

PAGES

MISSING

The Canadian Engineer

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ESTABLISHED 1893

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No. 28

The Canadian Engineer

ESTABLISHED 1893

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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.

C. S. OF C. E.

At the last annual meeting of the Canadian Society of Civil Engineers the most spirited discussion was in connection with the question of enlarging the usefulness of the Society. Several motions and suggestions were made, and after a lengthy debate it was left with the Executive, and early in May the Executive issued a circular letter to the members, asking for "views on the question of enlarging the usefulness of the Society."

What suggestions were made we are not told—it is just possible that there was not one reply—but after having "held several discussions on the subject (the Executive) is of the opinion that the success of the Society must depend mainly on the exertions of the individual members."

We had been hoping that some suggestion of greater value than this would result from these deliberations and consultations. This surely cannot be the final word on the subject by an Executive composed of men who are among the leaders in the engineering profession in Canada.

Men do not join an organization that they may profit by "his individual efforts," but they expect the united efforts of the membership will be to his advantage. Engineers have felt it was the proper thing to join the Canadian Society. The Society almost without question has accepted them. What advantages the member expected to receive or just what prestige the Society was to gain by the almost indiscriminate acceptance of new members it would be hard to define.

The objects of the Society as defined by constitution are (1) to facilitate the acquirement and interchange of professional knowledge among its members, and (2) to encourage original investigation; and with the aims of the Society so defined it may be the Executive felt they must devote their energies to securing papers descriptive of works or experiments.

We had hoped the Executive would suggest at least two additions to By-law o. 3 somewhat as follows: (3) to investigate a wrong, real or imaginary, which affects its membership; (4) to expose unprofessional conduct by persons accepting fees as engineers.

There is no doubt enlarging the objects of the Society would entail more work on the part of the Executive, perhaps it would require a reorganization and a new subdivision of work of the headquarter staff; it might involve an increase in fees. What matter. The interest that would then be taken in the Society, the advantages to be gained from membership, the assistance the Society could and would furnish to members in difficulty would be such as would make the membership more willing, than they are now, to pay their annual dues.

Engineering may never become a "closed" profession in Canada—we are not sure that a closed profession is desirable, but we do think greater effort should be put forth to encourage members to respect By-laws 56 to 66, to recognize a code of engineering ethics, and to prevent the promiscuous use of the letters C. E.

EDITORIAL NOTES.

Another interim report on the cost of the Georgian Bay Canal has been submitted by Mr. Arthur St.

Laurent. Ninety-nine million dollars is the estimated cost. The survey, which is now complete, has been a very thorough one, and represents four years of labor by large corps of technical officers. The cost of the survey has been over half a million dollars.

* * * *

In suggesting a thorough investigation that the diaphone signal contracts with the Government, Mr. Justice Cassels remarked: "Accounts showed that the Government had apparently paid \$150,000 for apparatus worth \$25,000. If more than a reasonable profit was being demanded, then the Government, under the patent law, had itself the privilege of manufacture."

* * * *

Next week we expect to commence the publication of a series of articles on Sewerage and Sewage Disposal. The articles are written by an engineer of wide experience with sewage disposal works, and who is still engaged with such problems. In Canada we are so busy with large railway and canal works that we sometimes forget the more important engineering work as water supply and sewage disposal. These articles will impress the necessity of proper disposal works and explain how they should be constructed. The series will be reprinted in book form.

PRECIPITATION FOR JUNE 1908.

The chief feature of the distribution of precipitation during June was the excessive amount over the Central and Northern portions of Alberta and Saskatchewan, where the fall was almost generally more than twice the average amount, while with local exceptions, the amount of rain recorded elsewhere in Canada was much less than normal.

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

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

Station.	Depth in inches.	Departure from the average of twenty years.
Calgary, Alta.	7.26	+ 4.19
Edmonton, Alta.	5.50	+ 2.41
Swift Current, Sask.	3.00	— 0.04
Winnipeg, Man.	3.10	— 0.42
Port Stanley, Ont.	2.10	— 0.73
Toronto, Ont.	2.97	+ 0.22
Parry Sound, Ont.	1.00	— 1.66
Ottawa, Ont.	1.20	— 1.49
Kingston, Ont.	3.50	+ 0.69
Montreal, Que.	1.00	— 2.69
Quebec, Que.	2.50	— 1.41
Chatham, N.B.	3.00	— 0.45
Halifax, N.S.	4.30	+ 0.49
Victoria, B.C.	0.10	— 0.97
Kamloops, B.C.	0.90	— 0.47

NEW ADVERTISEMENTS IN THIS ISSUE.

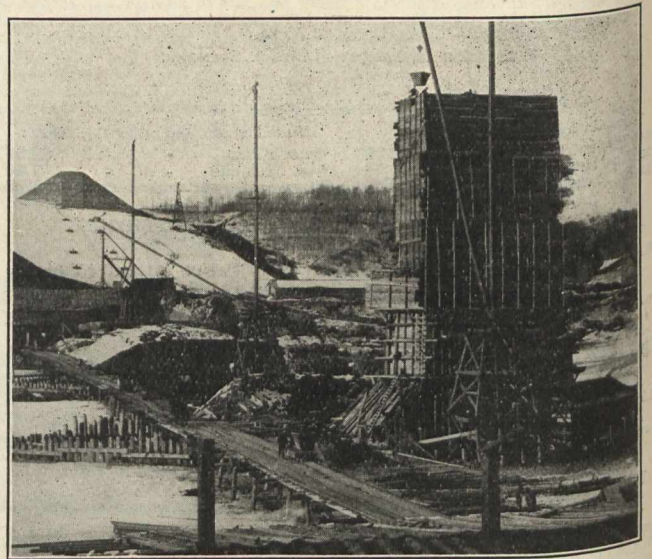
ROBERT W. HUNT & CO.,
Testing and Inspecting Bureau,
Montreal, Que.

HOLDEN & BROOKE,
Steam Specialties,
Manchester, Eng.

A. B. JARDINE COMPANY,
Machine Tools,
Hespeler, Ont.

Bridge at Clover Bar, Alberta.

The energy with which the railways in Western Canada are being extended has led to the construction of a number of new bridges and the replacement of old wooden structures by substantial bridges of various designs. The Canadian Pacific Railway are building a steel bridge 210 feet long on concrete piers near Saskatoon, which will probably be completed by July. The adjacent bridge of the Grand Trunk Pacific Company, with its approaches, is to be 1,501 feet long. The same Company are also constructing bridges across the Pembina and Battle Rivers, besides Clover Bar, near Edmonton. The latter is especially notable, since the four piers under erection are exceedingly massive. The bridge across the Battle will be almost half a mile long, and will, it is thought, be finished before next winter. In Winnipeg it is quite possible that three bridges will be commenced this summer to span the Red River. The National Transcontinental will build one, another may be



Pier No. 1 in course of erection, Clover Bar Bridge, Alta.

put up for the local traffic between Winnipeg and St. Boniface, and the Canadian Northern Railway also contemplate the construction of a bridge. Among the bridges recently completed are that of the Canadian Northern Company across the Saskatchewan, said to be the longest bridge in Western Canada, the Portage bridge of the Midland Railway, and one across the Rainy River at Pither's Point, which has a large opening span. One of the most interesting among the bridges in course of construction is that which is to carry the Canadian Pacific line across the Belly River at Lethbridge. It will be over a mile in length and more than 300 feet high. Another important bridge is that carrying the same railway across the French River. It includes the longest and heaviest single-track span yet built in Canada.

It is said that the river piers of the Grand Trunk Pacific Railway bridge at Clover Bar, near Edmonton, Alta., have the distinction of being the largest concrete piers in America, and possibly in the world. They are four in number, their dimensions being very similar to each other. The total height is 124 feet; the distance from footing to lower seat being 92 feet; from footing to upper seat, 98 feet; from footing course to bottom of foundation, 26 feet. The measurement at lower seat is 11 by 26 feet, and at foundation, 41 by 87 feet 6 inches, while the batter is half an inch to a foot. The total amount of concrete contained in each pier is 4,171 cubic yards. Besides the large river piers shown in the accompanying illustrations, these being four in number, there are two shore abutments and some thirty pedestals on the banks. The May-Sharp Construction Co. were the contractors, and about a year was required for the completion of the work. In order to get the steel work to

the site of the bridge a spur line is now being constructed to the Canadian Northern Railway. Meantime work on the bridge has been suspended, everything being in readiness for placing the steel into position. The bridge

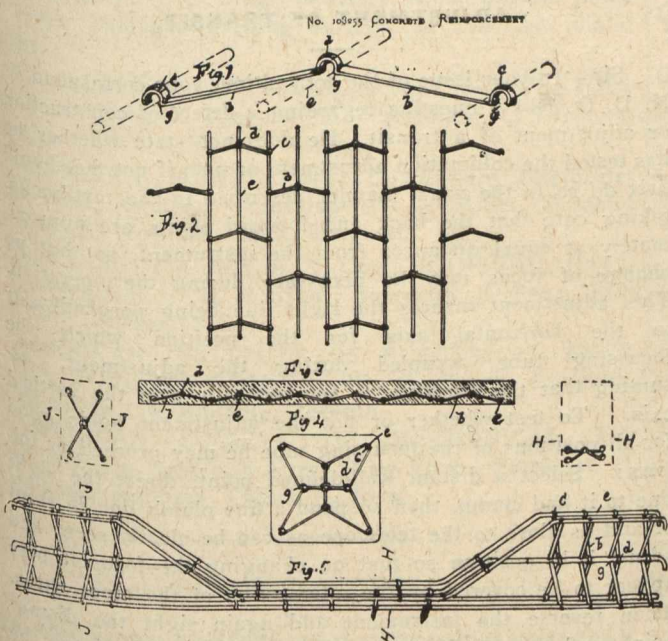


Piers Nos. 1 and 2, completed, Clover Bar Bridge, Alta.

will cross the Saskatchewan River, and will have a total length of about 1,560 feet. It is estimated that its cost will be in the vicinity of a quarter of a million dollars.

CLIP FOR CONCRETE REINFORCEMENT.

The accompanying cut illustrates a new clip to be used in reinforced concrete work, invented by Mr. F. H. Marsden, of Montreal. This clip is made out of mild steel half an inch wide, one-eighth thick and one foot long, and is so constructed as to be readily attached at both ends and in the centre to the rods used in concrete



reinforcement work. The cut shows, first, the manner in which the bars are attached to the rods; next, the bars attached to rods and ready for the concrete. Fig. 3 shows a cross section of the floor after the concrete is laid, while the remaining figures show the reinforcement in beams and columns. One of the claims made in favor of this reinforcement is that only plain,

round rods need be used, just as they come from the mills. No special manufacture is required, thus reducing the cost of the reinforcement. Each bar has three loops, by means of which the bar is snapped onto the rods, and binds them firmly together. This of itself adds greatly to the strength of the reinforcement, further strength being added by the regularity of the construction, each loop or bar necessarily retaining its position with relation to the other loops. The use of the bars also lends itself to the minimizing of carelessness on the part of the contractor or the men employed on the work, the loose rod system lacking any feature requiring regularity and symmetry in construction. Hence, it is claimed, the chances of failure are lessened and the use of less reinforcement is made possible. The use of the bars also does away with the necessity of wiring, which, in many instances, is a costly feature of concrete reinforcement work. It is also claimed that, inasmuch as the network of bars and rods is of such a regular nature, any carelessness or failure to place them in position properly can be detected at a glance, thus reducing greatly the cost of inspection and the chances of improper construction.

NOTES ON IRRIGATION.

Mr. L. G. Carpenter, I.E., speaking to delegates at the Irrigation Convention of Western Canada, concluded by saying:

1st. "Irrigation may be practiced either as a matter of necessity, as a matter of insurance, or as a matter of increase of crops. In any of these cases it is found that the area devoted to irrigation constantly increases and never lessens. Where the rainfall is relatively large the practice spreads more slowly. In the valley of the Po, where the rainfall is nearly 36 inches per annum, the land given to irrigation has more than doubled in the last thirty years. The average rainfall is as much as that of an extreme year in Alberta. While you have had for a few years back more than the usual rainfall, the average is not far from that of Colorado, namely, 14 inches per annum, and, hence, there will be many years in which irrigation in Alberta is an absolute necessity. Aside from this fact, the increase in the growth of crops, the certainty of greater yield and the freedom from failure is such that I would by all means select land that could be irrigated either for my own use or as an investment.

2nd. "Notwithstanding the various reports concerning dry farming in Colorado, it cannot be said to be a success. There are areas near the foothills, and near the irrigation ditches, that have given large yields of winter wheat, especially during the past few years when the rainfall has been excessive in Colorado, as it has been in Alberta. Experiences of old settlers, extending over nearly fifty years, have shown these variations in rainfall extend back to the earliest times. There have been some years when the grass on the plains has been good, and other years when there was not enough rainfall for it to start. On the plains proper the crop production by dry farming is small. If the dry farming is used as an adjunct to stock-raising little can be said against it, but when used to induce settlers to settle on the plains, with the idea that they can make a living on a quarter-section of land by dry farming, it is an injury to the plains and means ruin to the settler. The old settlers do not take any stock in dry farming, and where it is practiced it is because water cannot be obtained.

3rd. "By your question as to what extent irrigable lands have increased in value since this system of farming was first introduced, I presume you mean dry farming. The irrigable lands have been steadily increasing in value during the past twelve years, having more than doubled in value in that time. That is, they have increased from \$50 to \$100 or more. A great deal of this land cannot be had for less than \$150 to \$200 per acre. The lands above ditches bring from \$7 to \$10 to \$15 per acre. This has been effected by the general desire for land, and it is about the prices which these lands would bring for purely grazing purposes."

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.]

INSPECTING.

Sir,—Last week under the heading "Inspecting" you published an editorial which will aid in keeping before construction men the necessity of having capable inspectors on all work of any importance. This necessity cannot be too often or too forcibly brought before the readers of an Engineering paper. The duty of an inspector is to see that his employers, the people whose money is being spent on the enterprise, get the quality of work done which they are paying for. And the best way for him to earn his pay is to show the contractor at the start that good work must be done, and also show that he is willing and able to help the contractor get the work done well. Any inspector who thinks he can "lord it over" his job and who is under the impression that the contractor is to be looked upon as an enemy will soon find out that the contractor may turn out to be his enemy, and that the hostile feeling created by the inspector interfering too freely will not help the work either in quality or in the time limit required for its completion. Now, as you rightly say, an inspector should be a man of some experience and preferably not a youth who knows little or nothing about the carrying on of work. Such a youth by interfering with work he knows nothing about will prove a nuisance on the job, and by spoiling the tempers of the contractor and his men will spoil the quality of the work and will lose money for his employers instead of helping them. On the other hand, if he keeps his eyes open and uses common sense he may soon prove himself a valuable man both to his employers and the contractor. When the contractor is trying to scamp the job an able and experienced inspector is required. The inspector must recognize that the contractor is in the business to make money, and that most contractors are in the business to make money honestly. They have no desire to scamp the work, they want reasonably good work done, and the inspector ought to help him to have good work done rather than try to force him to do anything when he is doing his reasonable best.

Concrete work is the work which is at present in most need of good and careful inspection, considering the class of labour which is working on this important work to-day. The foremen obtainable are not always the highest class of men, and in many cases it is the work of the foreman rather than the desire of the contractor that gives bad results. Of course the foreman is supposed to look after the quality of the work as well as to look after the running of the gang. But hustling a gang of men, mostly unskilled, is no child's play, and in many cases the foreman's attention is entirely taken up and the time he can spare on the details which really determine the quality of the work is limited. Any inspector who shows the contractor that he knows his job can readily obtain permission to pick out the best men of the gang and teach them how he wants the work done. For instance, he can pick out a likely man to run the mixer, show him how he wants the stuff mixed, and stay with him until he can mix it evenly and well. He can pick out good men to do the tamping in the forms and for the other jobs that require careful attention, and by watching his own picked men closely can have work done well without clashing with the contractor's interests or delaying the work by interference. He will find that everything will soon run smoothly and easily for himself, and that he can have lots of spare time to examine gravel and stone and other materials used on the

job which require attention. On the other hand, he may go about his work in a different way, and when anything goes wrong he can go to the foreman and demand that he make it right without telling him how he is to do it. The foreman will soon get sore on the inspector, and continual scrapping will ensue. Now the inspector, to carry on his work well, ought of course to know how everything should be done, and unless he knows at least as much as the foreman he is very little use on the job. He ought to be able to see things the foreman does not see, and instruct the foreman as well as the man. In fact he ought to be the ablest man on the job, and should stay continually at his work. Especially these days he ought to be able to give all information needed about the work because it is generally useless to go to the so-called engineers on the job, many of whom hold their positions from the fact that they can look through an instrument and who really know very little if anything of the work. Many of them are most conscientious men and certainly know their work well, but unfortunately some of them do not. In fact it is very questionable whether a man should get his position as an engineer on construction work until he has had considerable experience either as an inspector or in an engineering position where he has come in contact with a number of inspectors. To put a man on as an engineer simply because he can look through a transit is undoubtedly folly, but yet it looks as if a great many engineers who have been made during the last great construction boom possess no other accomplishments in the engineering line. A firm in the construction business ought to pick out clever fellows for their inspectors, and by keeping them and teaching them they will soon have a number of men who can fill up their engineering staffs and do their work carefully and well. In fact engineers who have had an inspector's training ought to be better men than those who have only had a training in instrument work. Many of these last are unable to run a job right, and are unfit to be called engineers or to be placed over inspectors to whom they can give no instructions.

Yours truly,
Contractor.

ADJUSTMENT OF TRANSIT.

Sir,—In your issue of the 20th ultimo your correspondent N. D. O. asks a question regarding a defect of construction or adjustment of a transit. He does not state whether he has tested the collimation adjustment or not; if not, he should first do so in the usual manner described in the text-books, taking care that the back and forward points are approximately at equal distances from the instrument, so that no change of focus may be necessary during the operation. This adjustment insures the right line being perpendicular to the horizontal axis for the position which the focussing tube occupied during the adjustment, assuming that the telescope is set vertically over the vertical axis. To test whether or not the adjustment holds good for all positions of the focussing tube he may proceed as follows: Select a distant well-defined point, direct the sight line to it and clamp, then suspend a fine plumb line in front of and as close to the telescope as can be clearly seen, and adjust it in position so that on changing the focus it may appear to be covered by the intersection of the cross wires. Then reverse the instrument and again sight the distant point, and clamp. If now on again changing the focus the plumb line appears to be still covered by the cross wires he may be sure that the focusing tube runs truly and that the collimation adjustment is undisturbed by a change of focus.

The vertical adjustment of the focussing tube may be tested in a similar manner: Direct the sight line to a distant well-defined point and clamp firmly, then without changing the direction of the telescope read a levelling

rod or a finely divided scale attached to a rod which is held on a stake driven into the ground close to the instrument, then reverse the instrument, sight the distant point again, and again read the levelling rod. If the two readings agree the adjustment is good; if not then the diaphragm should be raised or lowered until the two readings, taken as above described, agree. If the transit is provided with a telescope level and it is proposed to use the instrument as a level should occasion require it, this adjustment should be made before adjusting the level by the "pig method."

If on making these adjustments the intersection of the cross wires is found to be a little out of the centre of the field of view of the telescope, it is not a matter of great consequence. Yours truly,

Louis B. Stuart.

Toronto, July 4th, 1908.

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, P.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, N. W. Ryerson, Niagara Falls; secretary, T. S. Young, Canadian Electrical News, Toronto.

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

NOVA SCOTIA SOCIETY OF ENGINEERS, HALIFAX.—President, J. H. Winfield; 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.

THE AMERICAN SOCIETY FOR TESTING MATERIALS.

The eleventh annual meeting of The American Society for Testing Materials was held at Atlantic City, June 23rd to 27th. There were nearly 300 members in attendance, and the membership of the Society is now 1,015.

The President, Dr. C. B. Dudley, in the annual address, took for his subject, "Some Features of the Present Steel Rail

question." Mr. W. H. Aiken read a paper on "Testing is Not Inspection."

Wednesday, a special rail session was held when the Committee on Standard Specifications for Iron and Steel reported. Three changes were suggested to be balloted upon by letter ballot.

(1) To modify paragraph 3 to the effect that one drop test shall be made on every blow of steel for rails weighing 85 to, and including, 100 pounds per yard.

(2) To modify paragraph 14 to the effect that No. 2 rails shall be accepted to at least 5 per cent. of the whole order.

(3) To add the following sentence to paragraph 14:—"Rails rejected under the drop test will not be accepted as No. 2 rails."

ORDERS OF THE RAILWAY COMMISSIONERS OF CANADA.

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

4921—June 2—Ordering the Ottawa Electric Railway Company to complete the work on the Somerset Street Bridge, Ottawa, Ont., within six months from the date of this Order, with proviso that the railway company shall be at liberty to apply to the Board for a further extension of time if good reasons exist therefor.

4922—June 25—Authorizing the Windsor & Tecumseh Electric Railway to cross two spurs of the G.T.R., in the Township of Sandwich East, County of Essex, Ont.

4923—June 25—Authorizing the G.T.P. Ry. and C.N.R. to operate their trains over the crossing at a point in Parish Lot No. 120, Portage la Prairie, Manitoba, without bringing said trains to a stop.

4924—June 25—Permitting the G.T.R. and C.P.R. to carry under special rate notices certain freight traffic for delivery to them by vessel owners at Kingston, Brockville and Prescott, for transportation to Montreal, such carriage being necessary owing to an interruption to navigation caused by a break in the Cornwall Canal.

4925—June 26—Authorizing the Erie Telephone Company, to cross the tracks of the G.T.R. at Talbot Road, west of Jarvis, Ont.

4926—June 26—Authorizing the G.T.R. to carry its wires across the tracks of the C.N.R. at West Fort William, Ontario.

4927—June 26—Authorizing Neil Watson, of Chatham, Ontario, to erect, place and maintain wires across the tracks of the Pere Marquette Railway one mile east of Blenheim, Ont.

4928—July 4, 1907—Authorizing the G.B. & S. Railway to cross with its tracks the lands and tracks of the Medonte Railway (owned and operated by the G.T.R.) at Coldwater.

4929-30-31—June 26—Authorizing the Erie Telephone Company to cross the tracks of the Grand Trunk at Garnet, Canfield, and Talbot Road, one mile west of Canfield Junction.

4932—June 26—Authorizing the Erie Telephone Company to cross the tracks of the M.C.R.R., one mile west of Canfield Junction, Ontario.

4933—June 26—Authorizing the Montreal Rolling Mills Company to erect, place and maintain an automatic railway and the structure supporting same, between the applicant company's works and the Lachine Canal, across the tracks of the G.T.R., Lachine Canal branch.

4934—June 24—Ordering that the expense of the maintenance and operation of the interlocking plant and signal and derailing system near St. Constant, P.Q., be borne and paid for as follows:—forty-two per cent. by the Q.M. & S. Ry. Company, and fifty-eight per cent. by the C.P.R.; the Q.M. & S. Ry. Company to pay all expenses in connection with the rearrangement of and additions to the said plant.

4935—June 25—Granting leave to the C.N.R. to construct branch line of railway from a point in Lot 29, Sec. 21, Town-

ship of McIrvine, to a point on the International Boundary near Pithers' Point, and from a proposed connection between the C.N.R. and Duluth, Rainy Lake, and Winnipeg R. R. over certain highways in the Township of McIrvine.

4936—June 23—Granting leave to the Sarnia Street Railway to cross with its track the track of the G.T.R. where the same crosses Christina Street in the Town of Sarnia, also to cross with its trolley wire the tracks of the G.T.R. at the same point.

4937—June 25—Authorizing the C.N.R. to construct, maintain and operate branch line railway or spur from a point in Lot 29, Sec. 21, Township McIrvine, to a point on the International Boundary, near Pithers' Point, and from a proposed connection between the C.N.R. and Duluth, Rainy Lake and Winnipeg R.R.

4938—June 23—Authorizing the C.P.R. to open for the carriage of passenger traffic that portion of its Pheasant Hills Branch from Saskatoon to Asquith, Sask., a distance of 23 miles.

4939—June 2—Authorizing the use of additional track constructed by the C.P.R. across the public road at Janetville, mileage 11.7 of its main line from Burketon to Bobcaygeon, between Lots 24, Con. 12, Township of Cartwright, and No. 1 Con. 15, Township of Manvers County, of Durham.

4940—June 26—Granting leave to the Erie Telephone Company to erect, place and maintain its wires across the track of the G.T.R. at Jarvis Station, Ontario.

4941—June 26—Granting leave to the Manitoba Government Telephones to erect, place and maintain telephone wires across the right of way and track of the C.P.R. 2½ miles west of Glenboro, Man.

4942—June 30—Approving revised location of the G.T.P. Ry. from the west line of Section 7, Township 53, Range 17, West, to the West Line of Section 31, Township 52, Range 20, West of the 5th meridian, Dist. of No. Alberta, Alberta; mileage, 10.238 to mileage 30.11.

4943—June 26—Authorizing the G.T.P. Ry. to construct a bridge over the Kaministiquia River, at West Fort William, Ont., on its Lake Superior branch.

4944—June 26—Granting leave to the C.N.R. to erect, place and maintain its telegraph wires across the track of the C.P.R. at Wanapitae, mileage 107.7 north from Parry Sound, Ont.

4945—June 30—Authorizing the Bell Telephone Company to erect, place and maintain its aerial wires across the tracks of the C.P.R. at public crossing about 3½ miles south of St. Felix de Valois, P.Q.

4945—June 30—Authorizing the Bell Telephone Company to erect, place and maintain its aerial wires across the tracks of the C.P.R. at public highway crossing ¾-mile north of G.N.R. Diamond near Joliette, P.Q.

4947—July 3rd—Authorizing the Cardoc-Ekfrid Telephone Company to carry its telephone wires across the tracks of the M.C.R. at two points, one 360 yards to the east and one 340 yards west of Melbourne Station, Ontario.

4948—July 3rd—Approving plan of C.P.R. bridge No. 9,17 on its Nipigon Section.

4949—July 3rd—Authorizing the New Brunswick Telephone Company, Limited, to carry its telephone wires across the tracks of the C.P.R. at St. Stephen, N.B.

4950—July 3rd—Authorizing the Bonaventure and Gaspe Telephone Company to carry its telephone wires across the tracks of the Atlantic & Lake Superior Railway at a point 2¾ miles west of New Carlisle, P.Q.

WATER POWERS OF CHURCHILL.

Mr. W. Thibaudeau, C.E., was sent to Fort Churchill, on Hudson Bay, to make an exploration survey from the Fort to the Pas. In his report he refers to the water-powers as follows:—

“Deer River, at its mouth, has a minimum flow of 70,000 cubic feet per minute. A dam eighteen feet high can be built at reasonable cost and would generate 1,600 horse-power.

Two dams of the same height could be built within ten miles of the river mouth, which is twenty-five miles from Churchill.

“North River, which is three hundred and fifty feet wide during December, had a flow of not less than 250,000 cubic feet per minute. This could be dammed for fifteen feet high and would generate about 5,000 horse-power.

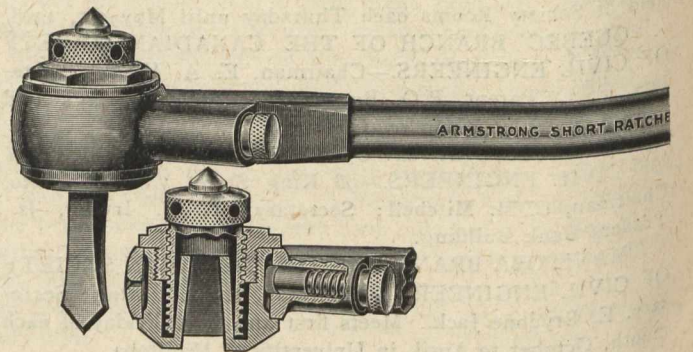
“On Churchill River, within sixty and eighty miles from Churchill, large water-power could be developed and transmitted to Churchill.

“Nelson River, Burntwood River, and Grass River, have a number of falls which could be utilized for the development of power for use in pulp mills or other industries.”

THE ARMSTRONG SHORT RATCHET DRILL.

There has long been a demand by boiler makers, machinists and general repair men for a ratchet drill with a very short head for use in places where the height of space is limited, but it was found difficult to make one without sacrificing some of the good features of the common ratchet drill, such as length of feed, strength and simplicity. The manufacturers of the Armstrong Short Ratchet Drill claim to have overcome these difficulties and offer the trade the ratchet drill herewith illustrated.

The sectional view shows it to be very simple and of strong construction, although a somewhat difficult machining proposition. The spindle and drill socket are made in one piece and the spindle is deeply recessed to receive the hollow feed screw. The telescoping of the feed screw over the drill



socket so as to secure a short, compact and strong ratchet drill without shortening the feed screw is the principle feature of the tool and enables the operator to drill holes in places where he could not possibly get at with the ordinary ratchet drill.

This drill can be reversed instantly. It is made of the very best material throughout, and is guaranteed to stand constant and rough usage for years. The handle and head is one piece, drop-forged of steel, the handle being turned true and polished. The pawl and centre are made of tool steel carefully tempered. All other parts are turned from bar steel and hardened.

Three style spindles are furnished. Style A Spindle taking drills with No. 1 taper square shank, Style E Spindle taking drills with No. 2 taper square shank, Style R Spindle taking drills with No. 3 Morse taper shank. Steel sleeves and sockets will be furnished by the manufacturers to fit Style R. Spindle to take smaller size Morse taper shank drills or taper square drills. Spindles are interchangeable.

ACCIDENTS DURING MAY, 1908.

Trade or Industry.	Killed.	Injured.	Total.
Lumbering	28	9	37
Building trades	1	16	17
Railway service	21	31	52
Navigation	9	8	17
General transport	6	6	12
Civic employees	1	3	4
Unskilled labour	5	8	13

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.

New Brunswick.

FREDERICTON.—Tenders for Fredericton bridge superstructure will be received at the Department of Public Works, Fredericton, until Monday, 20th day of July, 1908, for constructing three metal superstructure spans of the Fredericton highway bridge, between the city and the south end of the already revised work. John Morrissy, Chief Commissioner. Department of Public Works, Fredericton, N.B.

Quebec.

BALCARRES.—Tenders marked for Indian Agency Buildings, will be received at the office of the undersigned, File Hills Indian Agency, Balcarres P.O., up to Saturday, July 18th, 1908, for the erection of two frame dwelling houses to be built on Pasqua Reserve. W. M. Graham, Inspector of Indian Agencies, Balcarres P.O.

Ontario.

BRANTFORD.—Tenders will be received up to Saturday the 11th of July for the construction of a Cement Concrete Bridge and Dam at the Victoria Mills, on the County line between Townsend and Tuscarora Townships. W. H. Fairchild, C.E., 54 Market Street, Brantford. E. Boughner, County Clerk, Simcoe.

BRAMPTON.—Tenders will be received by the undersigned until noon Monday, July 20, 1908, for the construction of sewage liquefying tanks at the town of Brampton. Plans may be seen at the office of Willis Chipman, engineer, Toronto, or upon application to Banks Rushford, town engineer, Brampton. T. J. Blain, clerk of the municipality of Brampton.

KINGSTON.—Tenders for construction of Kingston Rifle Range, and addressed to the Secretary of the Militia Council, Headquarters, Ottawa, will be received until noon the 15th July, 1908, for the construction of a rifle range at Kingston, Ont. E. F. Jarvis, secretary.

OTTAWA.—Tenders for dredging will be received until Friday, July 17, 1908, at 4.30 p.m., for dredging required at the following places in the Province of Ontario:—Bowmanville, Green Shoals, Jackfish Bay, Leith, Newcastle, Rainy River, Spanish River. By order, Secretary, Department of Public Works.

PORT ARTHUR.—Tenders will be received by the undersigned up to 12 o'clock noon Wednesday, July 15th, for clearing grubbing and removing of all roots, ploughing, dragging, levelling, etc., of the West Algoma Agricultural Association Fair Grounds. J. T. Horne, Fort William, president West Algoma Agricultural Association.

Manitoba.

WINNIPEG.—Tenders for water meters will be received at the office of the undersigned up to 12 o'clock noon on Friday, July 17, 1908, for supply of the following quantities and sizes of water meters, viz., 6,350 ½-inch meters; 25 1-inch meters; 6 2-inch meters. M. Peterson, secretary.

Saskatchewan.

MOOSE JAW.—Sealed tenders will be received by the undersigned, up to, and including, Wednesday, 15th July, 1908, for the erection of the new collegiate building in the city of Moose Jaw. H. Jagger, secretary-treasurer Moose Jaw Board, Moose Jaw, Sask.

PRINCE ALBERT.—Tenders will be received up to the 31st day of July, for supplying a four-wheeled, double cylinder, chemical engine, and one haul chemical engine. C. O. Davidson, Sec.-Treas.

REGINA.—Tenders for 47,500 telephone poles addressed to the Deputy Commissioner of Railways and Telephones, Regina, endorsed "Tender for Telephone Poles," will be received up to 12 o'clock noon, July 18, 1908. S. P. Porter, Deputy Commissioner of Railways and Telephones.

REGINA.—Tenders will be received up to 4.30 p.m. on Monday, July 13th, 1908 for the construction of two reinforced concrete abutments for a highway bridge over the Qu'Appella River at the town of Lumsden, Saskatchewan. F. J. Robinson, Deputy Commissioner, Department of Public Works, Regina.

British Columbia.

VICTORIA.—Tenders will be received up to Monday, the 20th July, 1908, for the supplying and erecting of one horizontal cross-compound pumping engine, one steel tank and tower, one concrete and steel water tower. The lowest or any tender not necessarily accepted. W. H. Northcott, purchasing agent, city hall.

VICTORIA.—Tenders will be received up to Monday, the 20th July, 1908, for the supplying and erecting of 1 Horizontal Cross-Compound Pumping Engine; 1 Steel Tank and Tower; 1 Concrete and Steel Water Tower. The lowest or any tender not necessarily accepted. W. H. Northcott, purchasing agent, City Hall.

CONTRACTS AWARDED.

Nova Scotia.

MONCTON.—The contract for the substructure for the proposed new spans of the highway bridge here, has been awarded to C. B. Simmons, of Fredericton, at \$34,000.

Quebec.

MONTREAL.—The Canadian Light & Power Co., which represents Mr. Roberts and associates, have been awarded light and power contract by Montreal. The new by-law requires the company to supply 5,000 horse-power of electricity by 1910, and 20,000 by 1915, under the following rates: For incandescent lamps, not to exceed 10 cents per kilowatt hour, with a cash discount of 5 per cent. for payment in ten days on contracts for a term of one year or over and 10 per cent. for payment within 10 days on contracts for five years. For electrical energy for heating and industrial purposes, as follows:—

Amount of power delivered in horse power.	Annual cost of 10-horse-power per horse-power 7 a.m. to 6 p.m.	Annual cost of 24 hours' power per horse-power.	Annual cost of restricted power per horse-power.	Annual cost of power with stand by charge and meter rate.	
				Per H.P.	Per K.H.
0-2	\$ 35.00	\$ 40.00	\$ 22.50	12.50	1.8
2-5	32.50	35.00	30.00	12.50	1.35
5-10	30.00	32.50	27.00	12.50	1.125
10 to 100	27.00	30.00	22.50	10.00	1c.
100 to 500	25.00	27.00	20.00	9.00	1c.
Large blocks of power.	25.00	18.00	8.00	1c.

Ontario.

BERLIN.—The County Council awarded the contract to Goold, Shapley, & Muir Company, of Brantford, to erect a 100 foot flagpole and remove old pole, etc. Contract price, \$150.

BRAMPTON.—Three tenders were submitted for the construction of concrete sidewalks, namely, the Reeve Concrete Paving Company, A. Gardner & Co., and McKnight & Co., and the latter quoted at 11½c. per foot being accepted. This is a reduction of 1 cent per foot on the amount paid last year.

LISTOWEL.—James Peat & Sons, of Petrolea, have been awarded the contract for the drilling of an artesian

well required by the town in connection with their water-works extension.

TORONTO.—The Board of Control have decided to recommend to Council that the hose contract be given as follows: 2,500 feet to Gutta Percha Company, and 500 feet each to the Canadian Rubber Company, Montreal, the Dunlop and the Durham Rubber Companies, in order that the fire department might learn by experience the value of these brands of hose.

Manitoba.

WINNIPEG.—The new tenders for the supply of lumber to the City of Winnipeg have been opened. T. D. Robinson & Sons tendered at \$21.45; D. E. Sprague at \$22.30. The old price was \$28.45. There are several prices in each tender, as the city requires different dimensions of lumber and prices are submitted on each dimension. The city, however, uses far more of the dimension on which the Robinson price is \$21.45, than of any other. Hence that figure is used to compare with the corresponding price in the present Sprague contract and the saving to the people by letting a new contract is thus approximately determined.

Saskatchewan.

REGINA.—The contract for the construction of the new Parliament Buildings for the Province in this city, has been awarded to Peter Lyall & Sons, of Montreal. The contract price is \$1,424,150, which is \$94,110 less than the architect's estimate for the work. It is intended that work shall be commenced early in July. On the recommendation of Professor Nobbs, chairman of the commission which passed upon the plans for the buildings, and that of Mr. Maxwell, of Montreal, the architect who will supervise the work, the construction will be of brick and stone. The stone will be brought from Tyndall, Man., and Menominee red brick will be used. Six tenders were submitted for the work.

RAILWAYS—STEAM AND ELECTRIC.

Quebec.

RICHMOND.—It is rumoured that within a few weeks construction work will be commenced on the O. M. Railway to complete the line to North Troy, connecting with the C.P.R. at that point. It will take some months to finish the work.

Manitoba.

BRANDON.—The Canadian Northern Railway has large gangs of men at work ballasting the new line from Brandon to Regina, and it is expected it will be thrown open for freight and passenger traffic in the course of a few weeks. It is expected that on the completion of the road a through passenger service will be put on between Winnipeg and Prince Albert.

Saskatchewan.

SASKATOON.—The G.T.P. track laying force working west of here has laid down a record stretch of thirty miles of steel, or an average of five miles per day. When it is remembered that even three miles is splendid work, the above record stands out as exceptional.

British Columbia.

PRINCE RUPERT.—Three more sub-contracts have been let by J. B. L. McDonald, superintendent of construction for Foley, Welch & Stewart, and several other contractors who have looked the ground over will no doubt be allotted work shortly. John Albi, of Spokane, has taken four miles, 27 to 31 located just east of Aberdeen; Antonio Filigno, of Spokane, has mile 38, and D. A. Rankin, of Spokane, took two miles at Hole-in-the-Wall, about fifty miles east of Prince Rupert and where the work is extremely heavy.

PRINCE RUPERT.—Continued fine weather during the week has greatly facilitated progress in every branch of construction work on the Grand Trunk Pacific, and, while the contracts have not all been signed, it may be stated that Foley, Welch & Stewart have sublet all of their roomile contract, with the exception of about fifteen miles north of Graveyard Point. The Prince Rupert Construction Co. have taken a contract of four miles of road on the west

side of Kaien Island; Dan Stewart has two miles above Telegraph Point; and Fred Peterson has three miles north of Graveyard Point, seventy miles east of Prince Rupert. In addition to grading contracts, McDonald & Perry have been given six miles of right-of-way clearing, commencing at a station eight miles east; and Dudley Bros. four miles from Aberdeen. A. Ross also has a clearing contract above Aberdeen.

SEWERAGE AND WATERWORKS.

Manitoba.

WINNIPEG.—The City Council have struck out of the estimate the \$35,000 required to operate the softening plant in connection with the water supply. This will mean the shutting down of the plant.

RECENT FIRES.

TORONTO.—With the sudden roar of an explosion fire burst out on July 8th in the basement of a four-storey brick building at 18-20 Sheppard Street, owned by Jones Brothers & Company, makers of show cases, and occupied by Smith & D'Entremont, comb manufacturers, in the basement and first floor; P. T. Corcoran, builders' contractor, in the second floor, and Jones Bros. & Co., on the top flat. Loss about \$68,000.

MISCELLANEOUS.

Quebec.

MONTREAL.—The management of the Merchants Cotton Company are taking advantage of the idleness of their mill, at St. Henri, to make a number of improvements in their machinery and equipment. The boiler plant is shut down and Jones Underfeed mechanical stokers are being installed under five return tubular boilers of 125 horse-power each. The installation should be completed in about two weeks, and is taking place under a guaranteed saving of 20 per cent. in the fuel bills.

Ontario.

COBOURG.—The Cobourg Town Council are preparing to erect a number of concrete bridges to replace wooden bridges within the town. The price of timber is so high that it is felt that this will be most economical in the long run.

KENORA.—The season's cut of the Rat Portage Lumber Co. is estimated at sixty million feet, or about twenty per cent. under last year.

KINGSTON.—The Council has decided to engage Mr. William Newlands, architect, to prepare plans and specifications for a new shed, and to call for tenders for its construction. The shed will be 65 x 56 feet, of concrete, and without a roof.

PORT ARTHUR.—This town hopes in the future to have an ore dock for shipping iron ore. If a deal now pending for property goes through, the docks will in all probability be built.

TORONTO.—The civic officials inspected the new city dredge. No. 3 was built by Polson's, the contract price being \$72,500. The dredge is 130 feet long and, according to Engineer Fellowes' estimate, can dredge 1,000 cubic feet of sand in 12 hours, drawing three parts water to one of sand. The dredge will soon be sent on its special mission, the diversion of the mouth of the Don.

Manitoba.

WINNIPEG.—The total expenditure for the department for the fiscal year 1908-09 is estimated at \$83,650. The figures to show the exact expenditure for the fiscal year ending April 30th last are not yet complete, but it is thought that the amount expended was about \$59,193.82. The estimates include \$11,000 for the construction and maintenance of a new bridge over Omand Creek, on Portage Avenue. If street railway tracks are to be carried on the structure it

will cost \$5,000 more than the above amount. New floors will be placed on the Salter Street overhead bridge and on Maryland Bridge.

Alberta.

MACLEOD.—The C.P.R. bridge at West Macleod has been swept away. The St. Mary's bridge between here and Lethbridge is a total wreck. The C.P.R. pumping station at MacLeod was swept into the river recently.

British Columbia.

NEW WESTMINSTER.—The million dollar bridge erected here in 1906 across the Fraser River is about to be repainted for the first time. The work will entail an expenditure of \$3,000.

NEW WESTMINSTER.—The by-law authorizing the building of a new \$61,000 bridge across the north arm of the Fraser has been carried.

NEW WESTMINSTER.—Within a year this town will have a rival gas company, and gas at about half the rates charged by the present company. The by-law embodying the agreement between the city and the Royal City Gas Improvement Company, which proposes entering the local field, will likely be finally passed.

PERSONAL.

MR. GEORGE M. KENT is resident engineer for C.P.R. on construction at Noming, Que.

MR. N. A. BURWASH, B.A.Sc., D.L.L., is now practising surveying and engineering at White Horse, Y.T.

MR. C. H. MITCHELL, C.E., of Toronto, left for a three weeks trip to Western Canada and British Columbia.

MR. C. H. RUST, City Engineer, of Toronto, has returned to duty, after about two months' away in illness and convalescence.

MR. W. J. CAMP, electrical engineer of the C.P.R. telegraphs, has been elected president of the Association of Telegraph Superintendents of the United States and Canada.

MR. F. BUTLER, representing Laurie Engine and Machine Company, of Montreal, has returned East after a successful business trip through Northern and Western Ontario.

MR. A. L. READING, manager of The Standard Inspection Bureau, Toronto, has returned from the Atlantic City, where he took part in the programme of the American Society for testing materials.

MR. EDWARD B. MERRILL, B.A., B.A.Sc., has returned from Winnipeg and will now open an office as consulting engineer in Toronto. In Winnipeg Mr. Merrill acted as chief assistant engineer on the Winnipeg Hydro-Electric Development Work, but owing to Mayor Ashdown's stand the work is now practically at a standstill.

MR. A. J. LAVOIE, M.E., who during the past five years has been located at Toronto, has removed to Montreal where, at 76 Gabriel Street, he has entered into business on his own account. He is making a specialty of consultation work, such as the location and construction of factories, the installation of machinery and the complete organization of factory plants with a view to operation along the most productive and economical lines.

OBITUARY.

MR. FRED GELINAS, aged 39, Secretary of the Department of Public Works, died of heart failure on July 2nd. He was a native of Ottawa, but for many years was engaged in newspaper work in Montreal. He went to Ottawa in 1896 as private secretary to the then Minister of Public Works, Hon. J. I. Tarte.

Probably the last square raft ever to come over the Ottawa River arrived July 4th. It was composed of 150 cribs and was on its way to Quebec. It was manned by eighty men, now a sight novel in Ottawa, in what was formerly such a great lumbering country.

THE TECHNICAL SCHOOL AND THE ENGINEER.

At the closing exercises of the Clarkson School of Technology, Mr. William R. Hill, Deputy-State Engineer, New York, in an address on "The Technical School and the Engineer" said in part:—

The theme of this address is the value of technical education shown by the attainments of the engineers who have preceded you.

The hydraulic engineer was undoubtedly one of the primitive engineers, as water is one of the first necessities of our existence. We find on looking back into history that he left other great sources of power in nature lying almost dormant or he but crudely applied them until after the founding of the technical school, which event is followed by the wonderful attainments of the engineer.

Prior to the nineteenth century there were no technical schools, except a few established to train engineers for Government service. Apart from this, the military, engineering did not exist as a distinct profession until within the last hundred years, and it is only within a comparatively few years that engineering has risen to the dignity of a learned profession. Yet at the present time the engineer is regarded as one of the world's great workers, whose advice and supervision are necessary to almost all large or important enterprises.

The value of technical education can be clearly shown by a comparison of the achievements of the engineer of to-day, not only with the primitive but even with the early modern works.

The value of technical education is again shown by the civil and mechanical engineer in developing and equipping our wonderful system of railroads, whose birthday is September the 25th, for on that date, in 1825, the first steam railroad in the world was put in operation.

There is perhaps no better illustration of the worth of technical education to mankind than is shown by the discoveries of the electrical engineer, since the founding of the technical school. Prior to that period the great natural sources of power to produce electrical energy had escaped detection in all the ages of the world's existence.

Thus far we have considered only the results of technical education in their direct practical effects, that is, in relation to the construction of the works of civilization. There is, however, a broader view of these educational forces; it is their relation to social progress. If we look still deeper we shall see that with this advanced standard of living there has come an advanced standard of ideas and a spirit of liberal education. All this can be traced to technical education which has produced men capable of controlling and guiding some of the lesser forces of nature, for the benefit of humanity. Into whatever department we may look we shall find at the foundation technical knowledge and skill, without which we could not produce these results.

The men of yesterday laid the foundation; we of to-day are building upon their work, and our work in its turn must serve the purposes of those who follow us. It is well, therefore, for each of us to bear in mind as we go on from day to day, that Providence has ordained us to labor, not only for the material profit which may accrue to us from our toil, but to bear a part conscious or unconscious, in that mighty evolution which, in days to come, will bring at last universal peace and a living realization of the brotherhood of man.

PATENTS.

Below will be found a list of patents recently granted to Canadian inventors in Canada and United States, which is furnished by Messrs. Fetherstonhaugh & Company, barristers, solicitors, etc., Montreal, Ottawa, Winnipeg, and Vancouver.

Canadian Patents.—A. Berry, Ottawa, Ont., Pulverizer; H. H. Pitts, Ottawa, Ont., Dust Suction Apparatus, C. N. Choate, Woodstock, Ont., Cement Block Machines.

J. M. Neil, Toronto, Ont., processes for separating metals contained in copper-nickel matter; A. O. Tate, Toronto, Ont., storage battery plates; H. H. Williams, East Broughton Station, Que., asbestos plants; J. E. Purser, Windsor, Ont., steam trap; B. Hosking, Guelph, Ont., irons.

United States Patents.—F. P. Freeman, Dominion Yukon, Driving Head. F. Hendrickson, Three Forks, British Columbia, Gun Sight.

J. Bovey, London, Ont., gas-producer; J. A. Lamont, Montreal, Que., locking device; T. J. MacLaughlin, Toronto, Ont., putty-applying tool; F. Skelton, Hamilton, Ont., handle for shovels. M. E. Sutherland, Westville, N.S.C.R., Welch, Rossland, B.C., governor attachment.

The Province of Ontario has six hundred and fifty miles of electric railway. Of this mileage only fifty-seven miles is operated by electricity generated by water-power in the operating companies out power-houses. Eighty-eight miles is operated by "rented" electricity.

In estimating the quantity of standing timber north of Etoimami and west of the Hudson Bay extension of the Canadian Northern Railway to The Pas on Saskatchewan River, for the purpose of the Dominion Government, Mr. P. G. Stewart places the amount as follows:—

Spruce	217,700,000 ft. B. M.
Poplar	301,800,000 "
Tamarack	24,775,000 "
Balsam	16,000,000 "
Jackpine	20,000,000 "
Birch	7,000,000 "
	587,275,000 "

MARKET CONDITIONS.

Toronto, July 9th, 1908.

If one looks for unusual activity and buoyancy in the building trade, he does not find it. He does find, however, a fairly steady consumptive demand. This is true in lumber, bricks, cement and structural metals. July is not usually an active month in the hardware trade, but our hardware dealers report a fairly active business. And the lumber dealers say they find a better demand thus far than in June; of course their volume will expand as the other lines do, later on.

In the United States, conditions are peculiar. A wholesale man, just from Chicago, tells the Monetary Times that money is plentiful and easy there, costing from 4 1/2 to 5 per cent.; that business is steady, though one-fourth to one-third less in volume than in 1907; that paper is promptly met; but that nobody wants to "venture" a dollar until after the presidential business is over, and the full grain crop assured. In New York, trade conditions show a steady but very slow improvement, but the volume of business is, in different trades, reduced compared with 1907. Good crop prospects and unusually small supplies in the hands of merchants lead to the belief that a higher level of prices in metals may be expected. Pig-iron is meantime dull, and bar shows a waiting market. Structural steel begins to show some limited orders. Copper, while stronger in Boston, is steady and dull in New York; tin slightly firmer in London; lead dull and heavy; antimony, weak.

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.**—3/4-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 1/4-inch, 10c.; 1 1/2-inch, 9c. per foot; 2-inch, \$8.50; 2 1/4-inch, \$10; 2 1/2-inch, \$10.60; 3-inch, \$12.10; 3 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.**—Price of Canadian makes to the dealer in 1,000 barrel lots and up is \$1.80, in cotton bags, on car, Toronto. In lesser quantities, \$1.90 per barrel.
- Copper, Ingot.**—Quotations here are as before; say 13 3/4c. for large purchases, and 14 1/4c. 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 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 30 1/4, \$4.70 per 100 pounds. Demand very active.

Iron Pipe.—Black, 1/4-inch, \$2.03; 3/8-inch, \$2.25; 1/2-inch, \$2.63; 3/4-inch, \$3.56; 1-inch, \$5.11; 1 1/4-inch, \$6.97; 1 1/2-inch, \$8.37; 2-inch, \$11.16; 2 1/2-inch, \$17.82; 3-inch, \$23.40; 3 1/2-inch, \$29.45; 4-inch, \$33.48; 4 1/2-inch, \$38, 5-inch, \$43.50; 6-inch, \$56. Galvanized, 1/4-inch, \$2.85; 3/8-inch, \$3.08; 1/2-inch, \$3.48; 3/4-inch, \$4.71; 1-inch, \$6.76; 1 1/4-inch, \$9.22; 1 1/2-inch, \$11.07; 2-inch, \$14.76. These downward changes indicate the decline spoken of last week.

Lead.—More active here at about previous prices, feeling is, however, a little firmer.

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.—Last week's prices are confirmed, as a rule; superior pine suffers less in price however than other lines. Dressing, we quote, \$32.00 to \$35.00 per thousand for usual lengths (12, 14, and 16 ft.), and stock sizes of boards, and \$38 to \$40 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.—Business here is quiet and of small volume, price same. Summerlee quotes:—No. 1, \$25.50; No. 3, in car load lots, \$22 to \$23 here; Glengarnock, \$25.50; Clarence, No. 3, \$19.25 to \$19.50; No. 1 Cleveland, \$20 to \$22.

Steel Beams and Channels.—The cut in American prices does not affect this market, at least not so far. We quote:—\$2.50 to \$2.75, according to size and quantity; if cut, \$2.75 to \$3; angles, 1 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.

Sheet Steel.—Prices are: 10-gauge, \$2.65; 12-gauge, \$2.70; American Bessemer, 14-gauge, \$2.45; 17, 18, and 20-gauge, \$2.60; 22 and 24-gauge, \$2.65; 26-gauge, \$2.80; 28-gauge, \$3.

Tool Steel.—Jessop's special pink label, 10 1/2c.

Tar.—There is little activity and no large orders; \$3.50 per barrel the ruling price.

Tank Plate.—3-16-inch, \$2.50.

Tin.—Has been fluctuating abroad, Toronto price 31c.

Zinc.—Has been weakening, \$4.85 to \$5 is about the quotation here.

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Montreal, July 8th, 1908.

The markets of the United States have been exceptionally dull during the past week, as is customary at this season of the year. General sentiment is hopeful and improvement is predicted for about early September, although some judges do not think there will be any material change until towards the end of the year. Reports from all points indicate a limited tonnage moving. There does not seem to be any change in the price situation, makers holding to figures recently established. Generally speaking, the market is in a very dull state.

Latest mail advices from Great Britain show little or no change in the warrant market, the tendency being very slightly upward. This firmness is due partly to the fact that stocks in store continue to decrease and now stand at about 50,000 tons, only, as against 260,000 this time last year. A Glasgow letter says:—"Managers in all departments of trade continue their conservative policy of only buying for their limited requirements, while what little business that is doing is keenly competed for both by iron masters and merchants. While prices for immediate and early delivery are well maintained, there is an impression that towards the end of the year some reduction will have to be made, owing to the fact that stocks are increasing, in Germany, and that two or three large furnaces there are about to go into blast; both of which facts will tend to lessen the demand in the English market." Should shipments to Germany show any material decrease there is little doubt that prices will be affected in an adverse way.

In the local market, the condition continues to slightly improve, more especially in the way of enquiry for tonnage to be delivered during the next three or four months. It would seem as if the local market is being depleted and that consumption will require a fair tonnage for prompt delivery. But few are covering for their later needs, as the impression seems to prevail that prices may be easier two or three months hence. This, however, is a question which depends upon the trend of the English market.

Antimony.—The market is steady, and sales are being made at 10 to 10 1/2c. per pound.

Bar Iron and Steel.—Bar iron, \$1.90 per 100 pounds; best refined horse shoe, \$2.15; forged iron, \$2.05; mild steel, \$1.95; sleigh shoe steel, \$1.95 for 1 x 3/8-base; tire steel, \$2 for 1 x 3/8-base; toe calk steel, \$2.45; machine steel, iron finish, \$2.20; mild steel, \$2.05.

Boiler Tubes.—The market is rather lower, quotations being as follows:—2-inch tubes, 8c.; 2 1/2-inch, 10c.; 3-inch, 11 1/2c.; 3 1/2-inch, 14 1/4c.; 4-inch, 19c.

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. (See also Roofing).

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 87 1/2 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 2 1/2 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 7 1/2c. each.

Cement—English and European.—English cement is steady at \$1.85 to \$1.90 per barrel in jute sacks of 82 1/2 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 14 1/4c. per pound. Demand continues limited.

Explosives and Accessories.—Dynamite, 50-lb cases, 40 per cent. proof, 18c. in single case lots, Montreal. Blasting powder, 25-lb kegs, \$2.25 per keg. Special quotations on large lots of dynamite and powder. Detonator caps, case lots, containing 10,000, 75c. per 100; broken lots, \$1. Electric blasting apparatus:—Batteries, 1 to 10 holes, \$15; 1 to 20 holes, \$25; 1 to 30 holes, \$35; 1 to 40 holes, \$50. Wire, leading, 1c. per foot; connecting, 50c. per lb. Fuses, platinum, single strength, per 100 fuses:—4-ft. wires, \$3.50; 6-ft. wires, \$4; 8-ft. wires, \$4.50; 10-ft. wires, \$5. Double strength fuses, \$1 extra, per 100 fuses. Fuses, time, double-tape, \$6 per 1,000 feet.

Iron.—Prices continue steady, pig-iron now arriving being:—No. 1 Summerlee, on cars, Montreal, \$20 to \$20.50 per ton; No. 2 selected