged.

On the local market a fair trade is passing, although, compared with recent years, the dullness is marked. Prices continue steady and will likely to do for some time to come. These remarks, regarding pig iron apply equally well to finished or partly finished goods. Throughout the list, this week, not a change in price was reported while the dullness of trade was invariably remarked upon.

**Antimony.**—The market is firm and sales are being made at 9½ to 10c. per lb.

**Bar Iron and Steel.**—Bar iron, $1.90 per 100 pounds; best refined horseshoe, $2.15; forged iron, $2.05; mild steel, $1.95; sleigh shoe steel, $1.95 for 1 x ⅜-base; tire steel, $2 for 1 x ⅜-base; toe calk steel, $2.45; machine steel, iron finish, $2.05.

**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.**—Prices of pig iron continue steady here, foreign markets being, however, weaker. 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 are steady at $3.80 to $3.90 per 100 pounds, 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 but little change and prices are as follows: $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:—¼-inch, $5.50, with sixty-three per cent. off for black, and 48 per cent. of for galvanized; ⅜-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 ⅝ x 10 inch and ⅝ 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 ⅜, and $2.30 for ¼ 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 steady at 33½ to 34c. 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 "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.

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

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Winnipeg, May 26th, 1908.

All kinds of engineering work in the West is progressing in a very satisfactory manner. The contract for the new Union depot has at last been awarded to Peter Lyall & Son, of Montreal and Winnipeg, and work on it will start at once. The demand for contractors' machinery will undoubtedly be brisk when operations on this million dollar building commence.

One of the walls at the high pressure plant is reported as not being over secure, and may have to be strengthened by buttresses. This splendid plant has not been taken over by the city.

The Manitoba Iron Works are supplying 24,000 feet of steel railing for a bridge at Regina, and report business to be increasing in a satisfactory manner, with new enquiries coming in daily. The demand for all kinds of material used