

**PAGES**

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# The Canadian Engineer

WEEKLY

ESTABLISHED 1893

VOL. 15.

TORONTO, CANADA, JULY 24th, 1908.

No. 30

## The Canadian Engineer

ESTABLISHED 1893

Issued Weekly in the interests of the

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

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Present Terms of Subscription, payable in advance:

Canada and Great Britain:		United States and other Countries:	
One Year	\$2.00	One Year	\$2.50
Six Months	1.25	Six Months	1.50
Three Months	0.75	Three Months	1.00

### ADVERTISEMENT RATES ON APPLICATION.

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Address all communications to the Company and not to individuals.

Everything affecting the editorial department should be directed to the Editor

### NOTICE TO ADVERTISERS:

Changes of advertisement copy should reach the Head Office by 10 a.m.  
Monday preceding the date of publication, except the first issue of the month for  
which changes of copy should be received at least two weeks prior to publication date

Printed at the office of THE MONETARY TIMES PRINTING CO., Limited,  
TORONTO, CANADA.

TORONTO, CANADA, JULY 24th, 1908.

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### TO OUR READERS.

If you are coming to Toronto, Montreal or Winnipeg and wish to have your mail forwarded the offices of the Canadian Engineer are at your disposal. Have it addressed to our offices and we will take care of it until you call or ask to have it re-directed.

### CANADIAN ENGINEERS.

That the best men available should be selected for work to be undertaken is a truism that hardly needs repeating. The qualifications that make one man more capable than another to undertake a particular piece of work are sometimes hard to define, but because an engineer is resident in another country where the geological, climatic and sociological conditions are different from our own should not be a reason why he is better qualified to undertake to act in a consulting capacity in Canada. Yet so it would appear.

'Tis true Canada is not an old country. We have not engineering structures and engineering literature of our own such as may be found in some other lands. But we have a body of Canadian engineers, informed, capable, and tried, equal to any task this country is likely to require. Many of them are Canadian-born, educated in Canadian colleges, trained in Canadian fields, and familiar with native conditions and materials. Others were educated in foreign lands, and bring to bear upon the new problems of our new country a mind trained by experiences in other countries and stored with the best thoughts of the old masters. With their fellow-citizens of a developing country they accept gracefully the discouragements that come with the present depression, not suggesting that Canadian bankers, business men, or legislators are at fault, nor suggesting that conditions would be improved by calling in consultation men of experience from other lands.

It seems most unfair the discrimination that is being shown against Canadian engineers by Canadian municipalities and corporations. The great engineering blunders in Canada lie at the door of the "imported engineer." Then why continue the practice of going into other countries for expert advice? We have in our own country engineers, well educated, experienced, and capable of undertaking such works as the country requires.

There is no necessity of two of the three members of the New Quebec Bridge Commission being from another country. Toronto can find within the Dominion, if she so desires, three engineers quite capable of acting on a consulting board in connection with the electric installation. This present spasm of "going abroad" is not particularly business-like. The great mass of ordinary business men have no hesitation in trusting Canadian engineers. Why should a few of our corporations hesitate?

### TORONTO'S PURE WATER PROBLEM.

Toronto has engaged an eminent engineer to design and construct a water filtration system. It looks as if the citizens were going to build the plant and then decide afterwards whether they required it or not. If Toronto spends \$750,000 on a needless plant, water purification works in other cities, in years to come, will be hard to secure.

Toronto's drinking water has been contaminated by sewage, but whether from Bay water or lake water it has not been shown. The tunnel under the Bay should remove all danger of pollution from Bay water. It is very doubtful whether sand filtration of Lake Ontario water will make it any purer for drinking purposes.

**EDITORIAL NOTES.**

Tramway companies in Japan number 148, and of these 65 are running. Electricity is the motive power in 60, horse-power in 58, steam, oil and manual power are used for the remainder. The aggregate length of lines running reaches 545 miles; their paid-up capital, 40,140,000 yen, equal to about \$20,000,000. Of one concern, the Tokyo Railway Co., the capital is over \$13,000,000. The next in size is that of Kobe, some \$3,000,000.

\* \* \* \*

The amount expended for building in five Canadian cities, Toronto, Hamilton, Winnipeg, Halifax, and Vancouver, aggregated \$2,397,423 in June, as compared with \$2,681,000 in May, but showing a decline of 29.3 per cent. from June, 1907. Statistics from seventy-five American cities show declines each month this year of 27 to 45 per cent. from the figures of same month, 1907, except June, when the decline was only 8.1 per cent., viz., from \$59,333,000 to \$54,535,000. The total building expenditures in those cities for the last six months amounted to \$245,420,000 as compared with \$351,733,000 in the first half of last year.

\* \* \* \*

For some years there has been an agitation for a two-cent passenger rate on our Canadian railways. The revenue of Canadian railways per passenger mile is given as follows:—

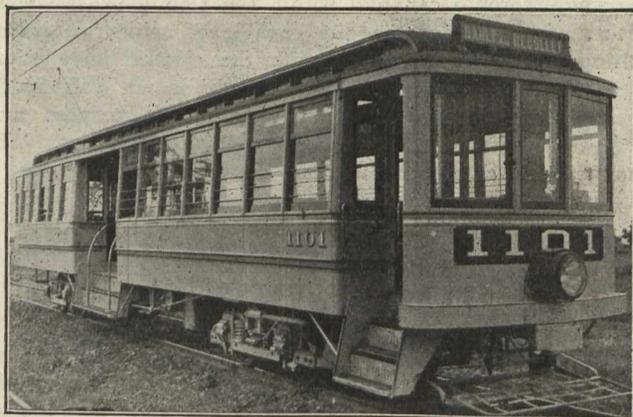
	Cents.
Canadian Pacific Railway .....	1.844
Grand Trunk .....	1.839
Canadian Northern .....	2.835
Intercolonial .....	1.762

With the rate for regular single fares at three cents, return fare at two and a half, and commercial tickets at two it looks very much as if our Canadian railways were hauling free a large number of passengers, and the worst offender is our Government-owned road. The pass habit has a strong hold on us. The many still pay for the benefits of the few.

**PAY-AS-YOU-ENTER CAR.**

The photograph of the new "pay-as-you-enter" car for use on suburban or interurban lines, reproduced herewith, is a car presently in service on the Montreal Park and Island Railway System, which system is operated by the Montreal Street Railway Company.

The principal dimensions of the car are: Length over all, 50 feet; width at belt rail, 8 ft. 7 1/2 in.; height from sill to top of roof, 8 ft. 5 in. The car weighs 58,400 pounds,

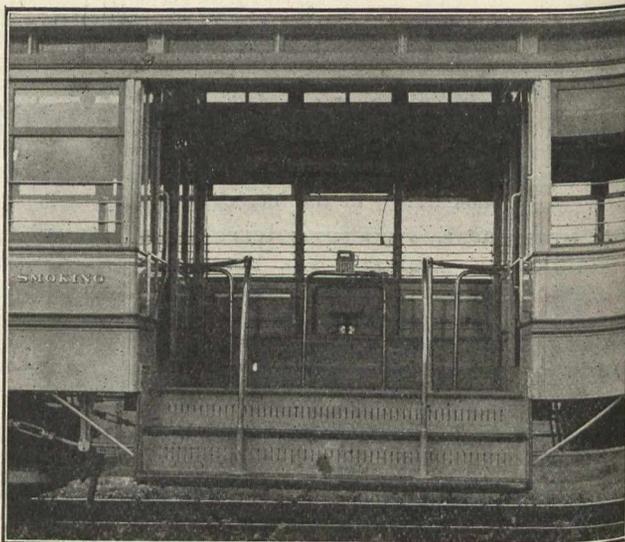


**End View.**

and rests on two four-wheel trucks. The track gauge is 4 ft. 8 1/2 in. Forty horse-power direct current motors are used, and the cars are equipped with air-brakes and Jenkins' fenders.

The platform, instead of being at the rear end of car, is placed about three-quarters distance from the front. The back compartment is for smokers. This car has all the latest improvements, and is without doubt one of the most

comfortable and prettiest cars in operation in any system in the world. The windows, being large and low, give passengers every opportunity of admiring the scenery along the route through which the car operates. The doing away with the rear platform is a decided improvement, as it prevents rocking, the car being evenly balanced. As passengers are not allowed to stand at the entrance, free egress



**Side View.**

for those getting on or off of cars is ensured. The conductor is always stationed at the entrance, thus ensuring against the possibility of an accident to those getting on or off. Passengers entering the car mount at the centre of the steps and pass up between the two brass bars, and after depositing their fare in the fare-box enter either the front or rear compartment, as they may desire. Those leaving the car pass out to the other sides of the brass rails, thus avoiding those getting aboard. After passengers leave the car the conductor, by pressing a pedal, which is operated by compressed air, closes and secures the doors, thus ensuring absolute safety. This car was built at the Montreal Street Railway Company's shops, Hochelaga, at a cost of \$11,000.

**JUNE LAKE LEVELS.**

The United States Lake Survey reports the stages of the Great Lakes for the month of June as follows:—

Lakes.	Feet above tide water, New York.
Superior .....	602.62
Michigan-Huron .....	581.60
Erie .....	573.50
Ontario .....	248.62

The Reliance Concrete Machinery Co., Limited, which was incorporated a year ago, have become organized, and are taking over the business of the firm of the same name for the purpose of manufacturing the Reliance concrete mixer, which is meeting with considerable success. One of these machines has been operating on the new Union Depot for the contractors, Lyall & Mitchell, and is more than able to take care of all the work on that extensive job. Locally, among contractors it has been watched with considerable interest, and the general expression as to its success is very satisfactory to the company. Twelve cubic yards per hour has been maintained without running the machine to its full capacity.

In the city of Erie, Pa., the average daily per capita consumption of water for domestic use during 1907 was 127 gallons.

## SEWERAGE AND SEWAGE DISPOSAL.

T. Aird Murray, C.E.

### Main Sewerage.

The question of main sewerage is, perhaps, one of the most important ones affecting the health of any community. Sewage in its composition consists of most of the waste products of humanity. The human body is constantly taking in forms of poison which it has to deal with and discharge in the form of effete matter. Upon the ability of the constitution to handle and combat with these various poisons depends its health state.

### Human Waste.

There is a constant flux or change going on in the tissues and frame of the body. It is held that in ten years the whole body has undergone an entire change, has been, in fact, renewed with fresh tissue and new cell formations. Thus in ten years the material part of a whole population has either passed as refuse into the atmosphere or down the town sewers. The waste is represented to a large degree by the carbonic acid the body is giving off by expiration to the atmosphere and by the organic particles absorbed by clothing, removed by washing and by the ordinary digestive processes. This waste has properties of a toxic ptomaine character, which, if they re-enter the human system, act as poisons.

When the air in a room is vitiated it is not the presence of the carbonic acid gas which affects those present. The consequent lassitude, sickness, and headache are due to re-breathing and swallowing particles of effete organic matter of a poisonous character. The measure of the carbonic gas is only an indication of the presence of organic impurities. Now, just as it is necessary to remove a vitiated air as quickly as possible, so is it necessary to remove a vitiated volume of water containing waste products, such as sewage.

### What is Sewage?

Sewage represents the total amount of water supplied for domestic purposes after it has passed through the human body, removing with it the internal waste products; also the dirt from surfaces of the body, from clothing, house-cleaning, street-washing, grease, etc., from cooking utensils, and, in fact, all the discarded waste which the water supply in passing through the town carries with it. With the sewage is carried all the effete discharges and resultants from disease. Skin scales from scarlet fever and small-pox, bacilli from typhoid and diarrhoea, etc. The whole sum total of the sewage, consisting of a liquid containing a large amount of organic matter charged with poisons and disease germs, in a condition unstable in its chemical combination and most liable to putrefaction. Sewage forms a suitable nidus for the rapid growth of disease germs: it will absorb them, whenever it comes in contact with them. In its midst they will grow by the million.

Sewage undergoing putrefaction produces a dangerous gas, called sewer gas, which may be charged with the germs or spores of disease and carry the infection of disease on its wings.

Sewage coming into contact with milk, milk utensils, food and water poisons them and renders them dangerous. Sewage is a necessary factor in the economy of existence. It has, however, to be dealt with firmly and scientifically—removed, totally removed, by the quickest and cleanest method possible to the wit of man.

### The Careless Mind.

When a municipality approaches the question of sewerage (or the getting rid of sewage) there is apt to be engendered a feeling of carelessness, resulting from a common idea that "anyone can lay a sewer." "There can be no difficulty in laying pipes under ground with a fall so that water runs." So we hear it said, the result being that

[This series of articles when completed will be bound in book form and may be ordered from The Canadian Engineer. Price, 25 cents per copy.—Ed.]

many sewerage systems have been put in roughly, improperly, leaky, without sufficient falls, no flushing, no proper supervision, and, it is said, "We never had smells till we got a sewerage system." "Our death rate is now higher since we got the sewerage system." The end of many of these so-called sewerage systems is certainly worse than the beginning.

What can be said of a sewerage system which is practically a disposal system in itself. That is, by means of careless jointing, defective laying, and, perhaps, broken pipes, most of the liquid sewage is escaping into the soil near the houses, near water mains, which may also be leaking, and into which the sewage is drawn when the water is turned off and the mains emptied. A town built upon a sewage contaminated soil, the ground air to the buildings supplied from a sewage contaminated source, the liquid escaping, leaving the solids stranded in the sewers to putrefy, forming elongated cesspools in the streets, supplying sewer gas in abundance at manhole gratings and into dwellings by means of plumbing defects. There is no exaggeration here. Thousands of dollars have been expended to obtain the above results. Plans, complete plans, carefully designed by competent engineers, have been handed over and botched by careless contractors, supervised, if at all, in many cases by some local person with no real experience of good work, but pushed into position by some local influence. In other cases no proper plans have been made, all being left to piecemeal hazard—odd bits done at odd times, noregulated plan, no complete scheme, no specification, and practically no knowledge of good work of any kind relating to sewerage. Every engineer can point to plenty of instances of the above. Many a community in its heart of hearts knows it is so. No one really to blame, no real culpable negligence, but just carelessness and want of real knowledge of the seriousness and importance of the subject, and, perhaps, just a little tendency to sacrifice good work in order to guard the sacred dollar in the safe.

### Approaching the Subject.

When an engineer or an authority has to approach the problem of main sewerage there are certain defined points which must be kept in mind. The author will endeavor to deal with these points as concisely as possible.

### The Main Principle.

Sewage must be completely removed from the vicinity of the town as rapidly as possible and before time is given for putrefaction to commence. Any structure or appliance which will cause sewage or the solids of sewage to collect is against every good principle of sanitation. Retention of sewage means formation of sewer gas and an admittance that the sewers are not capable of doing their duty.

### A Complete System.

No matter whether it is the intention to only lay a short length of sewer, or sewer only part of a town, every such length should be a part of a general system, schemed and laid out on a plan to deal not only with the town's present limits, but also comprising and taking in districts over which the town may have a tendency to extend. As far as possible, before laying out a sewerage system, a common point of discharge should be fixed upon, a point to which the whole of the sewage can be taken by gravitation if possible. Such a point should be well away from the inhabited part of the town, where sufficient land can be easily obtained for disposal purposes in the event of such being required at any time, if not at present contemplated. By the use of judicious foresight in this instance much money can be eventually saved. Every community may take it for granted that at some period or another sewage purification will become a necessity to them.

### The Separate and Combined Systems.

A "combined system" of sewerage is one which takes not only domestic sewage, but also all the storm road water and subsoil water which it is necessary to remove from a town. The "separate system" of sewerage is when there are two systems laid down, one for domestic sewage, including roof water and another for road and subsoil water. The separate

system presents the more up-to-date and by far the better plan. By the combined system it is necessary to lay down large diameter pipe sewers, capable of taking excessive torrential rains, and so prevent roadways and cellars from flooding. These large sewers during dry weather are much too large for the flow of domestic sewage, the result being that the mean hydraulic depth is so small and the liquid spread over so great a surface it is incapable of carrying forward solid matter. Such sewers present channels of piled-up filth, through which the liquid simply oozes, the filth not being removed until some rainstorm comes along capable of flushing the conduits.

The natural objection to the separate system is that at first sight it appears more costly, apparently providing for two systems of sewerage. However, the cost is very little more, if any, than in the combined. The two lines of pipes can be laid in the same trench when open and smaller diameter pipes are required.

The great advantage of the separate system is, however, that if at any time sewage disposal is required, a definite amount of sewage at the point of discharge can be depended on, the amount in dry weather simply representing the water supply per capita, and in wet weather the water supply, plus the rainfall on the roof area of the town, which at no time amounts to more than three times the dry weather flow. On the other hand, if storm road and subsoil water be admitted to the main sewerage system, it is necessary to spend almost four times the amount on disposal works and build works on a scale totally much too large to deal with the real sewage of the town.

#### Sewers Should be Self-cleansing.

By self-cleansing it is meant that whenever possible gradients and sizes of sewers should be so arranged that the depth and velocity of the flowing liquid should be sufficient to carry all solid matter with it. It is apparent that only by the adoption of the separate system can this object be attained. In main collecting trunk sewers little difficulty is found in obtaining a volume of sewage with a sufficient velocity. But in sectional sewers, where the volume is small and often intermittent, there is sometimes difficulty. Mistakes are often made in putting in sewers for branch work of too large a capacity. The velocity aimed at for branch sewers should not be less than two feet per second when running half full. The following falls, given to 9-inch and 12-inch circular sewers, running half full, will produce the following velocities in feet per second: 9-inch, 1 in 450 = 2 ft.; 1 in 200 = 3 ft.; 1 in 120 = 4 ft.; 1 in 75 = 5 ft. 12-inch, 1 in 600 = 2 ft.; 1 in 260 = 3 ft.; 1 in 160 = 4 ft.; 1 in 100 = 5 ft.

Whenever it is necessary to lay a branch sewer, 9-inch diameter at a gradient less than 1 in 450, or a 12-inch at less than 1 in 600, producing a velocity of less than 2 ft. per second, some method of extra flushing should be resorted to.

#### Flushing Sewers.

The best method of flushing for branch sewers is to erect at the head of the sewer an automatic discharging tank, fed either from the water main or by collecting bath waste water. The amount of the discharge should not be less than 700 gallons for a 9-inch pipe and 1000 for a 12-inch pipe. The discharging syphon should be capable of three-quarter filling the sewer to be flushed.

#### Materials for Sewers.

For all conduits up to 2 ft. 6 in. diameter, stoneware salt-glazed pipes are the best; for over 2 ft. 6 in. diameter the conduits should be built in culvert of the egg shape section of either brickwork or reinforced concrete. Stoneware pipes should have a thickness of crust equal to 1-10th their diameter, and the spigot ends threaded externally while the sockets are threaded internally. There should never be less than 2½ in. depth of socket room, and width space of at least ½ in. clear all round.

#### Jointing in Sewers.

Fig. 1 shows a good, sound sewer pipe joint made with grouted yarn stemmed into about half the socket space,

the remaining space being occupied with cement neatly finished. The purpose of the grouted yarn is to keep the pipe in position, so that the alignment is true and an equal socket space maintained all round the pipe. It also serves the double purpose of preventing cement from running into the pipes. The yarn is first dipped in liquid cement and then stemmed into the socket. The cement finish should be in parts of one of cement to one of sand. Pure cement is apt to crack when setting.

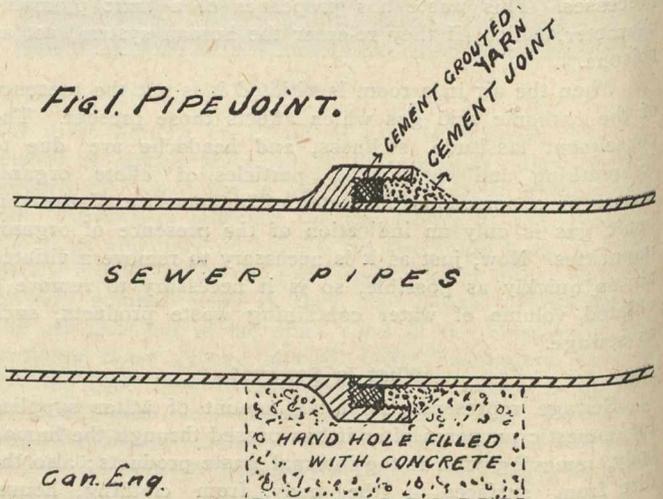
#### Laying the Pipes.

Great care should be taken that the body of all pipes rests evenly on the surface of the trench, and that holes be excavated at the sockets. No pipe must rest on its socket, or the result shown on Fig. 2 will be obtained. This commonly happens, especially when sewers are laid in rock or concrete, or other hard surface. The handholes should be filled with concrete. (See Fig. 1.)

#### Testing Pipe Jointing.

It is extremely important that all pipes be tested as to their jointing before and after they are filled in. The proper and only satisfactory test is the water test. The length of sewer as laid is plugged at the lower end and the whole length filled with water, the natural gradient providing a head

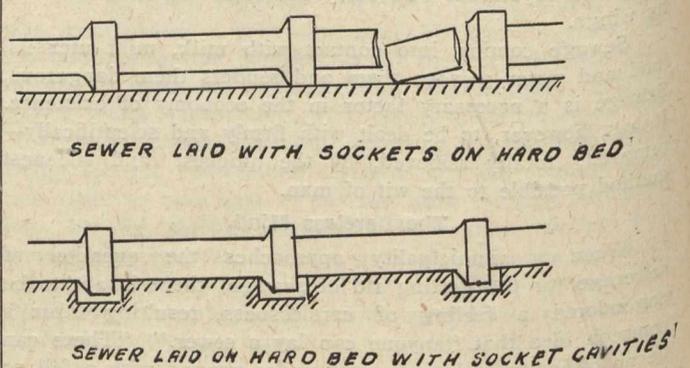
FIG. 1. PIPE JOINT.



of pressure. At the top end a curved elbow pipe should be temporarily fixed so as to obtain pressure on the upper joints of the length. The length of drain must be capable of holding the water without the least sign of leak. This is the natural test the sewer will be put to if at any time the length becomes choked in practice. The reason for testing a second time after the trench is filled is that there is a chance of the pipes being disturbed, and even broken, by careless filling in.

The man who says it is not necessary to test sewer joints is the man to be careful of. He either suffers from a mental or moral twist, or perhaps both. The contractor

FIG. 2. LAYING PIPES.

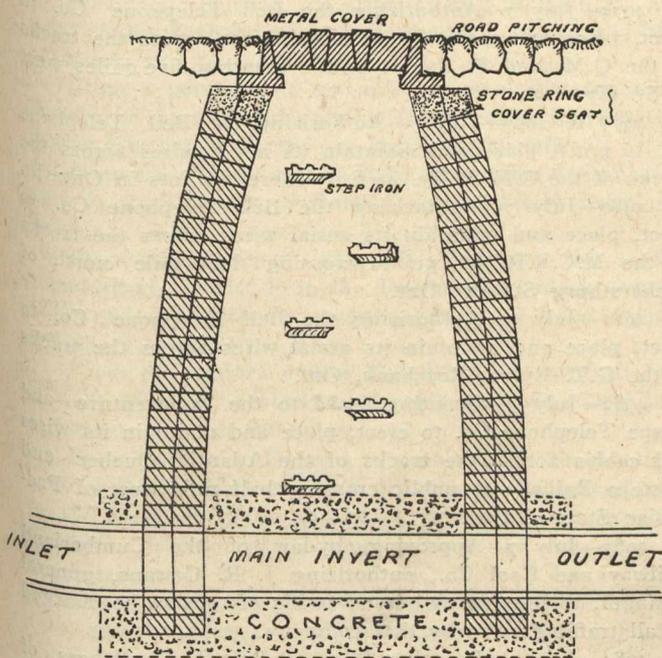
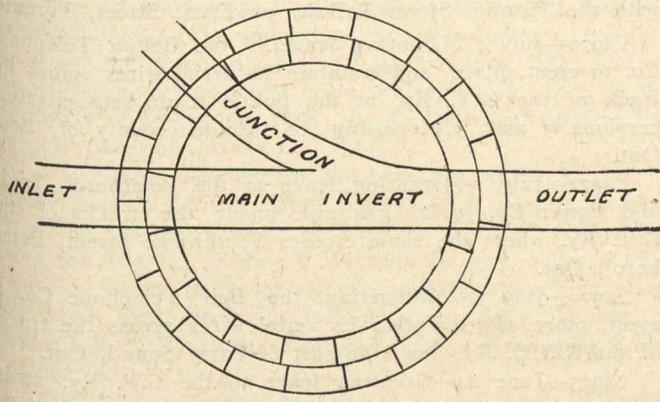


who takes it as an insult to have his work tested, and says, "So-and-So has always found his work all right without testing," is the sort of man who cannot take a threshing standing up, and is really afraid of his work.

**Filling in Trenches.**

The filling of the trenches requires great care and most careful supervision. Many lengths of sewer are ruined by careless filling, throwing in large stones immediately over the pipes, treading on the pipes, and ramming the earth before there is sufficient cover to protect them. It should always be borne in mind that a length of sewer jointed with cement forms a rigid tube. In filling, loose earth should first be carefully packed around and over the pipes, and no ramming should commence till there are at least two feet of covering.

**FIG. 3. MANHOLE**



**Manholes.**

Manholes should be built on the line of sewer at every change of gradient and direction, and at distances of not more than 300 feet apart. These will allow the sewer to be examined at any time, as a clear view through the sewer must be presented between each manhole. They also allow of any choke being removed by the use of drain rods. A well-arranged manhole system is a saving of money, and guards against the future breaking up of the road for examination purposes. Fig. 3 gives a useful and cheap form of manhole. Built circular, it is very strong, and will stand any weight of traffic. Such can be built of 9-inch brickwork with radiated bricks, or in concrete rings, either reinforced or otherwise.

**Ventilation.**

A common practice is to ventilate the sewers by means of open gratings over the manholes. In a first class system of drainage, where the sewers are self-cleansing, there is not much objection to this, as the sewer gas is seldom of a character causing any nuisance. The better plan, how-

ever, is to provide close covers on the road surface, and provide separate vent-pipes from the manholes to the sides of roadways, and carry up 6-inch iron pipes up the sides of buildings clear of all windows and chimneys. The vent-pipes may be carried in connection with gas lamps, and the organic impurities in the sewer gas destroyed by combustion. Special vent-pipes are often required at the head of sewers. Sewer gas, being generally warm, has a tendency to rise and become more concentrated in the higher reaches of a town. Ventilation to sewers is always necessary, so as to relieve house fittings from any undue pressure.

Much more in detail may be stated, but the object here is simply to show what should generally be insisted on in connection with a good, honest and serviceable system of sewerage. Special circumstances are always arising, such as waterlogged land, running sand, etc., which may require special pipes with special joints. If, however, sufficient has been said to make it clear that a sound and durable system of sewerage is within the reach of every municipality, the author will feel that his object has been achieved in this chapter.

[Any question arising out of statements contained in these articles will be gladly answered by the author.]

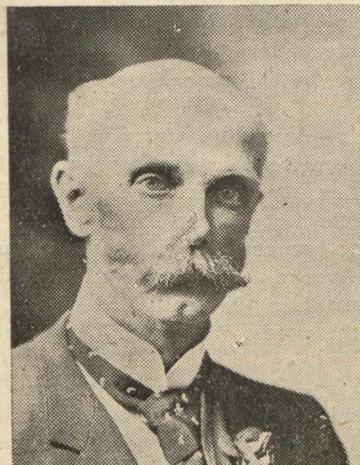
(To be continued.)

**SOCIETY NOTES.**

**Engineers' Club, Toronto.**

The annual outing trip of the Engineers' Club, Toronto, took place on July 15th and 16th, and consisted of a railway trip from Toronto to Peterboro', a sail through the Trent Valley Canal from Peterboro' to Bobcaygeon, where the train was again taken for Toronto.

The party left Toronto in a private car Wednesday evening, and found that President J. G. Sing, with the assistance of his Executive, had made complete arrangements for a successful outing. Besides President Sing, the other members of the Executive on the excursion were Second Vice-President C. M. Canniff, Treasurer L. J. Street, and members of the Executive Committee, W. J. Fuller and R. G. Black. Among those in the party were: F. L. Somerville, C. H. Heys, A. Pense, A. F. Macallum, W. Vandeleur, C. H. Hamilton T. T. Black, W. A. Young,



**Mr. J. C. Sing, President Engineers' Club.**

S. D. Chadsey, J. Williams, J. D. Shields, E. L. Merrill (late of Winnipeg), A. W. King, D. D. James, A. Lemay, O. W. Smith, A. J. VanNostrand, E. T. Ward, C. R. Young, E. A. James, W. Rubidge, W. A. Bucke, R. A. Baldwin, W. A. Johnson, J. H. McClelland, and Jas. J. Salmund, of the Canadian Engineer.

Early Thursday morning the party left Peterboro' on the Government boat, "Bessie Butler," the guests of Superintendent J. H. McClelland.

The Peterboro' lift lock is not new to Canadian engineers, yet the "locking through" was a matter of con-

siderable interest. From open water in the lower reach to open water in the higher reach in eight minutes is the regular time for this 60-foot lift.

In the first nine miles to Lakefield, five locks and three hydro-electric power plants were passed. The latter were the projects of the Canadian General Electric Company (3,000 horse-power), the Otonabee Power Company (2,000 horse-power), and the Lakefield Portland Cement Power Company (1,500 horse-power).

The only large work now being carried on in this section is the new Buckhorn dam, which is being built by David Conray & Sons, Peterboro'. The dam and bridge are being rebuilt at an estimated cost of \$55,000.

President Sing in tendering Superintendent J. H. McClelland the thanks of the Club for the lake trip and the royal entertainment, mentioned that the opening up of this canal system paved the way for the preserving, regulating and utilizing of the water powers of Central Ontario, and that it might, indirectly, lead to the reforestation of this area.

Mr McClelland, in his reply, was very enthusiastic as to the possibilities of a completed Trent Valley Canal. As each section was extended the traffic increased, and he expected that when the canal was completed the traffic carried on the canal would fully justify the expending of the \$15,000,000 which the system cost.

### ORDERS OF THE RAILWAY COMMISSIONERS OF CANADA.

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

4951-4957—July 3—Granting leave to the Bolton Telephone Co., Limited, to erect, place and maintain its wires across the track of the C.P.R. in township of Albion, Ont.

4958—July 3—Authorizing the C.P.R. to construct two bridges on its Sherbrooke section, one on its Prescott branch, one on its Newport section, one on its Montreal and Ottawa section, one on its Farnham section, and one on its St. John section.

4959—July 3—Approving of deviation in location of the E.P. Ry. Co.'s main line and double track between Kakabeka and Kaministiquia, mileage 19.46 to mileage 23, Province of Ontario.

4960—July 7—Authorizing the C.P.R. to construct, maintain and operate a branch line or spur in the parish of Gordon, county of Victoria, N.B., to and into the premises of the Wapskehegan Lumber Co.

4961—July 7—Authorizing the municipal council of St. Anne de Beaupre to lay water pipes under the track of the Quebec Railway Light and Power Co. at nine different points.

4962—July 7—Amending Order of the Board No. 4,865, dated the 2nd June, 1908, directing the C.P.R. Co. to continue to maintain the public highway crossing where its railway intersects Lot Official No. 138, of the parish of Montreal, Que., between Fenwick Avenue on the one side and Crescent Avenue on the other, by adding after the word "applicants," in the tenth line of the operative part of the Order, the words, "David S. Leach and Dame Jessie R. Leach."

4963—June 23—Granting leave to the C.N.O. Ry. to erect, place and maintain its telegraph wires across the track of the G.T. Ry. north of Mount Albert, township of East Gwillimbury, Ont.

4964—June 23—Ordering the C.P. Ry. to bear and pay the cost of the reconstruction and strengthening of subway where its track crosses the track of the G.T. Ry. Co.'s main line at mile post 124.96, east of G.T. Ry. station, Brockville.

4965—June 23—Approving of location of the Grand Valley Railway from Brantford to Eastwood, Ont.

4966—June 24—Ordering that all trains westbound to or beyond the Union Station, Toronto, Ont., are forbidden to cross Yonge Street, and are required to stop on the east side of the said street unless they have a clearance by the semaphore standing on the west side of Yonge Street, and that no engines or cars, except express cars containing

fruit and the engines moving the same, be shunted across or upon Yonge Street during the seasons of open lake navigation between the hours of 1 p.m. and 2 o'clock p.m.

4967—July 7—Authorizing the British Columbia Electric Co. to lay its track across Front Street, in the city of New Westminster, B.C., and across the tracks of the C.P. Ry.

4968—June 2—Authorizing the G.T. Ry. to construct, maintain and operate a branch line or siding extending from a point on its line of railway in the city of Peterboro', Ont., to and into the premises of the George Matthews Co., Limited.

4969—June 23—Ordering the G.T. Ry. to install, maintain and operate gates, semaphores, and derails at crossing with the Toronto Street Railway on Front Street, Toronto.

4970—July 7—Granting leave to the Bolton Telephone Co. to erect, place, and maintain its aerial wires across the track of the G.T. Ry. at the public road between Concessions 5 and 7, township of Albion, county of Peel, Ont.

4971—July 7—Granting leave to the Peterboro' Light and Power Co. to lay gas pipe under the tracks of the G.T. Ry. where the same crosses Sherbrooke Street, Peterboro', Ont.

4972—July 7—Authorizing the Bell Telephone Co. to erect, place and maintain its aerial wires across the tracks of the C.N.O. Ry. one mile east of Parry Sound, Ont.

4973—June 24—Granting leave to the C.P. Ry. at its own expense to construct a highway in the line and of the width of Fourth Street, Tillsonburg, Ont., and across the G.T. Ry. and lands and track of the M.C.R.R.

4974—July 7—Authorizing the Bell Telephone Co. to erect, place and maintain its aerial wires across the tracks of the Q.M. and S. Ry. at public crossing five miles west of St. Hyacinthe.

4975 to 4979—July 7—Authorizing the Bell Telephone Co. to erect, place and maintain its aerial wires across the tracks of the C.N.O. Ry. at five different points in Ontario.

4980—July 7—Authorizing the Bell Telephone Co. to erect, place and maintain its aerial wires across the tracks of the M.C.R.R. at public crossing half mile north of Amherstburg Station, Ont.

4981—July 7—Authorizing the Bell Telephone Co. to erect, place and maintain its aerial wires across the tracks of the G.T. Ry. at Rosebank, Ont.

4982—July 7—Granting leave to the Bonaventure and Gaspé Telephone Co. to erect, place and maintain its wires and cables across the tracks of the Atlantic, Quebec and Western Railway at public crossing half mile west of Paspebiac Station, Que.

4983—July 7—Approving by-law of the Cumberland Railway and Coal Co., authorizing J. R. Cowans, general manager, to prepare and issue tariffs of tolls to be charged on all traffic carried by that company.

4984—July 7—Granting leave to Bert J. Carruthers, of the village of Downsview, Ont., to erect, place and maintain underground wires across the tracks of the G.T. Ry. 1¼ miles north of Downsview Station, Ont.

4985—July 8—Ordering the C.P. Ry. to stop its passenger trains at home semaphore at the St. Jerome diamond; also C.N. Ry. to construct platform from point at which the trains of C.P. Ry. stop to the diamond, and supply proper and safe conveniences for the transfer of passengers at the point in question.

4986—June 23—Dismissing application of the C.P. Ry. for an Order directing that a case be stated for the opinion of the Supreme Court re application of the town of Montreal West, David Skirving Leach, of the city of Montreal, and Dame Jessie R. Leach, of the same place, to continue to maintain a public highway crossing where the C.P. Ry. intersects Lot Official No. 138 of the official plan and book of reference of the parish of Montreal, Que.

4987—July 7—Recommending to the Governor-in-Council by-laws of the Quebec, Montreal and Southern Railway excepting that portion authorizing an extra charge of ten cents over and above the regular fare to any person failing to procure a ticket.

# 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.

## TENDERS.

### Ontario.

OTTAWA.—Tenders for the purchase of the Baie des Chaleurs Railway, from its junction at Metapedia with the Intercolonial Railway and extending for a distance of eighty miles to Caplin, in the County of Bonaventure, P.Q., and all its rolling stock equipment up to twelve o'clock noon, on the ninth day of September, 1908. L. A. Audette, Registrar Exchequer Court of Canada.

OTTAWA.—Tenders for the purchase of the Atlantic & Lake Superior Railway, from Caplin to a point at or near Paspebiac, in the County of Bonaventure, P.Q., where it joins the Atlantic, Quebec & Western Railway, being a total length of twenty miles of railway, and all its rolling stock equipment up to twelve o'clock noon, on the ninth day of September, 1908. L. A. Audette, Registrar Exchequer Court of Canada.

OTTAWA.—Tenders are invited by the National Transcontinental Commission for six more sections of that railway.

The sections are from a point near Weymontachene, in the Province of Quebec, 196.38 miles west of the north abutment of the Quebec bridge, westerly for a distance of about 107 miles.

From a point about 107 miles west of Weymontachene westerly to the end of the Grand Trunk Pacific Railway Company's contract, a distance of about 114.97 miles.

From the western end of Fauquier Brothers' Abitibi contract in the Province of Ontario, in a westerly direction of about 104 miles.

From a point about sixty miles west of the easterly boundary of District E in the Province of Ontario, easterly to the end of Fauquier Bros. contract, north of Lake Nepigon, a distance of above 100 miles.

From the western end of Fauquier Bros. contract north of Lake Nepigon, westerly to a point at or near Dog Lake, a distance of about 126 miles.

From Dog Lake, Ontario, to a point at or about mile 2.6 west of Peninsula Crossing, a distance of about 23.76 miles by the northerly route, and 24.13 miles by the southerly route, the selection of the route to be at the option of the commissioners.

The contracts are all to be completed by December 31st, 1910, except the last two, which are to be finished on September 1st, 1910, and September 1st, 1909, respectively. Tenders will be received up to August 20th.

### Manitoba.

MINIOTA.—Tenders for telephone lines will be received up to noon of the 30th day of July, 1908, for the building of such telephone lines and the installation of such telephones as will be required in the telephone system in the rural municipality of Miniota. Wm. Howard, Miniota.

WASKADA.—Tenders for telephone lines will be received up to noon of the 30th day of July, 1908, for the building of such telephone lines and the installation of such telephones as will be required in the telephone system in the rural municipality of Brenda. Rufus Marr, secretary-treasurer, Waskada.

WINNIPEG.—Tenders will be received until September 15th, 1908, for electric lighting plant and carbons. For fuller information apply F. A. Cambridge, city electrician, or M. Peterson, secretary Board of Control, Winnipeg. (Advertised in The Canadian Engineer.)

### Saskatchewan.

REGINA.—Tenders wanted to superintend building five to eight elevators in Saskatchewan. Work to commence soon.

Might let contract for labor only or elevator complete. Give reference and salary to superintend. E. E. Hall, 3208 Hennepin Avenue, Minneapolis, Minn.

REGINA.—Tenders for telephone supplies will be received until 12 o'clock noon, Thursday, July 30th, 1908. S. P. Porter, Deputy Commissioner, Department of Railways and Telephones. (Advertised in The Canadian Engineer.)

### British Columbia.

VANCOUVER.—Sealed proposals will be received by the chief engineer at his office, C.P.R. station, Vancouver, B.C., until noon of Friday, July 31st, 1908, for the grading and bridging required in construction of eleven miles of railway from Mile 89, near Nanoose Bay, to French Creek. C. E. Cartwright, chief engineer, Vancouver, B.C.

## LIGHT, HEAT, AND POWER.

### Quebec.

MONTREAL.—The Montreal Light, Heat and Power Company has sent a cheque to the city for the sum of \$16,852.25. This is the half-yearly percentage, at three per cent., of the company's receipts on the sale of gas. Three years ago the enactment came into force that the company should pay to the city three per cent. on its gas sales.

### Ontario.

BRANTFORD.—The City Council at a special meeting decided to expropriate the plant of the Western Counties Power Company, which is controlled by Cataract interests. For some weeks an endeavor has been made to get the company to make a definite offer to sell out its entire plant to the city and supply current until such time as the Hydro-Electric lines were built. The power concern wants \$37,000 for its equipment, but the matter will probably go before a board of arbitration.

BRANTFORD.—At a special meeting of the City Council Mayor Bowlby, by unanimous vote of the aldermen, was authorized to give notice of appropriation of the street-lighting system of the Western Counties Power Company, whose contract with the city for street lighting expires in September. Under the franchise the city has expropriation rights. The fact that notice has been given does not necessarily mean expropriation, as when it comes to carry out the proposals the city may find the financial obligations too heavy. The street-lighting rate is now \$55 per year per lamp for 250 lamps.

HAMILTON.—The council of the city of Hamilton have given the third reading to the by-law, making a contract with the Cataract Power Company for municipal power and street lighting purposes. The main features of the probable contracts are: For power for civic plants, \$16 a horse-power or 10 per cent. lower than the Hydro-Electric price for Toronto or any place west of Toronto; incandescent lighting rates to be 10 per cent. below the Hydro-Electric price for Toronto; monthly minimum, including meter rent, for users of electric light to be 75 cents instead of \$1; no protection for power users—the company binds itself for only five years not to raise the rates on users of ten horse-power or less; street lighting rate to be \$47.50 a lamp per annum.

MERRITTON.—Mr. K. L. Aitken, Traders Bank Building, Toronto, electrical expert, has been engaged by the Town Council to prepare a report on the purchase of power and other matters in connection with the enterprise.

OTTAWA.—According to a statement made in the House by Hon. G. P. Graham, there is no immediate likelihood of the Government granting a charter to the St. Lawrence Power Company to dam the St. Lawrence River, near Cornwall.

**WATERLOO.**—Although the Town Council adopted the report of the special committee on power, yet Mayor Fisher refuses to sign the Hydro-Electric power contract until consumers sign agreements of sufficient amount to ensure the venture being a paying one for the town. The committee of the council have obtained definite promises from consumers to take a total of 294 horse-power. According to the figures of this committee's report, the estimated cost to the town for 309 horse-power would be \$16,046, with a possible revenue of \$16,900.

#### Manitoba.

**WINNIPEG.**—The Colonial Engineering Company, of Montreal, has a splendid exhibit of the Hornsby-Stockport engine at the Winnipeg Exhibition just closed. Their exhibit attracted a great deal of attention and favorable comment among engineers who saw it in operation. The Westinghouse Company also had an attractive exhibit at the Winnipeg Fair, showing several large electric generators which supplied the light for the whole Exhibition over the entire ground. The plant was very complete, and much attention was shown to it.

#### Alberta.

**LETHBRIDGE.**—The council has adopted the recommendation of the special committee to enter into negotiations for the purchase of the Electric Company's plant. When bought the plant will be removed to the pumping house site, improved and enlarged and the whole system extended. The estimated cost is \$150,000.

### CONTRACTS AWARDED.

#### New Brunswick.

**ST. JOHN.**—The offer of Clark & Adams to place additional hard pine stringers and fenderings to the new wharf for which they are contractors at \$10,100 was accepted.

**ST. JOHN.**—The contract for installing electric light and wiring the post-office and customs house building in this city has been awarded to Marsh & Company, of Ottawa. Their tender is understood to have been somewhat less than \$1,500. W. H. McGinn has been appointed inspector of the job. The work is to be completed by the 18th of September.

#### Ontario.

**BURK'S FALLS.**—The Knight Bros. Company, Limited, have awarded the contract for two reinforced concrete dry kilns to the Concrete Engineering and Construction Company, Stair Building, Toronto.

**BURLINGTON.**—The Contract for concrete sidewalks was awarded to the Royal Art Paving Company, of Guelph, for 11 cents per square foot. The other tenders were A. Hannoford, Hamilton, 13 cents; and Thos. Barnes, Hamilton, 13 cents.

**NEWMARKET.**—Mr. Chas. Bradt, of St. Catharines, has a heavy contract to construct trestle work at Newmarket.

**SHELBURNE.**—The municipality of Shelburne have awarded the contract for cement sidewalks to the Royal Artificial Stone Paving Company, Guelph, Ont., the price being, sidewalks, 10 cents per square foot; crossings, 12½ cents. Extra filling, 40 cents per cubic yard. Castings, 4 cents per lb.

The other tenders were Walter G. Davies, Stratford; walks, 11¾ cents per square foot, crossings 13½ cents, extra filling 60 cents per cubic yard. Standard Paving Company, Simcoe; walks 14 cents, crossings 13½ cents, extra filling 50 cents. Orillia Star Paving Company, Orillia; walks 10¾ cents, crossings, 13½ cents, extra filling 55 cents. Grey and St. Croix, Orangeville; walks 12 cents per square foot. Silk and Reaburn, Shelburne; walks, 11 cents per square foot. Chas. Reburn, Shelburne; walks 12½ cents per square foot, castings 4 cents per lb.

**TORONTO.**—Tenders to the number of 27 for the construction of the electric power transmission line were opened Jul y16th, by the Hydro-Electric Power Commission. Some of the bulk tenders, enabled the commission to announce that a saving of at least 10 per cent. on the estimates would be effected under the anticipated contract.

#### Manitoba.

**WINNIPEG.**—The Dominion Bridge Company have been awarded the contract for the erection of all the structural steel on the Fort Garry depot, Winnipeg.

#### Saskatchewan.

**LUMSDEN.**—The contract for the abutments for the steel bridge being placed across the Qu'Appelle River at Lumsden by the Provincial Government, has been awarded to Sydney Bros., of Regina.

#### Alberta.

**CALGARY.**—In consequence of the rapid growth of the city it has been found necessary to triple the capacity of the municipal lighting plant. Allis-Chalmers-Bullock, Limited, of Montreal, have been given a contract for a 750 k.w. engine type alternator, 30 k.w. exciter generator, switchboard, and other auxiliary apparatus.

**CALGARY.**—The city council has accepted the tender of John Gunn & Son, of Winnipeg, for work on a gravity waterworks system, one of the greatest improvements ever attempted in the city. The tender was \$156,195, which includes work on the pine line and excavations complete from intake to reservoir, a distance of over 10½ miles. The lowest tender was that of F. F. Fry, of Moose Jaw, at \$153,360. The next highest was that of the Redwood Manufacturing Company, of San Francisco, at \$172,000. The cost estimated by Consulting Engineer Mitchell, was \$204,000.

### SEWERAGE AND WATERWORKS.

#### Ontario.

**GUELPH.**—Three carloads of pipes supplied by the American Sewer Pipe Company to the Waterworks Commission, for piping the water from the springs to the pumping house, are lying in the cars, untouched. It is understood, on very good authority, that Engineer Davis condemned the whole three car-loads as being unfit for the work.

**LONDON.**—A largely attended public meeting held this week passed a resolution unanimously favoring immediate submission of the by-law authorizing the installation of a high-pressure water system at the forks of the river, to cost \$200,000.

**RED DEER.**—A by-law was submitted to the ratepayers to extend the waterworks system south on Gaetz Avenue and west on Victoria Avenue at a cost of \$4,500, and was carried by a safe majority.

#### British Columbia.

**VANCOUVER.**—Superintendent Madison has reported to the Civic Water Committee that the watermains in certain parts of the city were beginning to show the effects of electrolysis, through the leaking of the current from the rails of the tramline. A similar condition of affairs had prevailed two years ago, but the British Columbia Electric Railway Company had bonded its rails to the mains at many points, which had abated the trouble. In the last two months, however, it had again appeared.

### RAILWAYS—STEAM AND ELECTRIC.

#### Nova Scotia.

**SYDNEY.**—The Dominion Government have placed \$400,000 in the estimate for the diversion of the Inter-colonial from Georges River to Sydney Mines by way of Little Bras d'Or, from Sydney Mines to North Sydney by the existing line, and from North Sydney to Leitch's Creek by way of Upper North Sydney. This is taken to mean that this work will be commenced this season.

**YARMOUTH.**—The Yarmouth Street Railway Co. has thirty men at work at Nine Partners' Falls, preparing for the construction of a large dam.

#### Ontario.

**BRANTFORD.**—Johnson Bros., contractors, of this city, have completed the grade of the Grand Trunk Pacific

from Winnipeg to Portage la Prairie, and begun work on a heavy contract "subbed" from the Grand Trunk Pacific Railway Company. This latter contract begins at Plaster Rock, on Tubuque River, in New Brunswick, and runs east twenty-eight miles. The country here is rough or rolling and heavily timbered.

**COBALT.**—Since the Government has taken over the extension of the northern part of the T. and N.O. from the firm of McRae, Chandler & McNeil, the work on the road has been most progressive. Driftwood City marks the end of the steel. "Cochrane," the future junction of the T. and N.O. and the Transcontinental, is forty-two miles north of the Chutes, and it is calculated that the road will be laid to there by the end of the season.

**COCHRANE.**—The J. H. Reynolds Construction Co. have taken a contract to do one hundred and fifty miles of grading in the Abitibi district from this junction point to the east. Good progress is being made with this stretch. The Fauquier Bros. have a contract for grading from the junction one hundred miles west. They expect to have ten miles of their grading done by the winter, and to have a tote road built along the right-of-way for bringing in supplies for the winter.

**PORT ARTHUR.**—Pease Bros. have a section on the C.N.R. betterment near Kabigon. A large number of teams are engaged on the work. This is a portion of the work that the C.N.R. have in view for the betterment of the service between Port Arthur and the West.

**PORT COLBORNE.**—The Minister of Railways has intimated that steps will be taken to connect the new grain elevator here with the present railway tracks by the building of a new spur. It is expected this spur will be built before the close of navigation.

**SAULT STE. MARIE.**—Following on the heels of the closing of the plant of the Algoma Steel Company comes the story that it will be taken over by the Canadian Pacific Railway in addition to the Algoma Central Railway. Draftsmen and others are busy compiling figures relative to the plant, and a party of Canadian Pacific people started on Friday last on a second trip over the Algoma Central.

#### Alberta.

**CALGARY.**—Mr. R. T. D. Aikins, of the Montreal Engineering Company, is here, and has had several interviews with reference to the city granting his company a twenty-five year franchise for a street railway. Should the city not agree to Mr. Aikins' terms, his company is willing to construct the line for the city.

**RED DEER.**—Work has been commenced by the Canadian Pacific Railway in completing the new steel bridge over the Red Deer River at this point. The concrete abutments were put down last season, and stood the spring freshets without any apparent damage whatever.

### MISCELLANEOUS.

#### Nova Scotia.

**YARMOUTH.**—The Nova Scotia Telephone Co. submitted a contract for new telephones in the town offices under the new system. The combined cost would be \$142 per phone, an increase of \$49 over the old rate.

#### Ontario.

**AYLMER.**—The town council purpose sinking another eight-inch well, as with the present flow they are not able to supply new industries.

**AMHERSTBURG.**—Dunbar & Sullivan's dynamite manufactory at Dynamite Island has been completed and work of making "powder" has commenced. Seventeen hundred pounds are made daily, and, as it requires no curing process, what is made one day is used the next. This amount is just what is required for Dunbar & Sullivan, and, though at present there is no mention of extending the plant, the inconvenience other Detroit River contractors are experiencing in getting dynamite may result in their going in on the deal in some way.

**PORT ARTHUR.**—Applications will be received by the undersigned up to Saturday, July 25th, 1908, for an experienced Road Commissioner for the city of Port Arthur. The Commissioner will be given full charge of all street work. Applicants will please state references, experience, and salary expected. J. McTeigue, clerk.

**STRATFORD.**—Mr. Mellis Ferguson, of Kingston, Ont., was appointed city engineer at a salary of \$1,200 per annum. He will devote his whole time to city work. There were some fifty applications.

**SIMCOE.**—The Ontario Government has decided to purchase a plot of ground in Norfolk County, to be used for the cultivation of nursery stock. This will be established on the south half of Lot 24, Concession 2, in the Township of Walsingham, in South Norfolk. The plot is 100 acres in area, and is situated on the borders of a section several thousand acres in extent, which is unsuited for agricultural purposes, but admirably adapted for the cultivation of trees. The forestry outfit for the new nursery has been moved thither from the Ontario Agricultural College at Guelph, and it is said Mr. E. J. Zavitz will take charge there, with three trained foresters from the college.

**TORONTO.**—There will be sold by public auction on July 30th, 1908, at 68 Wellington Street West, at 2 p.m., the assets of the estate of the Dominion Pressed Steel Co., of Port Elgin, consisting of contractors' supplies and machinery. E. R. C. Clarkson & Sons, assignees.

#### Manitoba.

**WINNIPEG.**—Shurly & Dietrich, of Galt, Ont., were also forward at the Exhibition in the Western metropolis with their usual splendid exhibit of saws and tools. Their exhibit took up the whole end of one of the buildings.

#### Saskatchewan.

**MOOSE JAW.**—Wm. Newman & Co., Winnipeg, engineers and reinforced concrete specialists, have commenced work on a reinforced concrete abutment over Moose Jaw Creek for the Saskatchewan Government, the work to be completed this season. The same company are at present working on nine reinforced concrete piers and one abutment over the Saskatchewan River at Battleford. There are five spans of 250 feet each and three spans of 200 feet each. This bridge crosses two channels, one 1,250 feet, to an island, and the other 600 feet to the other bank. This work is also being done for the Saskatchewan Government, and is to be finished this season.

### PERSONAL.

**MR. W. G. WINTERBURN, M.I.N.A.,** has opened an office in Victoria, B.C. as a consulting engineer and surveyor.

**MR. MELLIS FERGUSON,** of Kingston, Ont., has been appointed City Engineer of Stratford.

**MR. J. A. MACDOUGAL,** County Engineer for York, has been appointed temporarily engineer for the Township of York.

**MR. JAMES P. GORDON, B.A.Sc.,** has been transferred from Moosomin, Sask., to Portage la Prairie, Man., where he has charge of work for Mr. Willis Chipman.

**PROF. SAMUEL W. PERROTT, B.A.,** Dean of the Engineering School, University of New Brunswick, has resigned his position and accepted an appointment with a technical college in Liverpool, Eng.

**MR. P. S. GIBSON,** Dean of the Ontario Land Surveyors, and for over thirty-five years Township Engineer for York, has resigned. Mr. Gibson sent in his resignation on the ground that his private practice interfered with his duties as engineer.

**MR. J. C. GARDENER, B.A.Sc.,** has just returned to Canada after having spent two years on the location and construction of the Chilian Government Railway from Arica to La Paz, Chili. Mr. Gardener will open an office at Niagara Falls, Ont., as a Consulting Engineer, giving special attention to hydraulic and railroad work.

**MR. W. F. JENNISON, C.E.,** who has been in communication with the Federal Government regarding the gypsum

deposits of the Maritime Provinces, has been instructed to prepare a monograph on the subject, which he will proceed with at once. The gypsum deposits of the Provinces of Nova Scotia and New Brunswick are said to exceed anything known to the world in quantity and variety of quality, but are only developed in their primary stage.

### RAILROAD EARNINGS.

The following are the latest figures:—

Grand Trunk System	1908	1907
Mileage . . . . .	\$ 4,528	\$ 4,528
1st week July . . . . .	728,831	861,217
<b>Great Northern</b>		
June gross . . . . .	3,561,939	5,211,486
July 1—June 30 . . . . .	54,757,072	55,993,424
<b>Toronto Street Railway</b>		
2nd week July . . . . .	68,488	.....
<b>Canadian Northern</b>		
Mileage . . . . .	2,874	2,554
2nd week July . . . . .	177,500	216,600
July 1st to date . . . . .	329,800	424,000

Work rope right-handed or forward to prevent kinking. The working strain is about one-third the breaking strain. Manilla rope is 25 per cent. stronger than equal size of sisal. Slow rope speed, 50 to 100 feet per minute travel. Medium rope speed, 150 to 400 feet per minute travel. Rapid rope speed, 400 to 800 feet per minute travel.

### MARKET CONDITIONS.

Toronto, July 23rd, 1908.

Almost the only article in which we change quotations is cement. Lumber is weak and looking downward, iron and steel tend towards lower figures, though there is no quotable change. Lime, sand, and brick are well maintained in price, but there is reason for this. While cement is reduced because of its greater supply and the lack of orders for factories and large buildings in which it is most used, brick and lime are comparatively buoyant because dwellings, for which they are wanted, are being built in considerable numbers in Toronto.

Metals, other than iron and steel, for the most part maintain their prices. Pig-iron is weak and lower in Great Britain, quiet and dull in the United States, dull and lower in Canada. Old Country advices about lumber are that business is quiet and demand dull, with increasing stock of deals. Values here are weaker.

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

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

**Boiler Plates.**— $\frac{1}{2}$ -inch and heavier, \$2.40. Fair supply, prices steady. Boiler heads 25c. per 100 pounds advance on plate.

**Boiler Tubes.**—Demand limited. Lap-welded, steel,  $1\frac{1}{2}$ -inch, 10c.;  $1\frac{1}{2}$ -inch, 9c. per foot; 2-inch, \$8.50;  $2\frac{1}{2}$ -inch, \$10;  $2\frac{1}{2}$ -inch, \$10.60; 3-inch, \$12.10;  $3\frac{1}{2}$ -inch, \$15.30; 4-inch, \$19.45 per 100 feet.

**Building Paper.**—Plain, 32c. per roll; tarred, 40c. per roll. Orders are of a limited character.

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

**Cement.**—It was learned last week, just too late for the press, that certain dealers had lowered prices. Our quotations of 16th were therefore 10 to 20c. too high. The quotation now for 1,000 barrel lots and perhaps smaller parcels is \$1.60 exclusive of cotton bags. Small lots \$1.75 to \$1.80; if cotton bags are included price is \$2.

**Copper, Ingot.**—The market is quiet and irregular, with an upward look at the moment. We quote  $13\frac{1}{2}$  to 14c. here.

**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 cannot go lower, dealers say there is no profit at present rates, and not much doing.

**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 Brand.**—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  $10\frac{1}{2}$ , \$4.70 per 100 pounds. Demand very steady.

**Iron Pipe.**—Black,  $\frac{1}{2}$ -inch, \$2.03;  $\frac{3}{8}$ -inch, \$2.25;  $\frac{1}{2}$ -inch, \$2.63;  $\frac{3}{4}$ -inch, \$3.56; 1-inch, \$5.11;  $1\frac{1}{4}$ -inch, \$6.97;  $1\frac{1}{2}$ -inch, \$8.37; 2-inch, \$11.16;  $2\frac{1}{2}$ -inch, \$17.82; 3-inch, \$23.40;  $3\frac{1}{2}$ -inch, \$29.45; 4-inch, \$33.48;  $4\frac{1}{2}$ -inch, \$38.5-inch, \$43.50; 6-inch, \$56. Galvanized,  $\frac{1}{2}$ -inch, \$2.85;  $\frac{3}{8}$ -inch, \$3.08;  $\frac{1}{2}$ -inch, \$3.48;  $\frac{3}{4}$ -inch, \$4.71; 1-inch, \$6.76;  $1\frac{1}{4}$ -inch, \$9.22;  $1\frac{1}{2}$ -inch, \$11.07; 2-inch, \$14.76. These downward changes indicate the decline spoken of last week.

**Lead.**—Active and higher, say \$3.95 to \$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.**—Dressing pine 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, \$20. Southern pine and Norway pine continue easier. Hemlock moves more freely and quotes at \$18 to \$20, according to size. Much spruce comes from the East and is somewhat weak; the price asked for flooring is \$25 wholesale and \$28 retail. Shingles, B.C., are off again, having been offered at \$3 wholesale, per thousand. Laths are easier, No. 1 quote at \$3.75 on track, No. 2 at \$3.25.

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

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

**Pig Iron.**—Very little selling, and prices lower, Clarence quotes at \$19 for No. 3.

**Steel Beams and Channels.**—Quiet. We quote:—\$2.50 to \$2.75, according to size and quantity; if cut, \$2.75 to \$3; angles,  $1\frac{1}{4}$  by 3-16 and larger, \$2.55; tees, \$2.80 to \$3 per 100 pounds. Extra for smaller sizes of angles and tees.

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

**DOMINION BUREAU**  
**ROBERT W. HUNT & COMPANY, ENGINEERS**  
 Bureau of Inspection, Tests, and Consultation, Chemical and Cement Laboratories  
 OFFICE AND LABORATORIES  
 CANADIAN EXPRESS BUILDING, MCGILL STREET, MONTREAL  
 CHARLES WARNOCK, Manager

## THE LATTICE SYSTEM OF REINFORCED CONCRETE [CONSTRUCTION

“REQUIRES NO LUMBER FORMS”

The Rigid and Self-Supporting Reinforcement carries a thin Concrete Shell into which the Concrete Body is poured.

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## Septic Process Patent Sustained BY REGENT ACTION OF THE United States Supreme Court

After five years of litigation, unlicensed use of the Septic Process has been declared illegal.

Municipalities and others contemplating the installation of Sewage Disposal Plants are invited to avail themselves of our facilities for and experience in treating sewage.

We offer three propositions:

- 1.—To design Sewage Disposal Plants and take contracts for their construction.
- 2.—To furnish plans and specifications and license the use of plants.
- 3.—To license the construction and use of plants designed by other engineers.

Hereafter infringements will no longer be tolerated, and owners of unlicensed plants are invited to write us for the purpose of effecting settlements.

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 SAN FRANCISCO: Mr. W. C. Fee, Resident Engineer  
 528 Monadnock Building