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TORONTO.

**ANADIAN MANUFACTURER**  
AND INDUSTRIAL WORLD  
DEVOTED TO THE MANUFACTURING INTEREST OF THE DOMINION

AMATION THAT MANUFACTURES FOR ITSELF PROSPERS

Vol. 52.

TORONTO, APRIL 6, 1906.

No. 7.

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Specially designed for the **RAPID, ECONOMICAL and SAFE** Generation of Steam up to the highest pressures.

Over 5,000,000. H.P. in use.

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NEW YORK LIFE BLDG., MONTREAL.

BRANCH—114 King St. West, - TORONTO.

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**HIGH PRESSURE SHEET PACKING**

MAKES PERFECT JOINTS.

Does not blow out and requires no following up.

Try a sample lot and be convinced of its merits.

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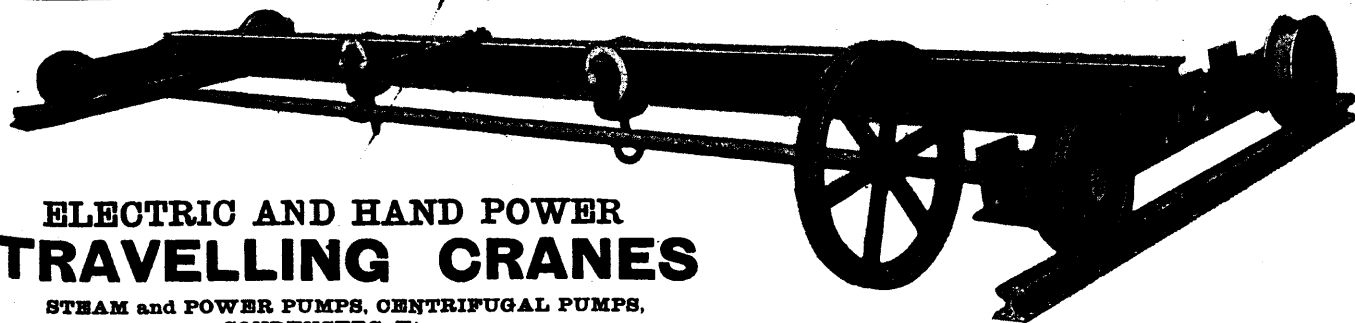
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HIGHEST GRADE  
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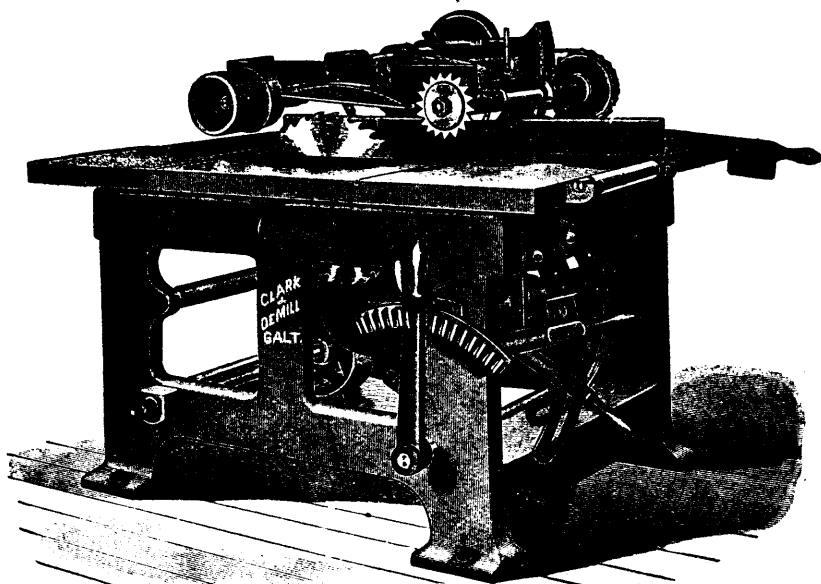
**The Classified Index**

Beginning on page 37 of this issue of *The Canadian Manufacturer* will save our readers money, and should be consulted by them before purchasing.

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...Our No. 24 Variable Self-feed Rip Saw. A simple, substantial saw, designed for heavy work in Planing Mills, Furniture and Sash and Door Factories.

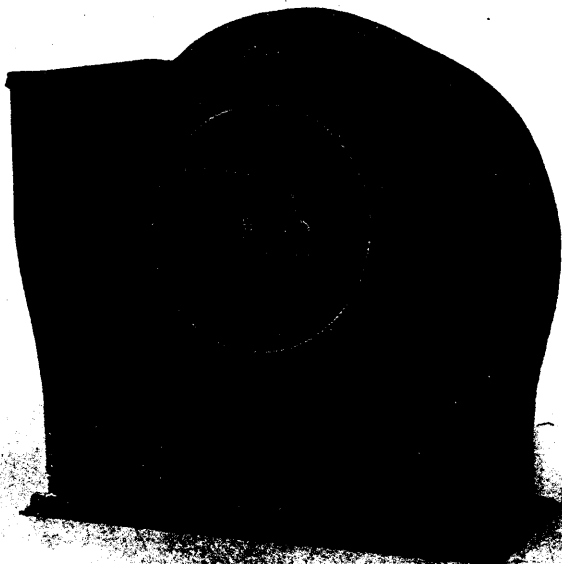
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DRYING SYSTEMS OF ALL KINDS  
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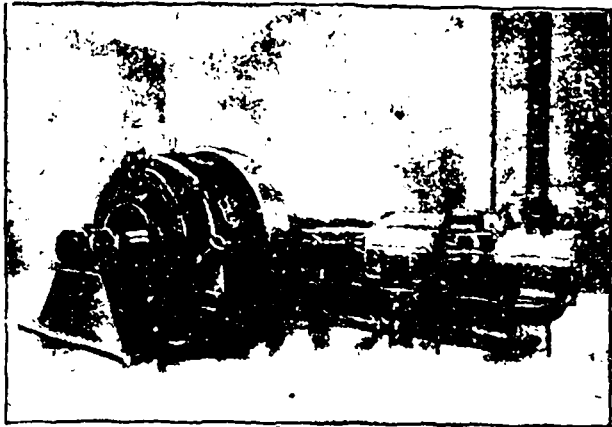
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Perfection in High Speed Engine Design,  
Noiseless Running, Perfect Lubrication,  
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THE MOST ECONOMICAL FORM OF SODA FOR MANUFACTURERS OF  
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HIGH STRENGTH, 35/37% IN  
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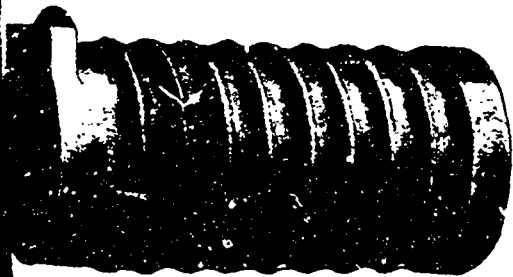
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# MORISON Suspension Furnaces

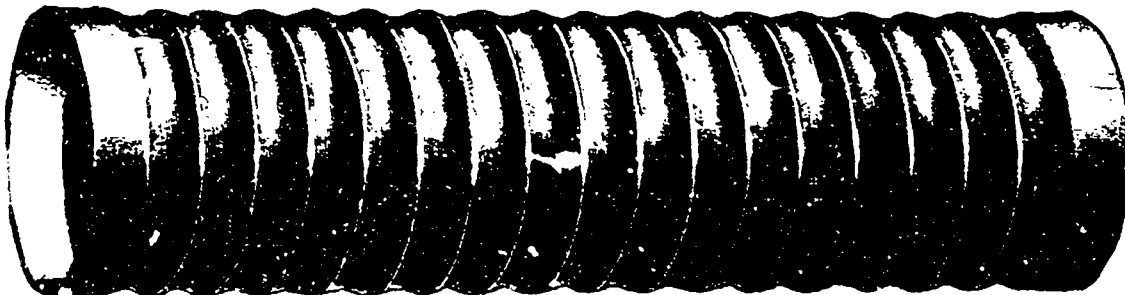
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With Plain Ends or Flanged to any required shape.

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Manufacturers of the well-known

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Suitable for Car Wheels, Cylinders and Fine Castings, where the utmost strength is required.

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UNSURPASSED IN STRENGTH BY SWEDISH, RUSSIAN OR AMERICAN CHARCOAL IRON.

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All sizes in stock.

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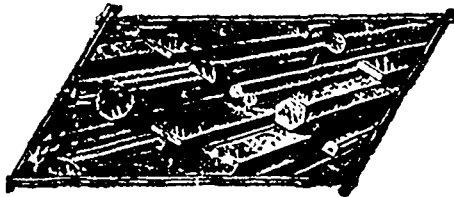
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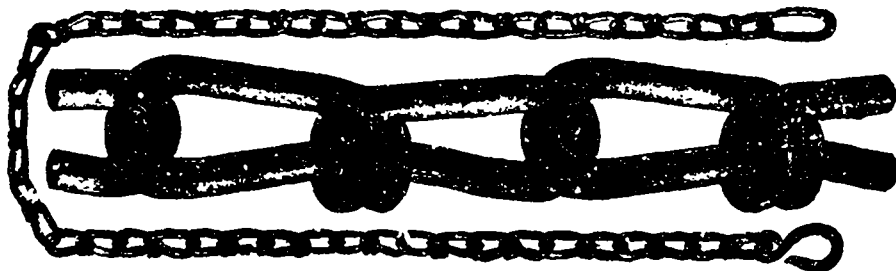
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Correspondence solicited.

We send cuts with table of breaking strain, samples, etc., upon request.

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Why put it in a bank or a mortgage at 3½, 4, 5 or even 6 per cent. when we can make it earn 20 per cent. for you.

No, this is no fake, neither is it a mining scheme.

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Well, it is, and the demand far exceeds the supply.

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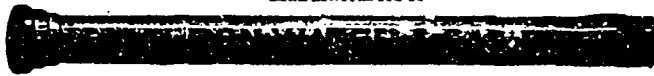
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During the fiscal year ending June 30, 1905, the imports of fuel into Canada and the value thereof were as follows:—Bituminous and Dust, **4,826,535** tons, value **\$8,346,352**; Anthracite and Dust, **2,604,137** tons, value **\$12,093,371**; Coke, **371,593** tons, value **\$307,842**; Charcoal, value **\$46,862**. Under the general tariff the duty on Bituminous Coal is 53 cents per net ton, and upon Bituminous Dust or Slack, and upon Charcoal, 20 per cent. There is no duty imposed upon Anthracite or Coke.

EVERY STEAM POWER PLANT IN CANADA USES COAL. EVERY FOUNDRY USES COKE.

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## "Red Jacket" Coal

MINED IN WEST VIRGINIA.

The Best Bituminous Coal for Steam and Domestic Purposes.

Has a tough and blocky structure.  
Smallest percentage of fine coal.  
Low in ash and sulphur and no clinkers.  
Not subject to spontaneous combustion.  
Nothing better for malleable iron works.  
One of the strongest steam coals.

RED JACKET

### COMPARATIVE HEAT UNITS PER POUND OF COAL.

Anthracite—See "Steam," published by Babcock & Wilcox Co., 13,985.  
"RED JACKET"—Determined by 50 weeks' test at Cincinnati Edison Plant, in 1901-2, the daily use of the coal tested being two hundred tons, 13,000.

### BOILER TEST OF THE CINCINNATI EDISON CO., OF CINCINNATI.

Water apparently evaporated under actual conditions per pound of coal, 10½ lbs.  
Equivalent evaporated from and at 212 degrees per pound of combustible pounds, 12:33.

We also handle Pocohontas Coke. Correspondence solicited.

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Loading and Fuelling Docks at all Ports on the Great Lakes.

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## Bituminous Coals

Pittsburgh, Rooms 64 and 65  
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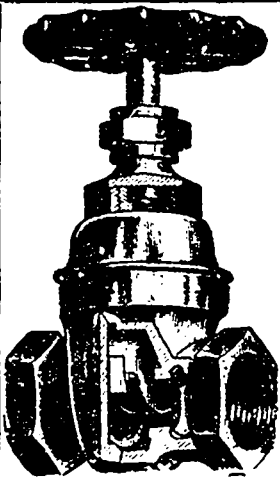
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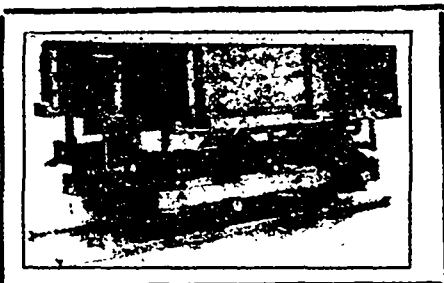
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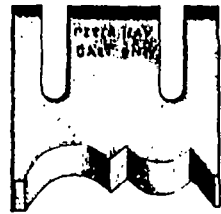
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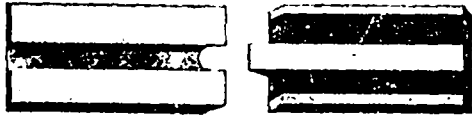
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Best Fire Brick for Any Purpose.

There are none "just as good."

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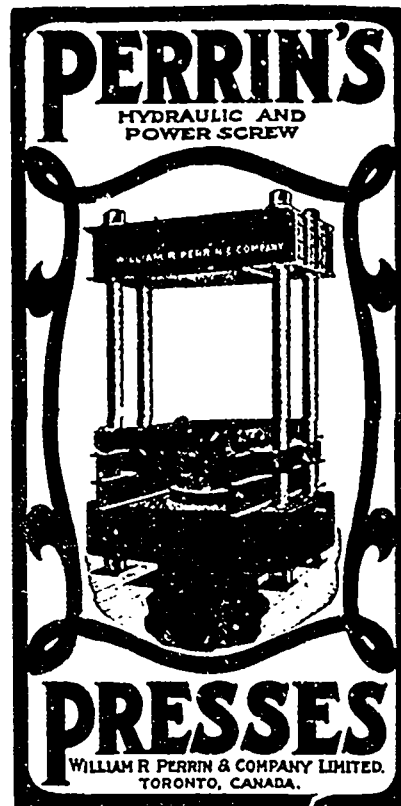
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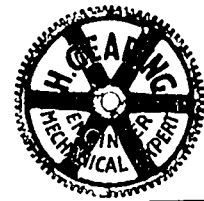
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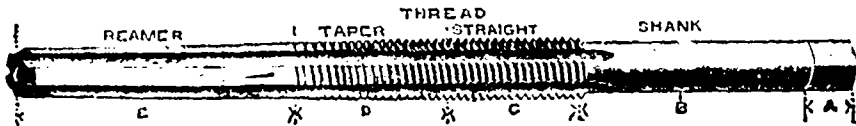
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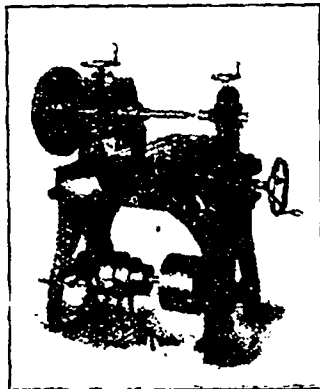
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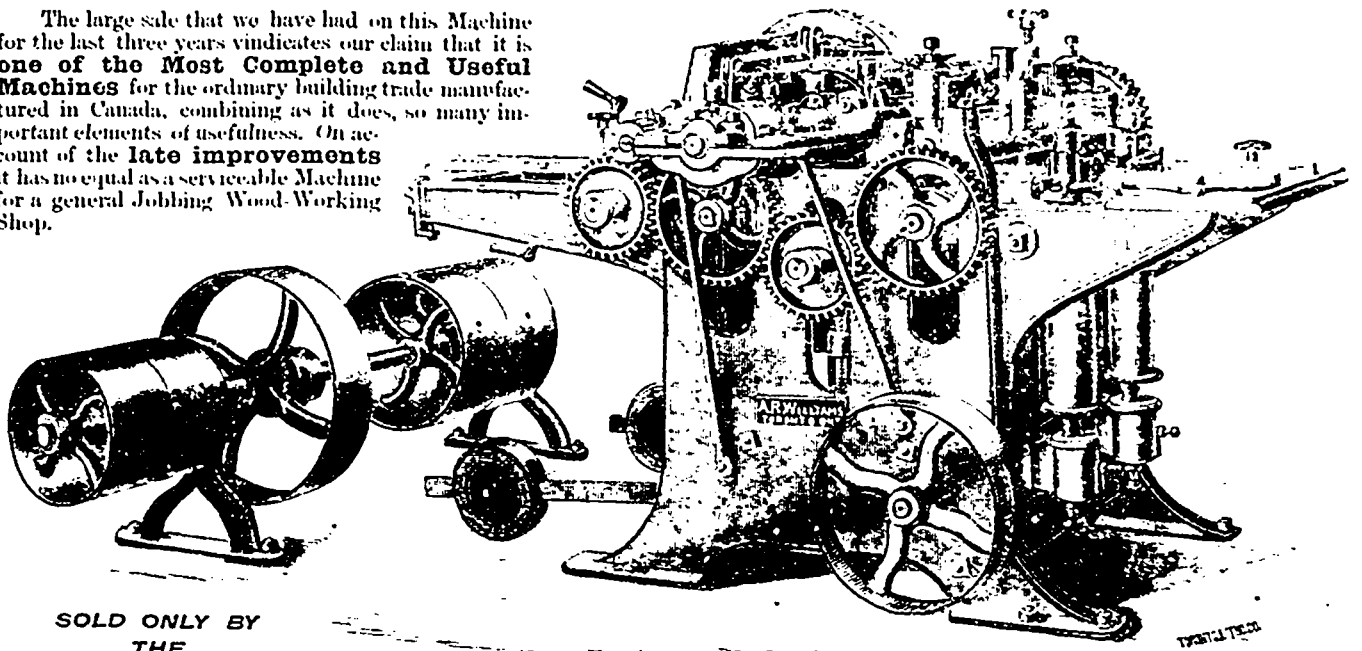
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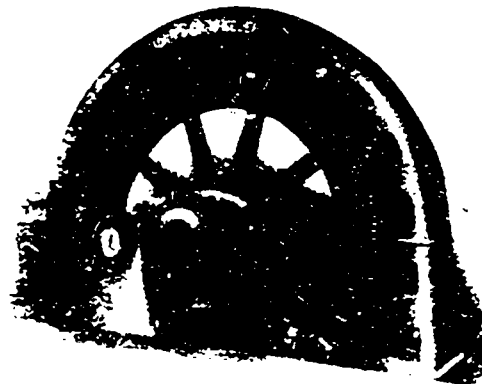
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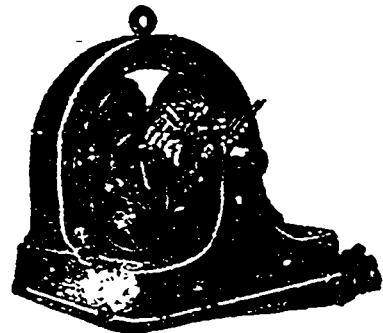
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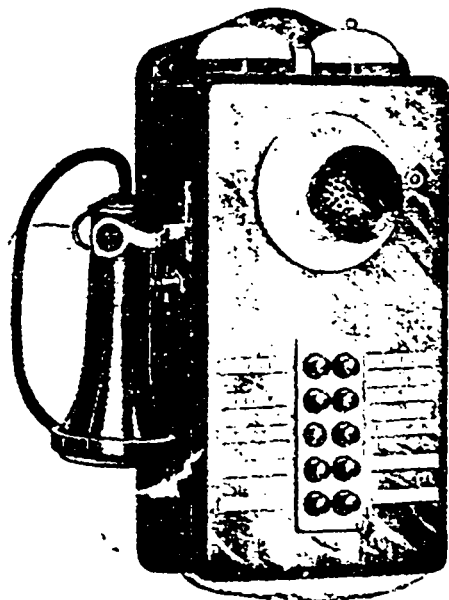
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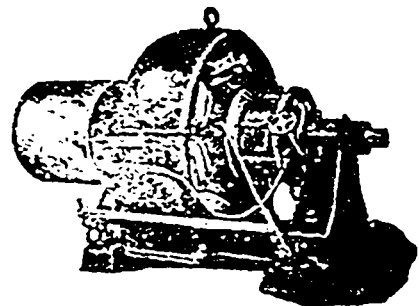
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TABLES

Manufacturing Plant Number.	Total Horse-Power.	Horse-Power to drive Shafting.	Per Cent. to Drive Shafting.	Manufacturing Plant Number.	Total Horse Power.	Horse-Power to Drive Shafting.	Per Cent. to Drive Shafting.
1.....	400	157	39.2	7.....	40.4	20.7	51.2
2.....	74	57	77	8.....	74.3	40	53.8
3.....	38.6	25.3	65.6	9.....	47.2	24.5	51.8
4.....	59.2	47.9	80.7	10.....	190	108	56.9
5.....	112	64	57	11.....	107	74.5	69.7
6.....	168	91	54.2	12.....	241	114	47.3
Average, heavy machine work,	.....	.....	62.3	Average, light machine work,	.....	.....	55.1

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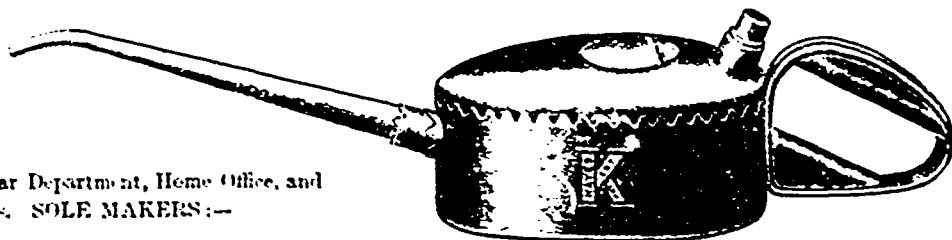
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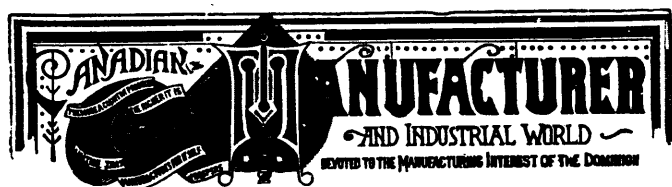
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J. J. CASSIDY, Editor and Manager

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Index to Advertisers ..... Page 45

### THE METRIC SYSTEM—3.

Prof. J. C. McLennan, of the University of Toronto, delivered his lecture in the rotunda of the Board of Trade, Toronto, as promised, on the Metric System. After outlining the history of the development of the system, he explained its chief characteristics, and dealt with the advantages he claims are possessed by it. He also referred to the status of the system in different countries, giving a resume of the legislative action taken both in the United States and the British Empire to have the system adopted. There was a display of the many various weights and measures proposed to be used should the system be adopted, with numerous charts, etc., explanatory of it. The lecture was listened to with much interest.

Explanatory of the system Prof. McLennan said:

The fundamental units of length and mass in the metric system of weights and measures are the metre and the gramme, and these, with the multiples and sub-multiples, which are decimally connected, suffice for the expression of all measurements of length, area, capacity, volume, mass and weight. The multiples of the metre and the gramme are denoted by the prefixes deca, hecto, kilo and myria, which are derived from the Greek words, deka, hekaton, chilioi and myrioi, signifying, 10, 100, 1,000 and 10,000 respectively, and their submultiples by the prefixes deci, centi and milli, which are derived from the Latin words decem, -ten; centum, a hundred; and mille, a thousand.

Measurements now expressed in yards will, under the metric system, be expressed in metres; those in feet will be decimetres, and centimetres will take the place of fractions of an inch. For all practical purposes of comparison one yard may be taken as 0.9 metre, one foot as 3 decimetres, one inch as 25 millimetres, and one kilometre as five-eighths of a mile.

In surface measurements the square metre and the square decimetre will replace the square yard and the square foot. For land measures the practical unit is the hectare, which is approximately equal to 2.5 acres.

Under the metric system measurements now expressed in cubic yards will be made in cubic metres. The bushel, peck, gallon, quart and pint will disappear, and

measurements made in gallons and quarts will be made in litres. The stere will replace the cord in the measurement of fire-wood, and the cubic yard in the measurement of stone, gravel and sand. For practical purposes the cubic foot may be taken as equal to 28 cubic decimetres, and the litre is approximately equal to the quart.

Under the metric system measurements in pounds will be made in kilogrammes and grammes. Decimals of a gramme will be used instead of ounces and grains.

The metric ton, which differs but slightly from the ton now in use, will replace the latter. The kilogramme is approximately equal to 2.2 pounds, and the pound is, therefore, but slightly different from one-half of a kilogramme. For practical purposes the ounce, avoirdupois, may be taken as 28 grammes, and the apothecaries' ounce as 31 grammes.

The advocates of the metric system of weights and measures claim the following advantages for that system:

1. The metric system is orderly, methodical, clear and extremely simple. In the metric system there is one specific word for each unit, and this word exclusively designates the one thing it is meant to represent.

2. In the metric system there are no specific trade tables. The same weights and measures are used for all purposes in all trades and industries.

3. The metric system of weights and measures, like our system of notation in arithmetic, which is universally adopted by civilized nations, is a decimal system and involves but a single ratio "10." For this reason all reductions in the system are made with the minimum amount of labor, and with no more effort than that involved in the expression of a number. The advantages of the decimal system in the coinage and money of Canada are manifest, and it is claimed that it would be just as convenient to use a similar system in our weights and measures.

4. The adoption of the metric system would materially assist education by facilitating the teaching of arithmetic and setting free a considerable amount of time which would be devoted to more useful subjects of learning and practising of our complicated and confused tables of weights and measures.

5. The universal adoption of the metric system of weights and measures by scientists has greatly facilitated the development and spread of scientific knowledge.

6. The international system of electrical units is based upon the metric system. All British and American electrical engineers and workmen must, therefore, work with it, and as long as the British system of units is retained in machine construction, so long will those connected with enterprises involving a knowledge of electricity be put to the inconvenience and unnecessary labor of keeping in mind two systems of standards.

7. Another claim urged on behalf of the metric system is that it is exceedingly simple in calculation.

8. It is claimed by the advocates of the metric system that it would be an advantage to British and to Canadian manufacturers to adopt this system, because if they are making goods for home consumption and also for export to countries using the metric system, as well as to British and American markets, it is necessary for them in many cases to have two sets of patterns or dies, whereas if the metric system were adopted in the British Empire and also in the United States, one set would suffice.

9. The supporters of the metric system also claim that its adoption by the British Empire, including its dependencies, would greatly assist in preserving our foreign trade, and also constitute a most valuable means of extending it. Our consuls have often reported that we lose trade in consequence of our weights and measures not being understood in other countries. At the present time forty-three of the countries of the world have



adopted the metric system as their sole official and legal system of weights and measures.

There are many features of the propaganda in which Prof. McLennan is engaged to force the adoption of the metric system upon the people of Canada, to the abandonment and exclusion of another system that has been in vogue for hundreds of years, and with which every one in Canada is well acquainted, that do not commend themselves as being as easy of adoption as he says they are; and it is safe to say that outside the universities and colleges not one in a hundred of the people are familiar with the terms and their values absolutely necessary in the administration of the metric system; and the advocates of the system will find it difficult to satisfy the minds of the people that it is "orderly, methodical, clear and simple," as is claimed for it. Admitting that there are many objectionable features in the existing system, it may be said that for hundreds of years many millions of people have found it sufficient for their commercial needs. The people are already educated in the use of the existing system, which is more than can be said about the metric system; and opportunity and prosperity will not linger at any man's door while he is struggling to eliminate from his mind a system that has always been so useful to him and to substitute another system the very nomenclature of which is clothed in Greek and Latin phrases and words.

Prof. McLennan tells us that the metric system is clear and extremely simple. No doubt it is in his mind, but is it to the common people? He wants us to abandon inches in favor of centimetres; we all know that the length of a foot rule is 12 inches, but he tells us that it is clearer and simpler to speak of that length as being 30.4800 centimetres. For 12 feet we should say 3.6576 metres. For 12 yards we should say 10.9728 metres. For 12 miles we should say 19.312 kilometres. For 12 square inches we should say 77.419 square centimetres. For 12 square feet we should say 1.11484 square metres. For 12 square yards call it 10.0335 square metres. For 12 square miles it would be 31.080 square kilometres; 12 acres would be 4.8562 hectares; 12 cubic inches would be 196.645 cubic centimetres; 12 cubic feet would be 0.33980 cubic metres; 12 cubic yards would be 9.175 cubic metres; 12 fluid ounces would be 355.0 cubic centimetres; 12 liquid quarts would be 13.62 litres; 12 gallons would be 54.49 litres; 12 grains the equivalent of 0.7776 grammes; 12 avoirdupois ounces would be 340.194 grammes; 12 pounds would be 5.4431 kilograms. For 12 short tons of 2,000 pounds each, we should say 10.866 milliers. For 12 pounds per square foot we should say 58.59 kilograms per square metre. For 12 pounds per square inch it would be 0.8437 kilograms per square metre; 12 foot-pounds would be 1.65906 kilogram metres; 12 British heat units would be 3.024 metric calories; 12 foot-pounds would be .003882 calories; 12 horsepower would be 12.166 forces de chevaux, and so on.

On the other hand the conversion of metric weights and measures are equally obtuse and, to common minds, incomprehensible. Thus—12 centimetres are the equivalent of 4.72441 inches; 12 metres become 39.370 feet,

or 13.1234 yards; 12 kilometres are 7.456 miles; 12 square centimetres are 1.86000 square inches; 12 square metres are 129.167 square feet or 14.3519 square yards; 12 square kilometres are 4.6332 square miles; 12 hectares are 29.653 acres; 12 cubic centimetres are 0.73228 of a cubic inch; 12 cubic metres are 423.78 cubic feet or 15.695 cubic yards; 12 cubic centimetres are 0.4056 of a fluid ounce; 12 cubic litres are 10.57 British quarts or 2.643 British gallons; 12 grammes are 185.188 grains or 0.423287 of an avoirdupois ounce, and 12 kilograms are 26.455 avoirdupois pounds. So, too, 12 grammes are 0.3858 of a troy ounce, and 12 kilograms are 32.15 troy pounds; 12 milliers are the equivalent of 13.228 short tons, 12 kilogram-metres and 86.796 foot-pounds mean the same thing, and 12 calories and 47.62 British heat units are of equal value; and 12 calories equal 37.096 foot-pounds, and 12 forces de chevaux are equivalent to 11.836, horse power and so on.

Prof. McLennan tells us that the metric system is "orderly, methodical, clear and extremely simple," and "the adoption of it would materially assist education by facilitating the teaching of arithmetic and setting free a considerable amount of time which could be devoted to more useful subjects of learning and practising of our complicated and confused tables of weights and measures?"

#### IN RESTRAINT OF TRADE.—2.

It is to be hoped that the Canadian Manufacturers' Association do not take themselves very seriously in asking the Government to disallow the tariff preference allowed by law to any British goods imported into Canada unless it be through Canadian ports. The request is unwise, unnecessary, unfair, impracticable, insincere, ill considered, calculated to create ill feeling among members of the association and lack of respect for it in the community wherever the matter may be brought to attention, and should be withdrawn. Probably one-fourth of all our imports from Great Britain are through foreign ports; and for the sake of Canadian importers as well as of British exporters, the request should be withdrawn. The value of all merchandise imported into Canada from Great Britain for home consumption in 1905 was \$59,583,801, of which \$38,444,668 was under the preferential tariff. The total value of all exports of Canadian produce to Great Britain in 1905 was \$97,114,867; while the total value of all merchandise imported into and exported from Canada, from and to Great Britain through United States ports was \$37,678,443. The total value of in-transit trade of Canada with all countries through United States ports in 1905 was \$58,089,204.

During the last few years one of the most prominent activities of the association has been to raise obstacles to the trade between Canada and the United States. It declares loudly for preferential trade with Great Britain, always with the understanding that the preferential tariff shall be high enough to afford "adequate protection" to the goods they produce; which means that while patriotic and affectionate syren songs are sung to please

the ear of the British, there must be no substantial encouragement given to the importation of British goods. That sort of protection is all right from their standpoint; but it is to be observed that while it may have its retarding effect upon British imports it does not so affect American imports, the duty upon which is 50 per cent. higher than the preferential duty. The Government made the distinction to assist British importations that could not otherwise compete with American goods in the Canadian market. It is therefore clear that the object of the association is not so much to encourage British trade as to discourage American trade. The general tariff, less the preference, is quite sufficient to retard British trade, but insufficient to prevent the acceleration of American trade; and the effort to induce the Government to deny the preference to British goods imported through American ports is intended to obstruct the in-transit trade which we find of so much importance to us.

As shown in a previous article, the beneficiaries of the proposed restriction could be only the Canadian ports through which British goods are imported, to wit—Halifax, St. John, and under certain circumstances, Quebec and Montreal. All the rest of Canada, particularly Toronto, the many mercantile centres of Ontario, and in fact all of country lying between Ontario and the Rocky Mountains, would be great sufferers by the restriction.

Many of our readers may not be aware of the large expenditures made by the Dominion Government every year for maintaining intercourse between Canada and Great Britain and other countries. According to the estimates just presented to the House of Commons by Finance Minister Fielding, the expenditures for the fiscal year ended with June 30, 1905, for mail subsidies and steamship subventions included as follows:

Ocean and mail service between Great Britain and Canada.....	\$260,000
Steam service between Halifax, St. John, Newfoundland and Liverpool.....	20,000
Steam service between St. John and Glasgow....	15,000
Steam service between St. John and Dublin and Belfast.....	7,500
Steam service between St. John and Halifax and London.....	12,500
Steam service between Prince Edward Island and Great Britain.....	7,000
Steam service between Montreal and Quebec in summer, and Halifax and St. John, in winter, and Manchester.....	35,000
Steam service between Annapolis, N.B., and London.....	5,000
Steam service between St. John and Halifax and West Indies and South America.....	80,700
Steam service between Canada and South Africa.....	146,000
Steam service between Canada and Australia....	170,000
Steam service between Canada and Mexico....	100,000
Steam service between Canada and New Zealand.....	50,000

Steam service between Victoria, B.C., and San Francisco.....	\$5,000
Steam service between Victoria and Skagway..	12,500
Steam service between Canada and China and Japan.....	73,000
Steam service between Canada and France....	133,333

These are some of the contributions of all the people of Canada, as represented by the Dominion Government, in 1905, to cultivate and encourage the over-ocean trade of Canada with other countries. It is done cheerfully and willingly. Observe how large a portion of these contributions are for the direct benefit of Halifax, St. John, Montreal, and Quebec. Under the head, "Mail Subsidies and Steamship Subventions," the amounts paid out by the Government in 1905 aggregated a grand total of \$1,350,654. Not included in the list above given, but included in the grand total, was for steam service paid for by the Government between St. John and Digby; Halifax and Newfoundland; to the Magdalen Islands; to Prince Edward Island; to Grand Manan; St. John and Halifax; St. John and Minas Basin; Pictou, Murray Harbor and Georgetown; Quebec and Gaspé Basin; Baddeck, Grand Narrows and East Bay; Port Mulgrave and ports on Bras d'Or Lakes; Gaspé Basin and Dalhousie; Pictou and Cheticamp; Port Mulgrave and Cheticamp; Sydney and Whycocomagh; St. Stephen and neighboring ports and Passamaquoddy Bay; Quebec and Blanc Sablon; Sydney and Bay St. Lawrence; Halifax and Canso; Quebec and Murray Bay; Prince Edward Island and Newfoundland; Paspébiac and Gaspé Basin; St. Catherines Bay and Tadousac; St. John and Westport; St. John and ports in Annapolis Basin; St. John and ports in Cumberland Basin; Moncton and other ports in Nova Scotia; St. John and Clementsport; Newcastle and Miramichi Bay.

The Government has always been financially generous with the ports of Montreal, Quebec, the St. Lawrence River and its approaches, and the Maritime Provinces, especially with reference to their ports and harbors. It is right and proper to be so, the cost of which is and has been borne by every soul in Canada. The in-transit trade of Canada through the United States from Ontario to the Rocky Mountains is of the utmost importance; and there is no evidence that Eastern Canada has any desire to destroy it. Time, distance, inadequate transportation facilities, crooked rivers and obstructed and shallow harbors are not favorable to the best interests of Eastern Canada; but all Canada are willing contributors to the work of rectification. At the same time Central Canada, a most liberal contributor, to which in-transit trade is a most important element of its prosperity and success, will not willingly see it interfered with.

ADVERTISING MEDIUMS.

During the course of an address at the recent annual meeting of the Aberdeen Association, held in Toronto, his Honor Lieutenant-Governor Clark emphasized the opinion that the literature sent to the settlers in the North-West should consist of British publications. However attractive some of the United States publications

might be, he said, it was a public duty to inculcate patriotism in the new regions. United States magazines, many of them, were merely advertising mediums. That is true, no doubt, of some British magazines, but they advertised British articles, and thus aided to spread patriotism. His Honor was glad to note that most of the magazines and literature sent out by the Aberdeen Association were largely British.

There is something somewhat noticeable about this literature matter. Aside from the illustrations usually contained in the magazines, both British and American, which would be entertaining to even those who cannot read, people generally now a days insist upon having something to read, whether it be good, bad or indifferent; and the chief reason why the magazines are so generally read is because they are inexpensive; and the reason why they are so inexpensive is that people who have goods and other things to sell, advertise them in the magazines; not to any great extent in Canadian magazines, but in those that Governor Clark objects to because they come from the United States. We have knowledge of quite a number of exceedingly meritorious magazines published in Canada that eke out more or less precarious and unsatisfactory existences, the literature of which is usually first class and unexceptionable in every respect, which inculcates good Canadian patriotism of the sort that would meet the views of even the governor; but alas! Canadians do not spend money in advertising in them, and so they become financial failures. The Governor objects to American magazines because they contain American advertisements, and he objects to some British magazines because they contain British advertisements, although they aid in the spread of patriotism; but just how the reading of British advertisements work such a good result we fail to see.

There can be no better way of spreading good Canadian patriotism than by teaching the people to use goods made in Canada, when such can be had as low in price and of as good quality as similar articles made in either the United States or Great Britain; and surely every intelligent manufacturer and dealer who has goods to sell understands that to sell them a demand must exist for them, and that the sure way to create such demand is to advertise them. The equal of American or British goods, in most lines, is made in Canada; but the manufacturers and dealers in them berate the perversity and lack of patriotism of the Canadian people for buying American goods in preference to home-made, oblivious to the fact that buyers usually read the advertisements that are presented to them in the magazines and other literature, and make their purchases accordingly. Usually buyers purchase no goods that are not advertised, which teaches that if manufacturers and dealers wish to push the sale of their goods they should advertise them in the home mediums which reach purchasers.

Plans and estimates for the completion of the Trent Valley Canal will be presented to Parliament at the November session and a vote asked for the work.

### ELECTRIC SMELTING.

Dr. Eugene Haanel, Dominion Superintendent of Mines, under whose supervision the recent experiments in electric smelting of iron ores at Sault Ste. Marie were conducted, in an address delivered at the luncheon of the Canadian Club, Toronto, on March 12, gave an interesting account of the experiments with some important details in advance of his official report. He pointed out that owing to the fact that the iron ore deposits of Canada were in the central provinces and the coal necessary for smelting by ordinary methods in the extreme east and west Canada was at a natural disadvantage in the iron and steel industry. The solution of the problem was electric smelting, as successfully applied in Europe. The commission appointed to investigate electric smelting in Europe, of which Dr. Haanel was chairman, had reported favorably, but some points remained to be cleared up before it was decisively established that the process would be economically successful under the conditions prevailing in Canada. Therefore the Minister of the Interior had arranged for the series of experiments held at Sault Ste. Marie, extending from about the middle of February to March 5, taking advantage of the presence in the country of Dr. Heroult, the noted French electrician and engineer, who was entrusted with the charge of the work.

The questions to be settled were:

Can magnetite be successfully smelted?

Can iron ore with considerable sulphur content be made into pig iron of marketable value?

Can charcoal be substituted for coke which must be imported?

Lastly, what is the exact amount of electric energy required per ton of pig iron produced?

The furnace specially designed for the experiments by Dr. Heroult was of simple construction, the upper half being lined with fire-bricks, and the lower half with carbon. An electric cable connected the carbon with the transformers procured from the Westinghouse company, which transformed the electric current from 2,200 volts to 40 as required by the experiment. Electrodes five feet long and 16 inches square had to be procured in Germany. The electric current coming in contact with the ore generated the intense heat necessary. The fuel used was charcoal with which no difficulty was found, the furnace working quietly and regularly and requiring little attention for the regulation of the electrodes.

In all 150 casts were made with Canadian ores, which yielded 55 tons of pig iron. The ore used in the first trial was hematite—but for all the others different kinds of Canadian magnetite were used, all with one exception, of high sulphur content. It was found that magnetite could be smelted just as easily as hematite. Analysis of the product showed that the pig iron contained only a few thousandths of one per cent. of sulphur. While blast furnaces will not generally use an ore containing as much as one-tenth of one per cent. of sulphur, the experiments had shown that the best of pig iron could be produced from ores containing as high as one per cent. of sulphur. The price paid by the Algoma Steel Works for the hematite ore it used

was understood to be \$4.50 per ton, but by the electric process, a pig iron of equal value and lower in sulphur could be produced from sulphurous ores now obtainable for \$1.25 per ton. The utilization of these ores, now shown to be possible, was a vital question in view of the problem now exciting discussion as to how long the present supply of blast furnace ore would hold out. When none but sulphurous and tianiferous ores were obtainable, the electric furnace, by which alone they could be satisfactorily treated, would necessarily supersede the blast furnace

The experiments had reduced the cost for electrodes to 30 cents per ton of pig iron produced, in place of 77 cents, which was the cost in the French experiments. The cost of developing electric energy from water powers near iron ore deposits was estimated by Dr. Haanel at from \$4.50 to \$6 per horse power annually. The day, he thought, would come when the cost of production would be further cheapened by the utilization of the carbon monoxide, which now escapes, considerably increasing the output, in which case blast furnaces could not compete with the electric process, even with coke cheaper than at present.

In addition to the experiments with iron ore, demonstrations with roasted and briquetted nickeliferrourpyrrhotite containing 1.6 per cent. sulphur had been successful in producing a ferro-nickel pig containing 4½ per cent. of nickel and practically free from sulphur. The Lake Superior Corporation had been so favorably impressed with this result that it wished to acquire the plant from the government to convert briquetted ore into ferro-nickel pig for the market.

NEWFOUNDLAND'S TRADE.

The industrial interests of Newfoundland, up to recent years centered in its fisheries, and although the fisheries are still its premier industry, the greater part of its population being "fisher folk," the opening of mines, lumber mills, and factories has added much to the prosperity of the Province.

The foreign commerce of Newfoundland, as far as its imports are concerned, is pretty equally divided between the United Kingdom, Canada, and the United States, as the following statement shows:

	Imports.	Exports.
United Kingdom.....	\$2,654,900	\$1,941,000
Dominion of Canada.....	4,105,600	1,135,800
United States.....	2,750,100	1,418,600
All other countries.....	768,700	6,174,000
Total.....	\$10,279,300	\$10,669,400

It will be noted that while the imports of Newfoundland are almost wholly with the three countries named in the foregoing list, the exports to "all other countries" comprise about six-tenths of the exports of the province, which is accounted for by the large exports of codfish to "other countries," to Portugal and Brazil chiefly.

The most notable thing in the British exports to Newfoundland is the very large amount of apparel—\$495,000, more than one-sixth the value of the total exports. On turning to the British official statistics it is found that \$445,000 worth of this apparel is made up of woolen and woolen-mixed goods, which shows the character of this class of manufactures required by the people to meet the demands of their rugged climate and calling. It is especially mentioned that this apparel is "not water-

proof." This was further supplemented by \$231,000 British woolen cloth. The British sales of haberdashery and millinery, arms and ammunition, fishing tackle, glass and chinaware, jute goods, linens and linen yarns were also large, while in cotton piece goods the mother country supplied \$191,000 in value against the \$36,000 from the United States and \$26,000 from Canada. In other cottons, however, Great Britain supplied \$45,000 values Canada \$12,700, and the United States, \$67,000.

Newfoundland purchased \$30,000 worth of oilcloths from the United Kingdom and none from America, and \$27,000 worth of paints and colors from the former and only \$14,000 from the latter. China and earthen ware showed the disparity of \$33,000 from the United Kingdom and none from the United States. In the metal line, however, the United States led with sales amounting for machinery to \$143,000, Canada selling \$43,000 and Great Britain \$26,000. The figures were reversed in iron and steel manufactures, the latter supplying \$145,000 in value, United States \$86,000, and Canada \$59,000. In paper and stationery the United States supplied but \$17,000, while \$30,000 were shipped from Great Britain and \$50,000 from Canada.

Newfoundland is particularly situated for favorable trading with the United States, yet some phases of the trade of 1904, as shown in the detailed exports, can only be explained on the hypothesis that American manufacturers either overlooked or ignored the market. A few years ago American flour dominated the Newfoundland market, yet in 1904 Canadian flour entered the market to the value of \$930,900, while American flour reaching the market in the same year amounted to only \$473,800. Canadian boots and shoes in 1904 were exported to Newfoundland to the value of \$76,500, against \$17,300 worth of American boots and shoes, and yet the United States sold nearly \$1,000,000 worth of boots and shoes to the Dominion during that year. To this should be added the fact that Newfoundland is as much within the zone of the Boston boot and shoe trade as almost any portion of the United States outside of New England.

The exports from the United States to Newfoundland during the year 1905 amounted to only \$2,444,400, a decrease of \$206,400 from those of the preceding year.

HONORS WORTHILY BESTOWED.

It is reported that a measure will be introduced during the present session of the Ontario Legislature marking an important and forward step in relation to the Department of Lands and Mines. As far as can be ascertained, the projected legislation provides for the changing of the name of the department to the "Department of Lands, Forests and Mines," and the appointment, in addition to the present Deputy, Mr. Aubrey White, of another Deputy Minister. The latter will undoubtedly be Mr. T. W. Gibson, the present Director of the Bureau of Mines. Mr. Gibson entered the civil service in 1880 as Secretary to Hon. T. B. Pardee, then Commissioner of Crown Lands, and retained that position until 1886, when he left the service. He re-entered in 1891 as Secretary of the Bureau of Mines, which was established in that year, with Mr. Archibald Blue as Director. When Mr. Blue resigned in August of 1900 to accept the position of Census Commissioner for the Dominion, Mr. Gibson was appointed to succeed him, and he has since conducted the work of the bureau with marked ability and success.

Mr. Aubrey White, the present Deputy Minister of the department, will have direction, under the responsible Minister, of course, of all matters pertaining to Crown lands and forests. Mr. Gibson will look after matters

pertaining to the mines, the parks and water powers, other than those now under the jurisdiction, or which may hereafter be placed under the jurisdiction of the Niagara Falls Park Commission or the Hydro-Power Commission.

The steady growth of the mining industries of the Province and the immense possibilities in that respect in the Cobalt area and elsewhere in northern Ontario fully warrant, in the opinion of those familiar with the situation, the appointment of a Deputy Minister, whose principal care shall be the mining interests. This could be better done by Mr. Gibson as a deputy, responsible only to the Minister of the department, than under the arrangement now existing. The new plan will also enable Mr. Aubrey White to devote his time more exclusively to questions relating to Crown lands and forests, in which there has been a tremendous increase of business of late years.

The proposal outlined is the first step in the carrying out of the Government's policies with respect to the mineral and timber wealth of the Province. In regard to both there is no doubt that important legislation will be introduced this session. The addresses of Hon. Mr. Cochrane at the recent mining convention and later at the conference with the lumbermen made that abundantly clear. One of the great difficulties in respect to the timber policy will be the solution of the difficulties constantly arising between the settlers and the lumbermen, and it is predicted that this will be reached by the legislation to be introduced. There are also a number of complex questions to be dealt with in respect to mining, but the feeling in Government circles seems to be that legislation generally acceptable to all the interest concerned will be adopted.

#### EDITORIAL NOTES.

A report from Vancouver, B.C., states that a lumber company now operating mills in the State of Washington has lately acquired 75 square miles of timber limits along the northern coast of British Columbia. It says:—

"The opinion prevails that this purchase was made because the concern anticipates an early removal of the duty upon lumber entering the United States, and that they would not have taken the step had it not been their intention to erect one or more large sawmills. The company pays \$140 a year for every square mile of timber limit, which would amount to a fee of \$10,700 for the whole. It is reasoned that the company can not long afford to pay this large sum annually without some return, which can only be secured, under present laws and regulations, by cutting and manufacturing the timber."

Delegations of manufacturers having failed to discover from President Roosevelt whether he is or is not in favor of reciprocal trade relations with Canada which they think are vital to their interests—or, perhaps, to state the case more accurately, having found that he has no opinion on any tariff matter save such as may be permitted him by his party leaders—purpose bringing strong pressure to bear upon Congress. Reports have been gathered showing that 132 of the leading concerns of the country have been obliged by the tariff restrictions to establish branch plants in Canada, with an estimated loss to the United States of about \$50,000,000. These branch plants employ Canadian labor. Yet the high tariff was devised with the

pretence of protecting American labor, and for the encouragement of these very industries now crying out against it. The Illinois Manufacturers' Association is up in arms over the matter, and is likely to make itself heard in an impressive manner, although Congress will probably remain under the control of the influences of the "stand-pat" doctrine until the power is shifted by action of the people. At this session the applicants for tariff revision can reasonably expect nothing in their behalf. The agitation in Illinois and New England, however, plainly shows a growing serious division in the Republican party which no one man's personal popularity, even if retained, can long prevent from reaching the point of complete separation. No political exorcism can keep the tariff issue down. If the Republican Congress will not deal with it while the opportunity is open, the citizens of both parties surely will.—Buffalo Manufacturer.

An exhibition is to be held in the coming months of July and August in Lyons, France, one of the principal features of which will be all electrical devices that can be applied to domestic uses, and no motor will be shown which exceeds the capacity of one horse power. The object of the exhibition is to bring cheap electrical appliances nearer to the people in order that the great mass may derive some benefit from them—motors that may be used on embroidery, sewing, and knitting machines, ventilators, vacuum carpet and rug cleaners, house-cleaning machines, floor polishers, carts for transporting objects, turning spits in cooking, etc.

One of Bessemer's earliest commercial ventures, mentioned by Captain Hunt, seems to have been in connection with the manufacture of plumbago or black-lead drawing pencils. Great Britain depended until some time after 1831 for its supply of plumbago, suitable for such pencils, upon a single mine located in Cumberland. This was of immense value to its fortunate owners, and was closely guarded and its production limited. It was operated for but a short time each year, when about 40,000 pounds were taken out; then the mine was again tightly sealed. This plumbago was bought principally by a Jewish syndicate for 40 shillings a pound, and by them manufactured into pencils. We are told that this ring was dependent upon an inner one—the actual cutters of the plumbago—who with great skill, and with a waste of 60 per cent. and for about 20 shillings a pound, sawed the brittle material into thin sticks. The waste realized only about half a crown a pound, and the prepared sticks, when ready for the cedar wood cases, were sold at over 80 shillings a pound. There were no lead pencils with rubber-tipped ends for a penny a piece in those days. Young Bessemer seized upon the opportunity. He built a powerful hydraulic press, and bought up all the refuse and waste plumbago he could find, at about half a crown a pound. In fact, he bought up all the available supply in Great Britain. This he ground, lixiviated, mixed with a proper binding material, and by his powerful hydraulic press formed into compact slabs which were subsequently cut with fine saws into proper sized sticks that were equally as good, if not better, than those made direct from the ore. He could undersell, and so controlled the market.—Cassier's Magazine.

# MACHINERY AND ENGINEERING.

## STURTEVANT VERTICAL ENGINES.

The Sturtevant vertical engines of class VS5 are high speed and automatic. A system of forced lubrication and the complete enclosure of the moving parts provide for continuous operation for weeks at a time without attention, and insure perfect reliability even in the hands of the unskilled. This type of engine is adapted to all classes of work requiring maximum power in minimum space; a condition attained by operation at the high speed made possible by the refined design, the high-grade construction, and the use of the best material. They are especially designed for the driving of direct-connected generators. Because of the large diameter and short stroke, they develop great power and high rotative speed without excessive piston travel.

Within the heavy cast iron base, to which is bolted the lower part of the frame, a sub-

merged oil pump, operated by the crank shaft, draws oil from the reservoir and forces it through pipes and internal passages in the moving parts to the crank pin, the wrist pin, and the main bearings. Twice during each revolution the reversal of stress on these parts, due to the double-acting feature of the engine, so reduces the pressure that the pump has an excellent opportunity to force between the surfaces a fresh film of oil which is carried around to lubricate the rotating parts when the pressure is greater. The pressure of 10 to 20 pounds per square inch positively maintains this film of oil, preventing actual contact of metal, reducing wear and friction to a minimum, and insuring a mechanical efficiency of over 90 per cent. Centrifugal oil guards located on the shaft

just where it passes through the casing, together with the enclosing frame, and the watershed partition insure perfect cleanliness and absolutely prevent the escape of oil, which is continuously repumped to the bearings.

The watershed partition, a valuable and distinctive feature, prevents water from the piston-rod stuffing box mixing with the lubricating oil in the case and at the same time makes impossible the passage of oil from the enclosing frame to the interior of the cylinder. The piston-rod stuffing box may be readily adjusted without opening the case. This watershed partition forms a part of the enclosing frame which protects the parts from dirt and accident, insures economy, and eliminates the necessity of frequent attention; but the removable oil-tight plates or covers make the parts as accessible as in the open type of engine.

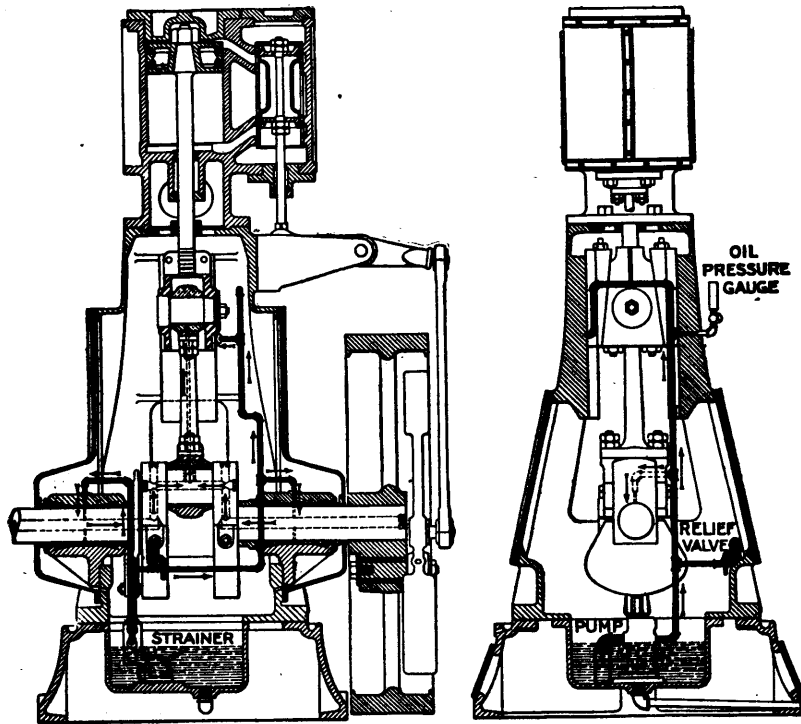
The cylinder, with which is cast the valve

the cut-off by changing the valve travel, permitting only 1½ per cent. variation in speed between no load and full load. The hollow cast iron piston, strengthened by internal ribs, is fastened to the piston rod by a forced taper fit, secured by a nut. To prevent leakage without unduly increasing friction, the cast iron packing rings are turned to a perfect contact.

Open-hearth steel is the material from which are forged the piston rod, connecting rod, and crank shaft, each from a single piece. The composition boxes of the connecting rod are lined with Sturtevant white metal hammered in and accurately bored; the cast iron cross-head is equipped with adjustable shoes and a nickel-steel wrist pin; and the crank pin is of such unusually large size that it cannot heat for the intensity of pressure is always low and the lubrication ample and positive.

In the construction of these engines only the highest grade of workmanship, finish, and material is allowed. The parts, which are interchangeable throughout, are made to gauge and template, ground or scraped to surface plate wherever such accuracy is desirable. Exposed surfaces such as cylinder head, steam-chest cover, rim and face of flywheel are highly polished, other parts being filled, rubbed down, and painted.

For further information apply to the B. F. Sturtevant Co., Hyde Park, Mass.



SECTION OF STURTEVANT VERTICAL ENGINE

Showing System of Forced Lubrication, Watershed Partition and Enclosing Frame.

merged oil pump, operated by the crank shaft, draws oil from the reservoir and forces it through pipes and internal passages in the moving parts to the crank pin, the wrist pin, and the main bearings. Twice during each revolution the reversal of stress on these parts, due to the double-acting feature of the engine, so reduces the pressure that the pump has an excellent opportunity to force between the surfaces a fresh film of oil which is carried around to lubricate the rotating parts when the pressure is greater. The pressure of 10 to 20 pounds per square inch positively maintains this film of oil, preventing actual contact of metal, reducing wear and friction to a minimum, and insuring a mechanical efficiency of over 90 per cent. Centrifugal oil guards located on the shaft

chamber, is provided with relief valves which, by opening automatically at any pre-determined pressure, prevent possible damage by water. A planished sheet-iron cylinder casing enclosing a thick layer of asbestos greatly reduces condensation. This lagging need not be disturbed, for the cylinder is tapped for the indicator. The flow of steam to and from the cylinder is controlled by a perfectly-balanced piston valve possessing the simplicity of the plain slide valve, but requiring the minimum of power to operate. The snap rings on this valve insure tightness, and the bushing in which it moves may be easily replaced when worn. A Rites governor, placed within the heavy flywheel, gives motion to the valve through the medium of a rocker, and alters

The much discussed railway to Hudson Bay will now be built. It is said that the Canadian Northern intends to construct, this year, the first link in the Hudson Bay line by building an extension 92 miles long from Etoimian, on the Prince Albert branch, north-east to the Pass. The extension, according to George H. Shaw, traffic manager, of Winnipeg, Man, will tap the Carrot River country, considered one of the best wheat regions in Canada. Next year, probably, the extension will go through to Fort Churchill, on the west coast of Hudson Bay. A new route to Europe will then be provided, which will bring the great wheat lands of central North America much nearer to England than by any other route. From Prince Albert, indeed, the distance to Liverpool via the Canadian Northern and Hudson's Bay will be only 500 miles longer than from New York, which is 1,500 miles or more east of the wheat-raising states and provinces. The new route, in other words, will save upwards of 1,000 miles of carriage. The Canadian Northern management is convinced that with its marine connections it will be able to maintain joint service six months of the year. The Canadian Northern's trains will probably enter Prince Albert within a month. On the main line, which now reaches Edmonton, two extensions, each of 25 miles, will be built this season. One will go north toward Athabasca Landing, 80 miles distant, and the other will go west in the direction of the Pacific Coast terminus, the logical end of the Canadian Northern system. From Athabasca Landing navigation is possible as far north as the Arctic Ocean.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

## CAPTAINS OF INDUSTRY.

The following items of information, which are classified under the title "Captains of Industry," relate to matters that are of special interest to every advertiser in these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

The Hamilton Light & Equipment Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture electric apparatus, machinery, etc. The provisional directors include E. Wilson, Hamilton; J. M. Neil and G. A. Turner, Toronto.

The Temagami Iron Mining Co., Toronto, have been incorporated with a capital of \$40,000, to carry on a mining, milling and reduction business. The provisional directors include D. W. F. Caldwell, Lanark, Ont.; H. W. Fleury, Aurora, Ont., and W. J. Fleury, Toronto.

Messrs. Matthew Bros., Toronto, have increased their capital from \$75,000 to \$250,000.

The North American Cobalt Refining Co., Hamilton, Ont., have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include A. A. McKelvie, New Liskeard, Ont.; J. McMartin, Cornwall, Ont., and W. G. Tretheway, Toronto.

The Great Lakes Dredging Co. have recently ordered an independent jet condenser, from the Smart-Turner Machine Co., Hamilton, Ont.

The Adian Multi-Phone Co., Hamilton, Ont., have been incorporated with a capital of \$200,000, to manufacture multiphones, phonographs, etc. The provisional directors include E. R. Marshall, J. Thomson and T. J. Stewart, Hamilton.

Messrs. Gordon Mackay & Co., Toronto, have increased their capital from \$750,000 to \$1,500,000.

The Baynes Carriage Co. have placed an order with the Smart-Turner Machine Co., Hamilton, Ont., for one of their automatic feed pumps and receivers, to be installed in their new works in Hamilton.

The premises of Messrs. Grand & Toy, Toronto, stationers, were destroyed by fire March 15. Loss about \$50,000.

The London Street Railway Co., London, Ont., will erect a large addition to their power plant at a cost of about \$75,000.

The ratepayers of Port Arthur, Ont., have voted favorably on a by-law to purchase a block of fourteen hundred acres for industrial purposes, creating a factory centre.

The Standard Envelope Co., Perth, Ont., have been incorporated with a capital of \$100,000, to manufacture envelopes, and to carry on a business of lithographers, engravers etc. The provisional directors include H. W. Brick, G. H. Wheeler, J. A. Stewart, Perth, Ont.; J. M. Lawson, Toronto, and Edward Newell, New York City.

The Marlatt & Armstrong Co., Oakville, Ont., have placed an order with the Smart-Turner Machine Co., Hamilton, Ont., for one of their centre outside packed plunger pumps with pot valves.

The ratepayers of Meaford, Ont., have voted favorably on a by-law authorizing the

Georgian Bay Milling & Power Co., to further develop the power dam of the electric light plant.

The Robb Engineering Co., Amherst, N.S., are building a 450-h.p. cross compound Corliss engine for the T. Eaton Co., Toronto.

The Empire Elevator Co., Port Arthur, Ont., have awarded a contract to Messrs. Barnett & McQueen, to erect an elevator with a capacity of 300,000 bushels.

William Bermingham, Ottawa, has been awarded the contract for developing the 1,100 h.p. electrical plant at Morrisburg, Ont., to cost about \$73,600.

Messrs. J. Perks & Co., Meaford, Ont., have installed a standard duplex pump built by the Smart-Turner Machine Co., Hamilton, Ont.

Woodstock, Ont., is to have a new Y.M.-C.A. building to cost about \$25,000.

Work will be commenced at once on the new municipal lighting plant for Parry Sound, Ont. Engineers, Messrs. Simpson & Lewis, Ottawa.

The premises of the McCann Milling Co., Toronto, which were destroyed by fire March 19, will be rebuilt at the cost of about \$250,000.

The premises of the Canadian Portable Fence Co., Armour's Limited, and the Craig-Cowan Co., Toronto, were destroyed by fire March 19.

The planing mill of Walter Mitchell, Port Stanley, Ont., was destroyed by fire March 26. Loss about \$4,000.

The Smart-Turner Machine Co., Hamilton, Ont., have recently supplied the Huntsville & Lake of Bays Navigation Co., Huntsville, Ont., with one of their standard duplex pumps.

The premises of the Crowe Iron Works, Guelph, Ont., were damaged by fire March 22. Loss about \$20,000.

The roller mill and elevator of Messrs. Gibson & Co., Morrisburg, Ont., were destroyed by fire March 20. Loss about \$25,000.

St. Andrew's Presbyterian Church, Martintown, Ont., was destroyed by fire March 20.

The telephone connection between North Bay and New Liskeard has been completed via the Temiskaming & North Ontario Railway.

The premises of the Canada Plate Glass Co., Toronto, were damaged by fire March 21. Loss about \$15,000.

The Doty Engine Works have recently placed an order with the Smart-Turner Machine Co., Hamilton, Ont., for a standard duplex pump, also for one of their end outside packed duplex pumps.

Sheldons, Limited, Galt, Ont., have decided to erect an addition to their factory 140x64 feet, two stories high.

The Simpson Avenue Methodist Church, Toronto, will erect a new church building at the cost of about \$10,000.

The factory of the Sanford Woodenware Co., Fenelon Falls, Ont., was destroyed by fire recently. Loss about \$20,000.

The Eagle Knitting Co., Hamilton, Ont., will erect a two-story brick mill 130x105 feet at a cost of about \$30,000, and a one-story warehouse 130x100 feet.

The saw and grist mill of John Hannah, Brockville, Ont., was destroyed by fire March 24.

The Barrie Carriage Co., Barrie, Ont., have placed an order with the Smart-Turner Machine Co., Hamilton, Ont., for one of their standard duplex pumps.

The Shakespeare Ward school, Stratford, Ont., was damaged by fire March 25.

It is stated that an electric light plant will be installed in New Liskeard, Ont.

The sawmill and factory of L. A. Ross, Cornwall, Ont., were destroyed by fire March 19. Loss about \$25,000.

The Canadian Pacific Railway Co., Port Arthur, Ont., will erect a large station a short distance north of the one of the Canadian Northern Railway.

The Canadian Pacific Railway Co. have placed an order with the Canadian Shipbuilding Co. for a new passenger and freight steamer, which will be 350 feet long by 44 feet beam. The steamer will be fitted with quadruple expansion engines.

The Smart-Turner Machine Co., Hamilton, Ont., have recently received an order from the Acadia Sugar Refining Co., Halifax, N.S., for one of their duplex outside packed plunger pumps with pot valves.

The Canadian Packing Co., London, Ont., will erect a packing house at Port Huron, Mich., under the name of the Huron Packing Co.

A new theatre will be erected on King Street, Toronto, at a cost of not less than \$150,000.

The furniture factory of Messrs. Walkey Bros., Fordwich, Ont., was destroyed by fire March 20. Loss about \$5,000.

The Government Marine Stores building, Ottawa, was damaged by fire March 23, to the extent of about \$5,000.

The Smart-Turner Machine Co., Hamilton, Ont., have received an order from the Kinleith Paper Co., St. Catharines, Ont., for a horizontal duplex plunger pump.

The McGregor-Gourlay Co., Galt, Ont., propose moving their entire plant to Berlin, Ont., if the Council will grant them a bonus of \$75,000.

The Evans Co., Sudbury, Ont., have been incorporated with a capital of \$100,000, to manufacture timber, laths, shingles, etc. The provisional directors include W. A. Evans, F. H. Aurie, and D. H. Andress, Sudbury.

The Maitland River Power Co., Goderich, Ont., have been incorporated with a capital of \$500,000, to manufacture electricity, heat, etc. The provisional directors include W. L. Horton, J. Clark, and A. Rumball, Goderich.

The Huron Oil Producers, Petrolia, Ont., have been incorporated with a capital of \$60,000, to manufacture oil, gas, etc. The provisional directors include W. McIntosh, Petrolia; G. E. Corell, Niles, Mich., and J. A. McIntosh, Toronto.

The Wunder Furniture Mfg. Co., Berlin, Ont., have been incorporated with a capital of \$40,000, to manufacture all kinds of furniture, etc. The provisional directors include M. Wunder, J. Wunder, and H. Arnold, Berlin, Ont.

The Hastings Wagon Co., Watford, Ont., have been incorporated with a capital of \$40,000, to manufacture wagons, sleighs, etc. The provisional directors include T. B. Taylor, I. J. Hastings and J. R. Hastings, Watford, Ont.

The Grand Trunk Railway Co's station, Wingham, Ont., was wrecked by the explosion of a water tank, March 20.

Messrs. Abbott, Grant & Co., Brockville, Ont., have been incorporated with a capital of \$50,000, to manufacture biscuits, confectionery, etc. The provisional directors include J. Grant, J. P. Grant, and E. Abbott, Brockville.

The Royal Bank of Canada will erect a branch office in Winnipeg, Man.

The Hamilton Cataract Power Co., Hamilton, Ont., have placed an order for a horizontal duplex power pump with the Smart-Turner Machine Co., Hamilton.

The Dominion Wine & Spirit Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture wines, liquors, etc. The provisional directors include A. Dods, R. McKay and G. Grant, Toronto.

The Oxford Knitting Co., Woodstock, Ont., have been incorporated with a capital of \$50,000, to manufacture knitted goods, etc. The provisional directors include J. Butler, T. L. Clarkson, and E. W. Nesbitt, Woodstock, Ont.

The Davis Acetylene Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture gas generators, etc. The provisional directors include W. B. McMurrich, J. P. Northey, and E. S. Piper, Toronto.

The National Drug & Chemical Co. of Canada, Montreal, have been granted a license to do business in Ontario. W. S. Elliot, Toronto, is the attorney.

The Abitibi & Cobalt Mining Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$2,500,000, to carry on a mining, milling and reduction business. The provisional directors include T. Mackie, W. B. Earle and W. L. Murdock, Sault Ste. Marie, Mich.

The Central Oil & Gas Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture gas, oil, etc. The provisional directors include J. S. Lovell, W. Bain and E. W. McNeill, Toronto.

The McConnell & Prospectors Exploration Co., Ottawa, have been incorporated with a capital of \$200,000, to carry on a mining, milling and reduction business. The provisional directors include W. D. Gregory, H. F. Gooderham and F. R. Dymond, Toronto.

The Delhi Light & Power Co., Delhi, Ont., have been incorporated with a capital of \$40,000, to manufacture electricity, gas, heat, etc. The provisional directors include P. Quance, S. Strout and E. Morgan, Delhi.

The Cobalt Consolidated Mines, Cobalt, Ont., have been incorporated with a capital of \$2,500,000, to carry on a mining, milling and reduction business. The provisional directors include F. L. Culver, North Bay,

Ont.; P. S. Hairston, Cobalt, and J. I. Davidson, Toronto.

The Ottawa Lumber Co., Ottawa, have been incorporated with a capital of \$100,000, to manufacture lumber, timber, etc. The provisional directors include E. C. Grant, J. Gow and R. G. Dinsmore, Ottawa.

The Dominion Cooperage Co., London, Ont., have been incorporated with a capital of \$40,000, to manufacture lumber, cooperage stock, etc. The provisional directors include J. J. Hayne, London; F. E. Cannon and J. W. Miller, Brigden, Ont.

James A. Cline, Limited, Stratford, Ont., have been incorporated with a capital of \$100,000, to manufacture furniture, novelties, etc. The provisional directors include J. A. Cline, W. H. Dunbar, and R. T. Orr, Stratford.

The Canada Tin Plate & Sheet Steel Co., Morrisburg, Ont., will extend their plant.

The Kortze Mfg. Co., St. Williams, Ont., are negotiating for removal of their works to Exeter, Ont.

The Penman Mfg. Co., Paris, Ont., are considering the establishment of a branch at Brantford, Ont., for the manufacture of some of their goods.

The Brantford Packing Co., Brantford, Ont., have surrendered their charter.

The premises of Dundurn Mill, Hamilton, Ont., were damaged by fire to the extent of about \$3,000.

The Globe Printing Co., Toronto, will erect an office building and publishing house on Queen Street East.

A company will be formed at Galt, Ont., with a capital of \$100,000, to manufacture iron castings, etc. The applicants for the charter include J. H. Fryer, M. N. Todd, Galt, and W. M. Davis, Berlin, Ont.

The machine shops of the John Gillies Estate Co., Carleton Place, Ont., were damaged by fire March 26. Loss about \$20,000.

The Peterborough Shovel & Tool Co., Peterborough, Ont., have increased their capital from \$50,000 to \$100,000.

The London Cement Construction Co., London, Ont., have been incorporated with a capital of \$10,000, to erect cement dwelling houses, roads, etc. The provisional directors include T. E. Robson, D. C. C. Macdonald and B. V. Hole, London.

The new steamer Cayuga, the latest addition to the fleet of the Niagara Navigation Co., was launched a few days ago from the yards of the Canadian Shipbuilding Co., Toronto. The vessel is planned on the lines of the day service observation type of steamers, having four principal decks—main deck, promenade deck, upper promenade deck and lower or orlop deck below the main deck. The design of the steamer is on new lines, different from the company's other boats like the Chippewa and the Corona. Instead of paddle wheels being used for driving the steamer, twin screws are used in connection with quadruple expansion engines, which, according to the responsible designer of the vessel, Mr. A. Angstrom, give an increased speed, and much greater economy, besides allowing a better disposition of the passenger accommodations of the steamer. The general dimensions are: Length, 317 feet 6 inches over all; beam of

hull 36 feet 6 inches; beam over all, 51 feet 9 inches; depth, 15 feet; draught, 10 feet. Her guaranteed speed is to be 22½ miles an hour, and if she attains this speed, she will be among the fastest vessels on the Great Lakes. The keel of the Cayuga was laid shortly after the close of navigation last fall.

It is stated that the Canada Chemical Co., London, Ont., will erect works in Central Ontario, for the manufacture of nitric, sulphuric acid, etc.

The foundry of Messrs. Wm. & J. G. Greey, Toronto, was destroyed by fire March 20.

Messrs. M. Beatty & Sons, Welland, Ont., will erect a new plant at that place.

The Robertson Machinery Co., Welland, Ont., will erect a new building at that place.

The Welland County Telephone Co. have been incorporated with a capital of \$40,000, to carry on the business of a telephone company. The provisional directors include C. Glenny, S. H. Tripp and W. Robinson, Welland County, Ont.

Queen's Alma Mater Society, Kingston, Ont., will erect a gymnasium at a cost of about \$16,000.

The Property Committee of the Toronto Board of Education have awarded the contracts for the addition of six class-rooms and the erection of a new gymnasium at Jameson Avenue Collegiate Institute, the aggregate cost being about \$32,177.

Mr. F. B. Chapin and associates, Toronto, have purchased the McKinnon and Darragh mine, which is situated at the head of Cobalt Lake. The price was \$500,000 cash. An up-to-date plant will be installed at once, and a large force of men employed. The mine is capable of shipping \$90,000 worth of ore per week for an indefinite time.

A deputation representing the Ontario Clay Products Manufacturing Association waited on Hon. Messrs. Cochrane and Pyne a few days ago, and asked that the government establish a school for the instruction of clay workers. The deputation included Mr. S. J. Fox, M.P.P. for West Victoria, president of the Association; J. M. McConnell, Milton; Prof. Baker and Mr. C. T. Chown of the Kingston School of Mining. The deputation emphasized the importance of the clay manufacturing industry to Ontario, and the fact that over 3,500 persons are employed in its various branches. The establishment of a school similar to those in England and Germany would aid to greatly enhance the output of clay manufacturers and give employment to a largely increased number of people.

Messrs. Darling Bros., Montreal, have been granted a license to do business in Ontario. Richard Dawson, Toronto, is their attorney.

The Low Bank Telephone Co., Low Bank, Ont., have been incorporated with a capital of \$40,000, to carry on the business of a telephone company. The provisional directors include A. Barrick, J. E. Furry and A. Mann, Haldimand County, Ont.

The Falls Power Co., Welland Ont., have been incorporated with a capital of \$10,000, to manufacture gas, electricity, etc. The provisional directors include G. C. Brown, D. Rees and J. E. Cohoe, Welland, Ont.



The Miller Cartage Co., Toronto, have been incorporated with a capital of \$100,000, to carry on a warehousing business and to manufacture vehicles, harness, etc. The provisional directors include H. A. Morrow, H. W. Ross and S. Thompson, Toronto.

Messrs. Orme & Son, Ottawa, have been incorporated with a capital of \$250,000, to manufacture musical instruments, etc. The provisional directors include G. L. Orme, M. Orme and W. C. Perkins, Ottawa.

The Terra Cotta Pressed Brick Co., Toronto, have been incorporated with a capital of \$80,000, to manufacture tile, bricks, etc. The provisional directors include R. J. Bee-man, F. F. Philip and T. Smith, Toronto.

A silver-plating and cutlery factory will be erected at Niagara Falls, Ont. The directors include J. G. Cadman and L. McGlashan, Niagara Falls, Ont.

The Don Machine Tool Co., Hamilton, Ont., have been incorporated with a capital of \$200,000, to manufacture iron, machine tools, etc. The provisional directors include W. Yeates, London, Ont.; G. F. Webb, and W. Southam, Hamilton.

The Norwalk Mining Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$300,000, to carry on a mining, milling and reduction business. The provisional directors include W. E. Gill, J. M. Harr and C. D. Smith, Norwalk, Ohio.

The Hamilton Anchor Co., Hamilton, Ont., have been incorporated with a capital of \$40,000, to manufacture anchors, drive bars, etc. The provisional directors include H. L. Frost, H. N. Kittson and C. S. Scott, Hamilton.

The Long Lake Co., Cobalt, Ont., have been incorporated with a capital of \$100,000, to carry on the business of an electric and power company. The provisional directors include S. White, Windsor, Ont.; T. P. Watson, New Liskeard, Ont., and H. C. Barber, Cobalt, Ont.

The Council of Strathroy, Ont., will be asked to provide \$5,000 for the improvement of the electric light plant.

Messrs. R. J. Cluff & Co., Toronto, will erect a four story brick warehouse, at a cost of about \$35,000.

The Annette Street Methodist Church, Toronto Junction, Ont., will erect a new church building at a cost of about \$40,000.

Messrs. J. C. Mundell & Co., Elora, Ont., will erect an addition to their factory.

The Lake Superior Co., Sault Ste. Marie, Ont., will erect an addition to their steel works, 200x110 feet.

A Methodist Church will be erected at Campbellcroft, Ont., to cost about \$20,000.

The Canadian Flax Cordage Co. will erect a factory at St. Mary's, Ont.

The town of Bobcaygeon, Ont., will install an electric light plant.

Messrs. H. K. Wampole & Co. will erect a box factory at Perth, Ont.

The assembly hall of the Industrial Home, Mimico, Ont., will be rebuilt at a cost of about \$15,000.

A new County House of Refuge will be erected at Lakefield, Ont., to cost \$30,000.

The planing mill of Walter Mitchell, St. Thomas, Ont., was destroyed by fire March 26. Loss about \$4,000.

The Canadian Yukon Mining Co., Toronto, have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The provisional directors include E. N. Armour, C. W. Mitchell and J. C. Mitchell, Toronto.

The saw and planing mills of J. P. Eastman, Welland, Ont., were destroyed by fire March 24.

The premises of the Reformer Printing Co., Galt, Ont., were damaged by fire March 25.

The International Gold Dredging Co., Ottawa, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include R. V. Sinclair, C. M. Farley and R. A. Hickey, Ottawa.

The Federal Colonization and Land Reclaiming Co., Ottawa, have been incorporated with a capital of \$100,000, to carry on the business of a land and colonization company. The provisional directors include J. R. Booth, W. Anderson and A. Taillon, Ottawa.

A public school will be erected at Peterborough, Ont., at a cost of about \$35,000.

Peterborough, Ont., is to have a new armoury, to cost about \$100,000.

The Sarnia Tanning Co., Sarnia, Ont., have been incorporated with a capital of \$40,000, to manufacture leather, hides, wool, etc. The provisional directors include T. H. Cook, R. H. Ragan and E. W. West, Sarnia.

The Dominion Government will erect a new ten story warehouse on Front Street, Toronto.

Imperial Coaches, Limited, Toronto, have been incorporated with a capital of \$225,000, to manufacture automobiles, omnibuses, etc. The provisional directors include A. Dods, W. N. Dollar and W. E. Sampson, Toronto. The company will inaugurate a system of electric buses. Two four-motor vehicles will be in operation this summer for sight-seeing and for passenger traffic during the rush hours. Next year ten or fifteen cars will be running on regular routes by the first of March. Motors for the first coaches have been built by the Consolidated Electric Co., Toronto. The cars will seat thirty persons, and will be equipped with comfortable spring upholstered leather seats, electrically lighted, and driven, with push buttons at each seat for passengers' use, and will be fitted with solid rubber tires.

The Hamilton, Galt & Guelph Railway Co. will apply for incorporation with power to construct and operate an electric railway from Hamilton to Elmira, passing through Galt, Preston, Berlin, and Waterloo; and also from Hamilton to Elora and Fergus, passing through Guelph. Power to manufacture electricity is also sought.

The Brintin Carpet Co., Kidderminster, England, will erect a branch factory at Peterborough, Ont.

The Peterborough Sandstone Brick Co., will erect two large buildings at that place.

The saw and grist mill of Messrs. Gingras & Methot, Warwick, Que., were destroyed by fire March 29. Loss about \$5,000.

The Lake of the Woods Milling Co. and the Keewatin Milling Co., Montreal, have amalgamated.

The Canadian Sports Publishing Co., Montreal, have been incorporated with a capital of \$5,000, to carry on a general printing, binding and publishing business. The charter members include J. E. Sullivan, J. N. Carrington, New York City; and T. Wall, Montreal.

Sutton, Que. is anxious to bonus some industry to increase its population. The natural woods in that vicinity are beech, birch and maple, which are in abundance.

The Canadian Dairy Supply Co., Montreal, have been incorporated with a capital of \$125,000, to manufacture dairy utensils, etc. The charter members include J. Ward, J. S. Clunie and W. Bashaw, Montreal.

Jas. Alexander, Limited, Montreal, have been incorporated with a capital of \$250,000, to carry on a warehousing and cold storage business. The charter members include D. C. Alexander, C. H. Powell, and D. McNeil, Montreal.

Messrs. Willis & Co., Montreal, have been incorporated with a capital of \$1,000,000, to manufacture gramophones, pianos, organs, etc. The charter members include A. P. Willis, C. D. Patterson and G. L. Duncan, Westmount, Que.

Watroil Limited, Montreal, have been incorporated with a capital of \$20,000, to manufacture oils, greases, etc. The charter member include D. H. Ferguson, A. G. MacDonald, Westmount, Que., and C. E. E. Dawson, Montreal.

The Ideal Concrete, Limited, Montreal, have been incorporated with a capital of \$50,000, to manufacture cement, limestone, etc. The charter members include L. N. Benjamin, P. A. Boivin, and L. A. Mon-genais, Montreal.

The premises of the Montreal Biscuit Co., Montreal, were destroyed by fire March 27. Loss about \$50,000.

The Ottawa River Navigation Co.'s steamer Sovereign was destroyed by fire March 17, while lying in the Lachine Canal. Loss about \$50,000.

The Church and Presbytery of Sacre Cœur de Jesus, East Broughton, Que., were destroyed by fire March 15. Loss about \$45,000.

A building owned by the Central Heat, Light & Power Co., Montreal, was damaged by fire March 23. Loss about \$30,000.

Estimates are being prepared by the Grand Trunk Railway Co. as to the cost of installing a telephone system on all the lines of the company, and it is probable that the work of placing such a system in service will commence early this summer. The cost of such an undertaking is estimated to be not less than \$150,000.

The council of Thetford, Que., have passed a by-law granting the Shawinigan Water & Power Co. the necessary privileges in the streets, etc., to enable them to distribute light and power in the municipality.

It is stated that Messrs. Brandrow & Sons, Halifax, England, will establish through Messrs. Henderson & Potts, Halifax, N.S., large corroding works in the vicinity of Montreal.

To meet the requirements of their increasing business, Allis-Chalmers-Bullock, Limited, Montreal, have made a number of

additions to their sales organization. Among them is Mr. T. J. Lynch, who has been appointed district manager at Toronto. He is already well known there, having for two years superintended on behalf of the Allis-Chalmers Co., Milwaukee, Wis., the construction of the fifteen million gallon pumping engine for the City of Toronto. Previous to that he was connected with the Metropolitan Water-works and Sewage Commission of Boston, Mass.

The J. P. Abel & Fils Co., Montreal, have been incorporated with a capital of \$20,000, to manufacture boxes, doors, sashes, etc. The charter members include J. Godbout, J. P. Abel and E. Abel, Montreal.

The Hussey Construction Co., Montreal, have been incorporated with a capital of \$20,000, to carry on the business of a general building and constructing company. The charter members include H. R. Hussey, W. H. Whitehead and P. Surveyor, Montreal.

The Yucatan Power Co., Montreal, have been incorporated with a capital of \$1,000,000, to carry on the business of an electric light, heat and power company. The charter members include W. Bain, R. Gowans and G. H. Cassels, Toronto.

The Canada Newspaper Syndicate, Montreal, have been incorporated with a capital of \$20,000, to carry on a printing, publishing and engraving business. The charter members include M. Epstein, J. Taylor and W. G. Mitchell, Montreal.

The United Collar Co. of Canada, Montreal, have been incorporated with a capital of \$150,000, to manufacture collars, shirts, etc. The charter members include C. B. Kelly, A. M. Bilsky and A. M. Reaper, Montreal.

The Canadian Pacific Railway Co. are contemplating the construction of 610 miles of new pole lines, and 4,068 miles of wire, 1,966 of which will be copper.

Allis-Chalmers-Bullock, Limited, under the new management have entered on an aggressive policy in the pursuit of business. They have leased a suite of offices in the new Trader's Bank skyscraper in Toronto, added to their office staffs in New Glasgow, N.S. and Winnipeg, Man., and are spending a large sum of money in improving the equipment of their shops at Montreal. The plant is running night and day to keep pace with orders received and further important additions to it are contemplated in the very near future.

The Maritime Light & Power Co., St. John, N.B., have been incorporated with a capital of \$100,000, to manufacture lighting and heating apparatus, etc. The provisional directors include J. R. L. Starr, J. H. Spence and A. Rogers, Toronto.

Messrs. E. S. Stevenson & Co., St. John, N.B., have recently ordered a standard duplex pump from the Smart-Turner Machine Co., Hamilton, Ont.

The premises of the Amherst Suspender Co., Amherst, N.S., were destroyed by fire March 24. Loss about \$4,000.

The Dunlap Cooke Co. of Canada, Amherst, N.S., have been incorporated with a capital of \$250,000, to manufacture clothing, mantles, hats, etc. The provisional directors include G. W. Cooke, D. W. Robb, Amherst, and J. H. Doody, St. John, N.B.

Stanfield's Limited, Truro, N.S., will erect a new factory at a cost of about \$40,000.

Work has been commenced on the new theatre which is being erected in Winnipeg, Man., by C. P. Walker. An hotel will be built in connection, the entire structure costing about \$500,000.

Rainy River is 85 miles in length, running from Rainy Lake to Lake of the Woods, and its average width is 900 feet. The river has a channel depth of eight feet or more at low water, except at a few places where there are rapids. The fall at International Falls is 20 feet, the water pouring over a granite ledge. Below this cataract the river is navigable to the outlet at all stages. This is practically the entire length, as the falls are only two and one-half miles from Rainy Lake. There are 16 steamboats plying on Lake of the Woods and the river. About 5,200 tons of freight and 14,700 passengers were handled by those boats last year, and the running of loose logs on the river amounted to 105,000,000 feet.

William Beech, a mining explorer who recently returned from the shores of Hudson Bay, traveling by snow shoes and dog trains to Winnipeg, Man., reports having made rich mineral discoveries near Fort Churchill. Among his other finds was a deposit of iron ore some six miles from the fort, close to the shore, so as not to require transhipment.

It is rumored that the Robert Simpson Co. will establish a branch at Brandon, Man.

The Machine Works Co., Brandon, Man., will erect an addition to their plant, 120x80 feet.

The ratepayers of Brandon, Man., will vote on a by-law to expend \$80,000 on school buildings.

The Brandon Electric Light Co., Brandon, Man., will erect a new power house.

The Brandon Electric Light Co., Brandon, Man., have placed an order with the Robb Engineering Co., Amherst, N.S., for two 375-h.p. compound Corliss engines for direct connection to 250-k.w. generators.

The flour mills of Messrs. Alexander & Law Bros., Brandon, Man., were damaged by fire March 18. Loss about \$10,000.

T. L. Arnett's lumber yard, Souris, Man., was damaged by fire March 9, to the extent of about \$15,000.

A Winnipeg syndicate will erect a creamery and factory near St. Laurent, Man.

Messrs. D. J. Dyson and Thomas Lock, Winnipeg, Man., are forming a company with a capital of \$50,000, to manufacture vinegar, etc.

The James Ballantyne Co., Winnipeg, Man., have been incorporated with a capital of \$50,000, to manufacture steam, gas, electricity, etc. The provisional directors include J. Ballantyne, A. W. P. Buchanan, Montreal, and G. A. Young, Hamilton, Ont.

The Siche Western, Limited, Winnipeg, Man., have been incorporated with a capital of \$15,000, to manufacture gasoline, electricity, etc. The provisional directors include E. C. Colby, G. H. Maurer, Winnipeg, Man., and E. C. Foley, Montreal.

The North-West Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$300,000, to carry on the business of manu-

facturers' agents. The provisional directors include W. S. Gowler, W. A. Griggs, and R. K. Lindsay, Winnipeg.

E. L. Drewry, North Battleford, Sask., will erect a cold storage warehouse.

The Raymond Mill & Elevator Co., Magrath, Alta., will erect a mill to cost about \$25,000.

The Windsor hotel and several adjoining buildings, Wolseley, Sask., were destroyed by fire March 11. Loss about \$40,000.

The premises of the Qu'Appelle Furniture Co., and several adjoining buildings, Qu'Appelle, Sask., were destroyed by fire March 20.

The Grand Trunk Pacific Railway Co. have awarded a contract to Messrs. Cash Bros., railway contractors, Lacombe, Alta., to commence operations on the new Transcontinental line, 110 miles east of Lacombe.

A mace for the new Provincial Legislature was shipped to Regina, Sask., from Toronto a few days ago. The massive rod, with the surmounting crown, measures in length four feet. It is of brass, heavily hand-chased, and plated with gold. Among the national symbols to be noted in the decorative effects are the maple leaf, beaver, wheat-sheaf, rose, shamrock and thistle. The royal crown is especially beautiful, with its massively chased and applied ornamentation. The seal upon it is perhaps the most remarkable piece of art craftsmanship yet produced by Canadian metal-workers.

The City Council, Weyburn, Sask., will install an electric light plant at a cost of about \$50,000.

The Edmonton Tent & Mattress Co., Edmonton, Alta., will erect a new factory at that place.

J. Burnside, Hamilton, Ont., will erect a sash and door factory at Lethbridge, Alta.

The Canadian Pacific Railway Co. announce that on May 25 and at intervals thereafter the Canadian Australian line new twin screw turbine steamer Maheno of 5,282 tons will sail from Vancouver to Sydney, calling at Honolulu, Fiji and Brisbane. This will be the first turbine steamer on the Pacific.

The King Lumber Co., Cranbrook, B.C., will erect a saw mill at a cost of about \$100,000.

The Department of Marine and Fisheries, Ottawa, will erect a lighthouse on Trial Island, B.C.

The Hall Elevator & Grain Co., Vancouver, B.C., will erect a 500-barrel flour mill.

The British Columbia Copper Co. have ordered a 10-ton hand-power traveling crane from the Smart-Turner Machine Co., Hamilton, Ont.

The Bullock Electric Mfg. Co., Cincinnati, Ohio, have just placed an order with the Electric Cable Co., 42 Broadway, New York City, for the new insulating compound, Voltax, for impregnating field and armature coils. This material, which is rapidly being adopted by many of the large railway and manufacturing companies, has only recently been placed on the general market. It is cheaper than rubber insulation and with the increase in the price of pure rubber this new material is coming into very general use.

## ELECTRICITY.

Electrical machinery and appliances of all kinds, electrical power plants and other progress in the electrical industries will be noted here.

Senator Domville has cabled from England to Col. F. V. Wedderburn, St. John, N.B., that a powerful English syndicate will build an electric passenger and traffic railway to be known as the Canada Central. The Canada Central, formerly known as the Ottawa Valley, is to run from Montreal to Ottawa and will then be carried on to the great lakes and is expected to become an important factor in developing the trade from the West, and carrying it to the seaboard at Montreal. The road may in time become a through transcontinental system. It will be operated by electric power.

The Toronto & Port Perry Electric Railway Co., Toronto, is being formed to operate an electric railway from Toronto to Port Perry, a distance of about 35 miles.

A Federal policy for waterpowers, which will prevent the export of energy developed at Niagara to an extent to starve Canadian industries, was announced in the Dominion House of Commons by the Minister of Public Works. The matter arose in discussion on a motion for a return describing all waterpowers under Dominion control. Mr. Hyman, the Minister, said there was no doubt of Federal control over the export of electric power. The government had therefore laid down a policy to govern their course. Right to export power would only be granted subject to revocation at short notice; there would be no claim against either Provincial or Dominion Governments arising out of such revocation, and the companies would be subject to such rules and regulations as the government saw fit to impose. Action would also be taken to prevent spoilation of the scenic beauty of the Falls.

The report of the Ontario Municipal Power Commission, which has just been completed, gives in detail the result of the examination of the project by electrical and hydraulic engineers, contractors and accountants. The construction of a power plant and a transmission line by the government, it is understood, is urged, and the following careful estimates are given of the cost of the work:—Cost of development, transmission, and distribution of 30,000 h.p., \$6,684,000. Cost of same for 60,000 h.p., \$9,354,000. Cost of same for 100,000 h.p., \$11,909,000. The cost of power for manufacturing purposes, it was found, could be supplied for \$17 per h.p. per year. Some estimates placed this fair selling price at \$15 per h.p. per year. It was also found by the commissioners that it would be possible to effect a reduction of at least 25 per cent. in house lighting. The last contract made by the City of Toronto for arc lamps was at the rate of about \$65 per year per lamp. The commission found that arc lamps could be provided for about \$40 a year. The commission also estimated that there would be a saving of \$1,850,000 each year to the municipalities interested.

Mr. J. Alexr. Culverwell, managing director of the Central Ontario Power Co. states that work and development will be started at the company's property at Burleigh Falls before May 1. The main line will pass through

Peterborough, Millbrook, Bowmanville, and Oshawa; the last two places have applied for some 1,800 h.p. It is also the intention to run a branch line from a point north of Millbrook up to Omeme and Lindsay. There is ample power, as Buckhorn Falls power will be connected with the Burleigh Falls circuit together giving a capacity of some 7,000 h.p. in the dry season.—Lindsay Watchman-Warder.

The chain of wireless telegraph stations from New York Harbor to Cape Race, Nfld., is now completed, and by means of this chain incoming and outgoing transatlantic steamers are in communication for a period of about 60 hours prior to arriving at and after departure from the harbor of New York. Arrangements also recently have been completed whereby the principal passenger steamers of the Cunard, Hamburg-American, North German Lloyd and French lines have, in addition to the regular Marconi apparatus, been fitted with long-distance receivers, so that these vessels, of which 13 are so fitted, can be reached at all times during the voyage across the Atlantic. There are now over 70 regularly equipped ocean-going vessels using the Marconi system.

## FUEL.

For names of fuel dealers see "Coal and Coke" in Classified Index.

The fuel supply question is a most important one to Canadian manufacturers. The information published in this department will keep the readers posted on sources of production.

F. L. Wanklyn, vice-president and general manager of the Dominion Coal Co., who has just returned from the mines at Glace Bay, N.S., says:—"The mines of the Dominion Coal Co. have now reached a new high record with a daily output of 14,000 tons, and the outlook for the coming season is very bright. Another satisfactory feature," says Mr. Wanklyn, "is that the quality of coal never looked better than at present. The company now have over 105,000 tons banked, a very large amount for this period of the year."

"A number of experiments have recently been made by the Boston & Maine Railroad Co. in the use of peat fuel, says the Bangor Commercial. So far the tests have given entire satisfaction, and now the company are preparing to give the new fuel a more extended trial. The company had their attention called to the value of peat as a steaming agency a few months ago. Experiments were satisfactory. The source of supply is in the township of Lexington, Mass., and it is said that this single deposit would furnish enough fuel for all the railroads entering Boston for a period of 250 years. The treatment consists in cutting out the peat in large cubes and then subjecting them to heavy pressure which exudes all the moisture and makes the mass as compact as anthracite. In the pressing the cakes take on an elliptical shape, with an inch hole running through them, which admits of free burning.

Hon. Robert Drummond in a recent address in which he reviewed the coal trade of Nova Scotia in 1905, said:—"There should be each year what may be called a natural increase of

10 per cent. in sales. This increase has not been forthcoming the past two years. The shipments for 1904 went some 30,000 tons behind those of 1903, and 1905 will not show more of an increase over 1904 than 100,000 tons, or say, 2½ per cent. only. And yet after all this is said, it can be claimed for 1905 that it shows the biggest shipments on record. The unfavorable weather early in the year and the lateness of the opening of water shipments caused profits to fall short. More than one company did not make profit sufficient in 1905 to pay fixed charges. The trade prospects for 1906 are good. The operators have no misgivings; indeed, they incline to be cheerful over the outlook. Nearly all of the companies have development work well ahead, which means that they are prepared for increased outputs should occasion demand. The great activity in the iron industry is guaranty of activity in the coal trade. The steel works have orders booked to keep them busy for the next few months, and they will have all they can do to supply all the foundry iron already sold.

The total production of bituminous coal in the State of Pennsylvania for the year 1905 was 119,330,878 net tons, compared with 99,087,354 tons for the year 1904, an increase of 20,243,524 tons. The anthracite production (not shipments) in net tons for the year 1905 was 76,469,561 compared with 70,929,496 tons for the year 1904, an increase of 5,540,065 tons. The total production of both kinds of coal amounted to 195,790,439 net tons, compared with 170,016,850 tons for the previous year, an increase of 25,783,589 tons.

The Dominion Coal Co., Sydney, N.S., have issued a pamphlet for distribution among their miners in which is outlined a plan for assisting the men to build and own their own houses. The management have had this idea under consideration for some time past, and have at last evolved a definite proposition. It consists of advancing to the employes, upon easy terms of repayment, funds for building cottages on lots in the neighborhood of the Cape Breton mines wherein they are employed. The land occupied by the structures will also be paid for in small periodical installments.

We noted in a previous issue the large increase of 100,000 tons in the aggregate coal output of Nova Scotia during the month of January, as compared with January a year ago. February returns maintain the good beginning with which the year was started. The Dominion Coal Co. show an increase in shipment of 62,356 tons over February, 1905. The Cumberland Railway & Coal Co. show an increase of 21,129 tons. The Intercolonial Coal Co. show an increase of 10,187 tons. Gowrie & Blockhouse, Limited, show an increase of 2,411. The Acadia Coal Co. show an increase of 4,433, and the Nova Scotia Steel & Coal Co. show an increase of 7,820 tons, or a total increase of more than 105,000 tons in the shipments of February, 1906, against the corresponding month of 1905. At this rate, if the output and shipments are maintained throughout the year, 1906 should realize the statements of parties who predict an unusually prosperous year in coal mining in this province.—Industrial Advocate.

## PUBLICATIONS.

The publishers of The Canadian Manufacturer solicit in advance, if possible, catalogues, circulars, and other industrial publications issued by manufacturers. We wish to review such literature, and bring the principal points to the attention of our readers.

Bulletin No. 1, published by the J. P. Morris Co., Philadelphia, Pa., gives among much other interesting information a complete description of their Port Richmond Iron Works, at Philadelphia, and of some of the turbines which they have furnished for some of the important installations in Canada, and at Niagara Falls, such as ten units, 5,000 h.p. each for Niagara Falls Power Co.; eleven units, 5,500 h.p. each for Niagara Falls Power Co.; five units, 2,900 h.p. each for Niagara Falls Hydraulic Power & Mfg. Co.; four units, 2,300 h.p. each for Niagara Falls Hydraulic Power & Mfg. Co.; two units, 10,000 h.p. each for Canadian Niagara Power Co.; two units, 6,000 h.p. each for Shawinigan Water & Power Co.; one unit 10,500 h.p. for Shawinigan Water & Power Co.; two units, 3,550 h.p. each for the Huronian Co.; two units 8,000 h.p. each for West Kootenay Power & Light Co.; four units, 13,000 h.p. each for Electrical Development Co. of Ontario.

C. Regenhardt's International Guide for 1906, for merchants, manufacturers and exporters, contains the addresses wanted constantly by those engaged, or interested in foreign business, data re shipping, consular and customs service, population of all manufacturing cities and towns in all countries; leading bank and law firms; commission and forwarding agents, etc. Price \$1.50, postage paid. The C. Regenhardt Agency, 11 Broadway, New York.

The Carter Publishing Co., 8 New Bridge Street, E.C., London, England, have sent us their 1906 edition of "The Export Merchant Shippers of Great Britain and Ireland." This valuable publication was heretofore the property of Messrs. Dean & Son, publishers, of London. Since the change of ownership the book has been augmented and enlarged by 40 pages, and the improvements and additions render it more valuable than ever to its readers. Some of the more salient and noticeable features of it are names and addresses of all consuls of foreign state in London, list of Lloyd's signal stations; Lloyd's agents throughout the world; Lloyd's register of British and foreign shipping; list of chambers of trade and commerce of the United Kingdom; customs tariff of the United Kingdom, including import and export duties and customs drawback, etc. The section of the book containing the Trade Directory of Manufacturers of the Kingdom is exceedingly useful to all who do business with that country.

The J. P. Morris Co., Philadelphia, Pa., have sent us their Bulletin No. 2 of their department of hydraulic machinery, having reference to "Variation in Power and Efficiency, due to Changing Heads, with the Revolutions Constant, as illustrated in the preliminary design of a 13,500 h.p. turbine." This technical bulletin, we are told, is published for the use of consulting hydraulic engineers and others desiring information concerning the variation in power and effi-

ciency of a turbine wheel when running at a constant number of revolutions, and operating under varying heads of water. The information contained in the bulletin will be found interesting and valuable to those contemplating the utilization and development of water power, and especially to those making a study of the economic running of water wheels.

Catalogue No. 111, issued by the Arthur Koppel Co., 66 Broad Street, New York, contains much interesting matter relative to industrial, narrow and standard gauge railway materials, covering the field from spikes to the locomotives and cars. In fact it is a complete catalogue of the "Arthur Koppel System," so widely and favorably known. Every item mentioned in the catalogue is illustrated, thus extending to the prospective customer a means of fully understanding what the company are manufacturing.

"A Little Talk on Brick for Boiler Settings" is the title of a brochure sent us by the Harbison-Walker Refractories Co., Pittsburgh, Pa. It can be read in five minutes but it contains a large amount of useful information relating to the subject. The talk is or should be exceedingly interesting to superintendents, engineers, and all who are responsible for or have care of boilers. Sent on application.

The Garvin Machine Co., Spring and Varick Streets, New York City, manufacturers of metal-working machine tools and special machinery, have sent us their new complete illustrated catalogue descriptive of their many products. It also contains a large amount of information appropriate to such a book.

The Star Corundum Wheel Co., Detroit, Mich., have sent us their illustrated catalogue No. 8 relating to the emery and corundum wheels, grinding machinery, sharpening devices, etc., manufactured by them. The different specialties are illustrated and described, and many useful hints and suggestions made regarding the selection of grades of tools for different work. The company will send catalogue on request.

The South African Trade Journal, published at Cape Town, reaches us in an enlarged and improved form. This important journal has now been in existence for nearly a quarter of a century, having first begun publication in 1882, and is the oldest established commercial paper in South Africa. It has recently undergone a change of management, and now presents a variety of features characterizing the present economic conditions of South Africa and affecting her relations with the rest of the world. There are immense possibilities in that country for Canadian trade.

"The Gaiho" is the name of a new trade journal published by the Gaiho Sha, at Tokyo, Japan, of which Mr. T. Murata is editor. In the current Canadian language "Gaiho" becomes the "Foreign Intelligencer," and "Gaiho Sha," when properly interpreted, means Bureau of Foreign Information. The Gaiho, or Foreign Intelligencer is the organ of the Gaiho Sha, and is circulated among the prominent commercial and industrial classes throughout Japan. The Gaiho Sha, or Bureau of Foreign Information, was established for the purpose of rendering mutual assistance to Japanese buyers and

importers as well as foreign merchants and manufacturers seeking trade in that country. Most of the 36 pages of Gaiho are occupied with advertisements, set in Japanese characters of manufacturers seeking Japanese trade, most of them American concerns, prominent among them being the Jeffrey Mfg. Co., Columbus, Ohio, and the Advance Machinery Co., Toledo, Ohio, who are patrons of THE CANADIAN MANUFACTURER.

Messrs. F. H. Hopkins & Co., Montreal, have sent us their new classified list of the tools and machinery for all forms of construction work, railroad, mill and contractors' supplies, etc., handled by them. The booklet gives a good idea of the variety of machinery, tools and supplies that the concern are prepared to furnish.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have sent us their circular No. 1,128, having reference to small power motors. Many operations which are usually performed by hand or mechanical means may be accomplished by the use of these motors with a saving of time and labor. In this list might be mentioned the running of sewing machines, coffee grinders, automatic pianos, small ice cream freezers, dental machinery, jewelers' lathes, phonographs, moving displays, sign flashers, polishing and buffing wheels, emory and grinding wheels, blowers and ventilating fans, cash transfer systems, slot machines, meat choppers, washing machines, cutters, stamping and marking apparatus, pasters, cancelling mechanism, addressing machines, ruling machines and other applications too numerous to mention.

### CASSELLA COLOR CARDS.

Among the color cards lately sent us by the Cassella Color Co., 182-184 Front Street, New York City, are the following:

Shade Card No. 2,696, The Printing of Woolen Fabrics.—This is a large card containing 73 handsome dyeings on woolen piece goods, illustrating the use of their colors for the printing of this material. The printing is shown in stripes and more elaborate patterns. Full description of the processes and formulae for the production of the dyeings is also given.

Shade Card No. 2,698, Fashionable Shades 1905-6.—This latest edition of Fashionable Shades contains 146 dyeings on woolen piece goods, showing easily leveling colors, both in combinations and as self colors. Dyeing formulae are included.

Shade Card No. 2,717, Para Diamine Black B B, Patented.—This card is issued as a supplement to the book on the Dyeing of Cotton and describes the dyeing of this new black dyestuff, being illustrated with four dyeings on cotton yarn and piece goods.

Shade Card No. 2,725, The Dyeing of Chrome Leather.—In somewhat similar form to their large handbooks on Wool Dyeing and Cotton Dyeing, Cassella Color Co. have now issued a book on the dyeing of chrome leather. It is divided into general remarks, which include the preparation of the leather, and treat, in detail, of The Dyeing of Acid Colors on Chrome Leather; The Dyeing of Basic Colors on Chrome Leather; The Blackening of Chrome Leather, and finally a large number of dyed leather samples are shown, in five different tables, altogether 44 dyeings.

The book should prove of great interest to all chrome tanners.

Shade Card No. 2,732, Immedial New Blue G Conc., Patented.—This card is another in the series of supplements to their book on The Dyeing of Cotton and contains full description and directions for the dyeing of this new Immedial Blue. Nine dyeings are shown, on cotton yarn, piece goods and loose cotton.

Shade Card No. 2,733, Exceedingly Fast Green and Olive Shades on Corduroy for Upholstery and Dress Goods.—Three dyeings of fashionable shades of green on corduroy velvet are shown in this little card, with directions for producing same.

Shade Card No. 2,736, Direct Prints with Immedial Colors acting simultaneously as Reserves for Aniline Black.—In this card directions are given for the printing of Cassella's Immedial colors with caustic soda lye only, and the patterns shown have been produced on a practical scale, according to this simple process, from Immedial colors in combination with aniline black. Twelve different patterns are shown.

Shade Card No. 2,739, Immedial Green B B Extra, Patented.—This is still another supplement to the book on The Dyeing of Cotton and illustrates and describes the use of the latest Immedial Green, B B Extra, Pat.

Shade Card No. 2,742, Anthracene Chrome Black P F Extra, Patented.—One of Cassella Color Co.'s newest wool blacks, which is fast to potting and severe milling, is described in this card, which is issued as a supplement to their book on Wool Dyeing. Full dyeing

directions are given and ten handsome dyeings shown.

Shade Card No. 2,752, Diamine Fast Yellow 3 G.—This is another supplement to the book on the Dyeing of Cotton, and contains dyeing directions for the use of this new yellow, together with attractive dyeings on cotton yarn and cloth and satin and union piece goods. Diamine Fast Yellow 3 G is distinguished as possessing a very good fastness to light, together with a very bright greenish shade.

Shade Card No. 2,753, Black on Uncarbonized Shoddy.—In this little sample box are shown nine dyeings, on uncarbonized shoddy, made from Para Diamine Black B, Pat., Oxy Diamine Blacks U S and U I, P Pat., dyed in three different ways; first, direct, then after-treat with bichromate of potash and acetic acid, and lastly, after-treat with formaldehyde and acetic acid.

Shade Card No. 2,758, Azo Chrome Blue T and T B.—In this card, issued as Supplement No. 2 to their book on Wool Dyeing, these excellent wool blues are described and illustrated by three dyeings, two on plain woolen piece goods and one on woolen piece goods with white cotton effect threads. Full dyeing directions are given.

Shade Card No. 2,762, New Method of Printing Immedial Colors in Dark Shades (Patent Applied for).—This large card contains twelve handsome dyeings on cotton piece goods, showing printed patterns produced by a new method of printing, using Reducing Paste A for Printing together with Immedial colors. Full directions are given.

Shade Card No. 2,764, Anthracene Acid

Blue G G and R R, Patented, Anthracene Chrome Blue F D, Patented.—In this card are shown sixteen attractive dyeings on wool yarn, felted wool and slubbing, and four examples of vigoureux printing. Full dyeing directions for their production and description of these new blue dyestuffs are included.

Bulletin No. 110, Hyraldite A, Patented, for the Stripping of Dyed Goods.—In this bulletin, as in No. 105, the use and advantages of Hyraldite A as a stripping agent are described and directions are given for the stripping of the two different pieces of raw material shown and the re-dyeing of same as illustrated by the four dyeings contained therein. This bulletin also contains a list of shade cards and bulletins referring to the use of Hyraldite.

Generating sets are now manufactured by the B. F. Sturtevant Co., Boston, Mass., in a line of thirty-six sizes ranging from 3 to 100 K.W., direct connected. The vertical cross-compound engines were designed to meet the rigid specifications of the United States Navy Department, which in the case of the 100 K.W. demand an efficiency of 31 pounds per K.W. hour. These engines, as well as the vertical and horizontal simple engines, are entirely enclosed, provided with forced lubrication and watershed partitions. The generators are multi-polar, capable of carrying 50 per cent. momentary overload and 25 per cent. excess for two hours without sparking or undue heating. The smaller sizes of these sets are particularly adapted to service as boosters.

## TO THE VARNISH BUYER

the most serious considerations are quality, reliability and uniformity, and these qualifications are of special importance to the dealer who is trying to build up a permanent varnish trade.

Berry Brothers' label or brand may be safely relied upon as ensuring the above conditions.

Our Varnishes are the safest goods to handle and the surest and most reliable goods to use.

### BERRY BROTHERS, Limited

VARNISH MANUFACTURERS

WALKERVILLE, ONT.

• Write for our 100 page illustrated catalogue. Every dealer should have a copy for reference.

**PERSONALS.**

Mr. E. J. Walsh, C.E., will remain in charge of the surveys on the Trent Canal. Mr. A. J. Grant, now resident engineer at Port Colborne, will be transferred to Ottawa as superintending engineer of the Trent Canal, and will have his headquarters there. Mr. Lambert Linn will be sent to Kirkfield as assistant engineer.

Messrs. Simpson & Lewis, Ottawa, have been appointed consulting engineers for the town of Morrisburg, Ont.

At the recent annual meeting of the Wellman-Seaver-Morgan Co., Cleveland, Ohio, the office of general manager, which has been vacant since the death last June of Mr. Charles H. Wellman, was filled by the election of Mr. S. H. Pitkin, whose present title will be first vice-president and general manager. Otherwise no changes were made in the officers of the company.

Messrs. Drummond, McCall & Co., Montreal, have secured premises at 86 Front Street East, Toronto, and have removed from their suite of offices at 100 King Street West, carrying a stock of galvanized sheets, steel, iron, and other metals. The new warehouse will be in charge of H. J. Hamilton, the Toronto manager, while F. R. Hamilton, formerly with Rice Lewis & Son, will travel through Ontario.

Mr. R. Wilson-Smith, financial broker, and a former mayor of Montreal, succeeds Mr. W. H. Plummer as one of the three Government representatives on the directorate of the Consolidated Lake Superior Co.

Dr. A. W. Bell, who has been connected with the Toronto Industrial Exhibition Association for a number of years, has been appointed manager of the Winnipeg Fair. Dr. Bell had charge of the poultry and dog departments at the Toronto Exhibition.

A dinner was tendered on Monday night last at the Windsor Hotel, Montreal, by the office and warehouse staff of the Canadian General Electric Co., Limited, to Mr. W. F. Dean, district manager, and Mr. F. J. Bell, assistant general manager, on the occasion of the severing of their connection with the company. Mr. Dean leaves shortly for New Haven, Conn. Mr. Bell who was for many years with the Canadian General Electric and formerly in business for himself in Winnipeg, has joined the Montreal office of Allis-Chalmers-Bullock, Limited.

The following are the names of delegates

appointed to represent the Toronto Board of Trade at the sixth Congress of Chambers of Commerce of the Empire to be held at London, England, on July 8:—Messrs. A. E. Kemp, M.P., W. F. Cockshutt, M.P., J. W. Woods, J. F. Ellis, J. D. Allan, D. R. Wilkie, W. J. Gage, R. J. Christie, Noel Marshall, C. W. Band, J. D. Ivey, C. W. I. Woodland, Lieut.-Colonel G. T. Denison and F. G. Morley.

At the annual meeting of the Canadian Westinghouse Co., Limited, held at their office in Hamilton, Ont., a few days ago, the annual report submitted to the shareholders showed the company to be in an exceedingly prosperous condition, the amount carried forward after payment of a six per cent. dividend being \$232,041.35. The Board of Directors was re-elected as follows:—George Westinghouse, president; H. H. Westinghouse, vice-president; Frank H. Taylor, vice-president; Paul J. Myler, vice-president and general manager; L. A. Osborne, George C. Smith, T. Ahearn, Warren Y. Soper, Hon. J. M. Gibson, C. F. Sise, and John H. Kerr, secretary.

The annual meeting of the Class Paper Section of the Canadian Press Association, was held in Toronto March 28, with Mr. C. H. Mortimer in the chair. The election of officers resulted in the selection of Mr. P. G. Van Vleet, of the Canadian Implement and Vehicle Trade Journal, to the office of president. The executive committee comprise Messrs. Wills, Gagnier, Gibbard, Edmonds and Cooper.

**TO DEVELOP POWER AT NIAGARA FALLS.**

Hon. Adam Beck, M.P., delivered an address before a general meeting of the Toronto Board of Trade a few days ago on "Electrical Power from Niagara Falls," in which he made some exceedingly interesting statements about the cost of transmission from the Falls to Toronto and other consuming points. He said:

"Electric energy can be developed at Niagara Falls for \$8 per h.p., which figure would cover money invested and operating expenses; that it should only cost \$5 for transmission to Toronto; that under such conditions the saving to consumers of Toronto as against steam would be from \$500,000 to \$750,000 a year, and that it would mean a saving of \$10,000,000 a year to the province as against steam.

"I will confine myself to the waterpower

of Niagara Falls," said Mr. Beck. "That is of especial interest to us because it will supply with cheap power a large part of the population of this province. I estimate, in fact, that 1,500,000 people may easily be supplied with electric power from the Falls if the available power there is developed. There is an agitation going on both in Canada and the United States over the likelihood of destroying the scenic beauty of the Falls by a diversion of water. Our friends in the United States need not be so concerned as they profess to be. Canada has not been prodigal in letting franchises, although too great concessions may have been made to companies, but I am sure the Government of Ontario—and from what I read in the press the Minister of Public Works at Ottawa is of a similar view—will never consent to any steps which will mean the depletion of the waters of the Falls. President Roosevelt has been very fair and pronounced on all these matters, and I feel certain he will not consent to allow the scenic beauty of the Falls to be destroyed. He may repose the same confidence in our Governments, both of Ontario and of the Dominion. It is true the State of New York has been granting power franchises without demanding a limit to the water that shall be used. We want the amount to be limited.

"The export of power should not be prohibited. It would be an injustice if it were to those who have invested between \$30,000,000 and \$40,000,000 in the development of power at the Falls. It would be unfair to prohibit a realization of profits on money so invested, but what I do hold is that power must always be first available for local consumption.

"Regarding the price of this power to the consumer, the matter might well be left in the hands of our Provincial Legislature. The power companies are our tenants and as such we should be able to regulate them.

"From figures which I have been able to secure I estimate that power can be developed at the Falls for \$8 per h.p. This figure would cover money expended in installation, in maintenance, expenses, depreciation, and interest on money invested at, say, four per cent. to five per cent. Against this steam power costs on an average \$28 per h.p. The difference is a saving of \$20 per h.p., or \$10,000,000 to the province."

Dealing with the benefits of power obtained at his figures, the speaker took the ground that it would build up manufactures, prove a moral blessing by giving more work to

**HARBISON-WALKER REFRACTORIES CO.**

PITTSBURG, PA.

MANUFACTURERS  
OF  
HIGHEST GRADE  
REFRACTORY  
MATERIALS

Fire Clay  
Silica  
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**BRICK**

SOLE AGENTS FOR  
CARL SPAETER  
MAGNESITE  
IMPORTERS  
CHROME ORE

7,000 REGULAR CUSTOMERS

Write for Booklet "K."

1,100,000 DAILY CAPACITY

laboring men in all the cities of Ontario, and would even allow the Toronto Railway Co. to offer penny fares to the workmen. If Ontario did not develop this power Winnipeg might take away the industrial supremacy of the larger cities of this province, since that city was obtaining cheap power from Winnipeg River.

"I am not antagonistic to any capitalists," observed the speaker, "for we are all anxious to make all we can, but I hold the power at Niagara is for all the people of this province and should not be controlled by a few promoters and wealthy men. It cannot be contradicted that at present power is being sold at Niagara for \$12 per h.p. It is to be brought to Toronto by the Electric Development Co. and sold here in large units at \$35 to consumers. How is it that the cost of transmission is \$23 per h.p.? It is an unreasonable figure and can only be accounted for by the belief that the interests of the three companies, the Electric Development, the Toronto Electric Light and the Toronto & Niagara have identical interests behind them, such as Sir Henry Pellatt, Frederic Nicholls, Senator Cox, and others. I cannot accept the statement that these companies are

justified in charging \$35. I may say to them that it costs only \$5 for transmission instead of \$23. But the price you are asked to pay is not what this power costs, but what those companies can get from you."

It was explained by Mr. Beck that \$5 for transmission would allow for all expenses of right of way, superstructures, etc., and an interest of four per cent. or four and a half per cent. on all moneys invested. He estimated that if power were sold to the Toronto Street Railway at \$17 instead of \$35, as under the contract made some time ago, it would mean a saving of \$250,000 to the company, and would allow the workingman to get two or three more tickets for 25 cents.

Figuring on the basis of \$20 per h.p. for pumping stations and railways, and on a slightly higher rate for small consumers, he estimated that, after allowing for all expenses and for interest on all moneys invested, the consumers of Toronto could be saved from \$500,000 to \$750,000 per year. He further quoted figures to show how capitalists had raised almost double, in some cases, the price of light, heat and power in Montreal, Buffalo and Ottawa.

The Westinghouse Electric & Mfg. Co., have received through their Atlanta office a very large order for electric machinery from the Southern Power Co., Fort Lawn, S.C. The order includes eight 3,000 k.w., 3-phase, 2,200-volt, 60-cycle generators for direct connection to water wheels and to operate at a speed of 225 r.p.m.; two 250-volt exciters, and twelve 2,000 k.w., oil-insulated, water-cooled transformers. Through the Philadelphia office an order has been received from the Wilkesbarre and Hazleton Railway for two turbine-type generators of 1,000 k.w. capacity, 3-phase, 25 cycles, to operate at an electro-motive force of 300 volts.

Orders for Sturtevant high speed automatic enclosed engines, with forced lubrication, have recently been placed with the B. F. Sturtevant Co., Boston, Mass., by the Canadian Shipbuilding Co., Toronto; Cleveland Cliffs Iron Co., Nashwauk, Minn.; The Champion Coated Paper Co., Hamilton, Ohio; Cordaville Woolen Co., Cordaville, Mass.; Ames Iron Works, Oswego, N.Y.; Thomas S. Smith, Chicago, Ill.; Fuller Cabinet Co., Portsmouth, Ohio; Department of Docks & Ferries, New York City.



We have persistently trained our workmen in "the McCullough-Dalzell way," for over 35 years.

Every crucible bearing our trade-mark is as perfectly formed as these export potters can make it.

**McCULLOUGH-DALZELL CRUCIBLE CO., Pittsburg, Pa.**



WATCH FOR THE  
ANNOUNCEMENT OF

**The Power & Gas Machine Company**

LIMITED

**GALT - - ONTARIO**

**TORONTO TO BUFFALO.**

It is said that the construction of the electric line from Toronto to Buffalo will cost in excess of \$30,000 a mile, an average for railroad construction, and that not much short of the \$4,000,000 capital of the Toronto & Hamilton Railway Co. will be expended in getting the line under way.

Much of the route lies through country where the line will have to be cut through stone formation, and a large sum will be spent in grading and converting trestle-work into permanent fills to secure a permanent roadbed. In addition there will be no fewer than a dozen high level bridges to build along the 86 miles of the road, which when built will be the only electric road of its length and capacity on the continent, marking the first attempt to run a railroad entirely by electric power.

The first high level bridge will be built over the Humber, the second at Oakville and two more at Twelve and Sixteen Mile Creeks. The system between Niagara and Port Dalhousie will be relaid with 90-pound rails, and the trestle-work that now supports a good deal of the line between these points will be replaced with permanent fills to allow for the double-tracking of the system. Hamilton will be reached by a spur off the main line. Branch lines will be run from Lockport and Niagara to Rochester, and other branches will be spread out through the surrounding country.

Overhead trolley will be the electrical means of running the cars and the road will be of standard steam gauge. It is not yet determined where the rolling stock will be

built. It is supposed that each car will be a motor in itself. It is possible that the car works at Amherst, N.S., may be asked to build some of the cars, or the promoters of the line may go to the United States for the latest models, and there is talk of adopting for the system a type of all-steel cars in which form some of the cars are being built over the border.

The road will carry passengers, freight, express, and possibly some of the mail for the Government. It is supposed that the rates will be competitive with railroads now covering the distance.

**HIGH SERVICE TURBO PUMPING STATION FOR TORONTO.**

The city of Toronto, is installing a pumping station for serving a high pressure fire system which possesses several features of unusual interest. The entire station equipment (contracted for by the Canadian Westinghouse Co., Hamilton, Ont.) is of the turbine type; power being furnished by steam turbines and the water pressure by multiple stage turbine pumps.

The service to be rendered by this station will be similar in character and extent to that of the Philadelphia high pressure pumping station, now familiar to the public and which is driven by gas engines. As is the case in Philadelphia, the Toronto service plant will supply water at a maximum pressure of 300 pounds per square inch to a high pressure piping net work, covering the district to be protected. Hose connections are made direct, thus dispensing entirely with the use of fire engines in the locality.

For the present the new high service equipment will comprise two turbo pumping units having a capacity of 5,000,000 gallons per 24 hours at 300 pounds maximum head. It will be installed at the main pumping station where steam power is at all times available. This fact was an important and probably the preponderating one in the decision of the city to install steam-driven, in place of gas-driven apparatus as the expense of maintaining an individual steam plant under full pressure would have been prohibitive.

Motive power for each pumping unit is supplied by an 1,100 h.p. Westinghouse-Parsons steam turbine of the same construction that has become standard for electrical work. They operate on dry saturated steam at 150 pounds pressure and a moderate vacuum of 26 inches is supplied by a condenser of the simple jet type. As the highest economy was not considered of paramount importance in this case the simplest form of condensing plant was adopted. Independent operation is assured by the use of one condenser for each unit. In order to enable the turbines to sustain full load in case of condenser failure, a secondary valve, standard to Westinghouse construction, may be used which at the same time gives the unit an overload capacity of 50 per cent. or more when running condensing at the usual speed. An important feature in the operation of the plant will be the speed control of the pumps, which will, of course, be necessary to secure the desired variation in delivery pressure to meet the exigencies of fire fighting. This will be done largely by hand, and provision has been made for a 30 per

**The Samson Turbine**



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It is a very strong and durable wheel, and is unequalled for ease of regulation.

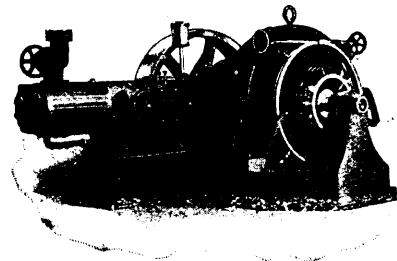
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492



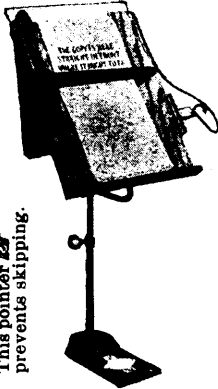
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CLEVELAND RIBBON & MFG. CO., - 2741 CARNEGIE AVE., CLEVELAND, OHIO

cent. variation in speed below the normal speed of 1,500 r.p.m. As an auxiliary feature, the governor operates as an automatic safety stop, preventing the turbine unit from reaching a dangerous speed should any part of the regular governing mechanism get out of order; this being accomplished by instantly shutting off the steam supply to the turbine.

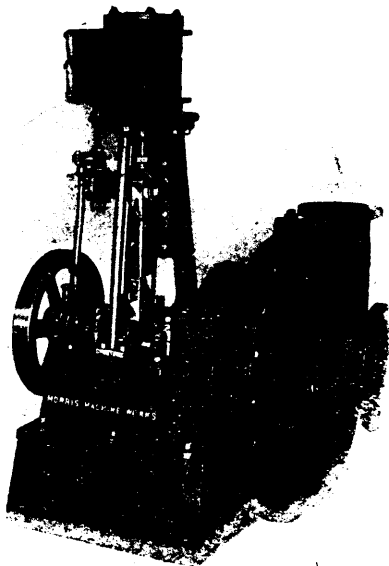
In the specifications drawn up by the City Engineer, it was stipulated that either turbine or pump should be capable of disconnection for inspection of repairs without disturbing the adjustment of the remaining half of the unit. This is readily accomplished by a split coupling of the flexible type. As both turbine and pump each has two bearings, the two parts of the unit are thus independent.

Although the centrifugal pumps are not particularly designed for steam turbine driving, yet in this case, the design is well adapted for direct connection to steam turbines. They are of the two-stage turbine type as developed by the Worthington Co., and are manufactured by the John McDougal Caledonian Iron Works, Montreal. An important and essential feature in the design is the provision of diffusion vanes by which the water delivered by the pump impellers is brought approximately to rest under the static head of 150 pounds per stage. Furthermore, the pumps have been designed so that the dynamic forces acting in the direction of the shaft are approximately balanced, thus relieving the turbine shaft from axial thrust. The pumps take water axially at the centre under a suction head of 10 to 15 feet, both delivering into a horizontal 24 inch main connected with the high pressure system. In cases of large fires and high buildings where maximum pressure head is necessary, the two pressure stages will be operated in series; where lower pressure is desired, the speed of the unit will be reduced in proportion. In cases of small fires, however, where only moderate pressures are required, one pump stage will be eliminated by a by-pass valve delivering suction water directly to the succeeding stage. These valves will be electrically operated.

The complete pumping units are extremely compact, being only about 25 feet in length over all and set at 10 feet centres. This close spacing is largely due to the possibility of locating the condensing plant for each turbine directly beneath it in the foundation.

The operation of a high pressure fire system such as is being installed at Toronto presents many novel conditions not arising in ordinary power work. Principal among these, is the necessity for quick starting. The chart records delivery pressure at the service station. Alarm sounded at 10.15 p.m. At 10.40 the pressure had to be increased to 250 pounds, and maintained until after midnight when the fire was completely conquered; a pressure of 125 pounds was then sufficient for "wetting down" the debris. The morning fire was of shorter duration but required full pressure.

Messrs. Dodge & Day, engineers, Drexel Building, Philadelphia, Pa., have sent us their pamphlet No. 14, describing the piano factory of Wm. Knabe & Co. recently built in Baltimore, Md., under their supervision. Messrs. Dodge & Day issue pamphlets like the one here alluded to describing their work, each representative of some industry.



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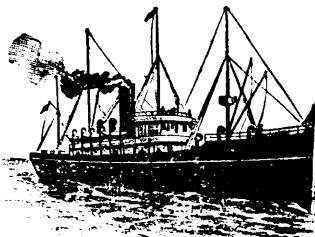
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Date of Publication of 1906 Edition,

FEBRUARY 28th.

London:

THE CARTER PUBLISHING CO., 8, NEW BRIDGE STREET, E.C.

9. Register of British and Foreign Shipping.
10. Shipping and Forwarding Agents, Export Packers, Steamship Lines.
11. Export Sections of London and Provinces (separate towns), giving names of exporters, places of shipment and class of goods shipped.
12. Index to class of Goods Shipped with names of Shippers.
13. Trade Mark Section.
14. Manufacturers Trade Directory (Buyers' Guide).

**LIMIT THE USE OF WATER.**

Governor Higgins, of the State of New York, in his annual message at the opening of the legislature on January 3, dealt at some length with the necessity of protecting Niagara Falls. He said:

"More than twenty years ago the State of New York sought to redeem the Falls of Niagara from vandalism by restoring the surrounding scenery to its primeval beauty and creating a State reservation as a free pleasure ground for the people. It has spent large sums of money in the establishment and maintenance of the reservation, and many thousands of visitors enjoy its privileges yearly. This State and the Dominion of Canada have in the past been engaged in an unworthy rivalry in granting franchises of incalculable value to power development companies, permitting them to take water from the Niagara River above the Falls for commercial purposes. The privileges granted to these companies now constitute a real menace to Niagara. The State of New York cannot carry on the work of preservation effectively without the aid of an international agreement to protect the cataract and the river from spoilation. It can, however, in some degree, repair the mischief already done, (1) by limiting the amount of water which may be taken from the river by the New York companies now engaged in developing power; (2) by repealing all undeveloped charters, of which several remain on our statute books, dormant if not defunct, and (3) by instituting legal proceedings for the forfeiture of the charters of any companies which may be guilty of misuse of their franchises or abuse or usurpation of powers. I earnestly desire to impress upon the Legislature a due sense of the responsibility of this State for the protection and preservation of the grandeur and beauty of Niagara Falls."

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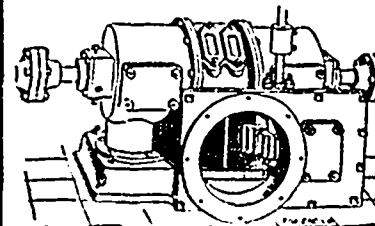
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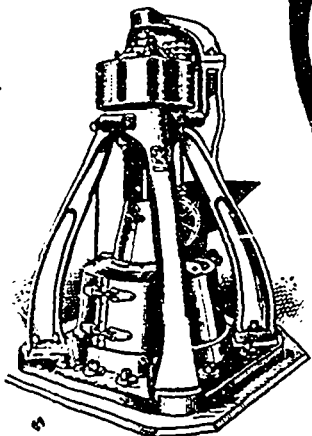
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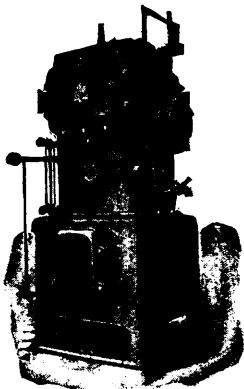
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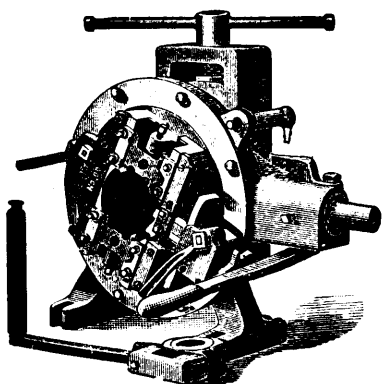
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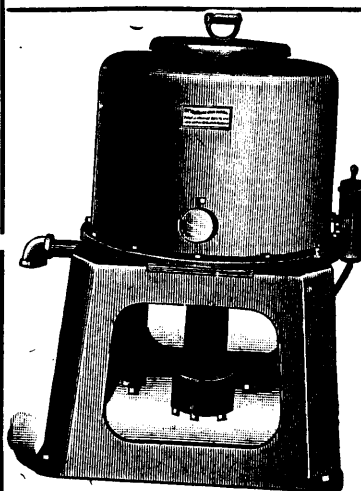
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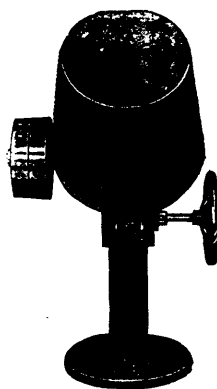
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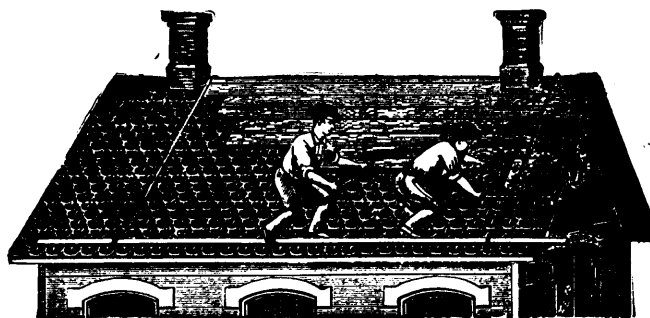
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**FILE and RASP MANUFACTURERS**  
AND RE-CUTTERS.

A trial order solicited. Write for terms.  
C. P. MOORE, PROPRIETOR.

## A WORD TO OUR READERS!

The line at the bottom of our advertising pages requests you when writing to Advertisers, to mention THE CANADIAN MANUFACTURER. Compliance with the request costs nothing, but would mean a great deal to us. As the manufacturer usually grades the salary of his salesman according to the value of the orders he turns in, so the advertiser values space according to inquiries received. The only way for this journal to receive full credit for sales influenced is for our readers, when writing to advertisers, to kindly mention THE CANADIAN MANUFACTURER.

## CLASSIFIED INDEX.

(CONTINUED).

### Belting (Rubber)

Gutta Percha & Rubber Mfg. Co., Toronto.  
McLaren, D. K., Montreal and Toronto.  
McLaren, J. C., Belting Co., Montreal  
Petrie, H. W., Toronto.

### Belting and Supplies

Bristol Co., Waterbury, Conn.  
Dominion Belting Co., Hamilton, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Montreal Belting Co., Montreal.  
McLaren, D. K., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Blast Furnace Brick

Dunbar Fire Brick Co., Pittsburgh, Pa.  
Elk Fire Brick Co., St. Mary's, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Harbison-Walker Refractories Co., Pittsburg, Pa.  
Pennsylvania Fire Brick Co., Lock Haven, Pa.  
Queen's Run Fire Brick Co., Lock Haven, Pa.  
Stowe-Fuller Co., Cleveland, Ohio.

### Blowers

Hamilton Facing Mill Co., Hamilton, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Boiler Compounds

Canada Chemical Mfg. Co., London, Ont.  
Hamilton Facing Mill Co., Hamilton, Ont.

### Boiler Inspection

Boiler Inspection & Insurance Co., Toronto.  
Canadian Casualty & Boiler Insurance Co., Toronto.

### BOILERS (See Engines and Bolders)

#### Bolts and Nuts

London Rolling Mills, London, Ont.  
Morrow John Machine Screw Co., Ingersoll Ont.

#### Brass Founders

Hamilton Brass Mfg. Co., Hamilton, Ont.

### Building and Paving Brick

Dunbar Fire Brick Co., Pittsburgh, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Harbison-Walker Refractories Co., Pittsburg, Pa.  
Pennsylvania Fire Brick Co., Lock Haven, Pa.  
Queen's Run Fire Brick Co., Lock Haven, Pa.  
Stowe-Fuller Co., Cleveland, Ohio.

### Building Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Expanded Metal & Fireproofing Co., Toronto.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

### Builders' Materials

Albert Mfg. Co., Hillsboro, Ont.  
Canada Foundry Co., Toronto.  
Conduits Company, Limited, Toronto.  
Expanded Metal & Fireproofing Co., Toronto.  
Gartshore, John J., Toronto.  
Hopkins, F. H. & Co., Montreal.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.  
Sheldon & Sheldon, Galt, Ont.

### Cables

Dominion Wire Rope Co., Montreal.  
Greening, B. Wire Co., Hamilton, Ont.  
Phillips, Eugene F. Electrical Works, Montreal.

### Canada Plates

Leslie, A. C. & Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

### Canoes

Peterborough Canoe Co., Peterborough, Ont.

### Caps

McCullough-Dalsell Crucible Co., Pittsburg, Pa.

### Card Clothing

McLaren, D. K., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.

### Cast Iron Pipe

Canada Foundry Co., Toronto.  
Montreal Pipe Foundry Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Castings (Grey Iron, Malleable Iron and Brass)

International Harvester Co., Hamilton, Ont.  
Jenckes Machine Co., Sherbrooke, Que.  
Kerr Engine Co., Walkerville, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

### Cement Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Bradley Pulverizer Co., Boston, Mass.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Centrifugal Pumping Machinery

Morris Machine Works, Baldwinsville, N.Y.  
Smart-Turner Machine Co., Hamilton, Ont.

### Chain Making Machinery

#### (Welded Coil Chain)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

### Channels

Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Leslie, A. C. & Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

### Charcoal Pig Iron

Canada Iron Furnace Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Chemicals

Canada Chemical Co., London, Ont.  
Nichols Chemical Co. of Canada, Montreal.

### Chemists

Heys, Thomas & Son, Toronto.

### Clay Working Machinery

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

### Coal, Coke and Charcoal.

Bourne-Fuller Co., Cleveland, Ohio.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Milnes, James H. & Co., Toronto.  
Wick, H. K. & Co., Buffalo, N.Y.  
Wilson, H. T. Coal Co., Detroit, Mich.

### Coal Cutting Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Jeffrey Mfg. Co., Columbus, Ohio.

### Coal Tipples

Jeffrey Mfg. Co., Columbus, Ohio.  
Jenckes Machine Co., Sherbrooke, Que.

### Coil Chains

Greening, B. Wire Co., Hamilton, Ont.  
Leslie, A. C. & Co., Montreal.

### Coke Oven Brick

Dunbar Fire Brick Co., Pittsburgh Pa.  
Stowe-Fuller Co., Cleveland, Ohio.

### Collection Agency

Petrie, H. D., Hamilton, Ont.

### Concrete Mixers

Hopkins, F. H. & Co., Montreal.

### Condensers

Smart-Turner Machine Co., Hamilton, Ont.

### Conduits (Interior)

Conduits Company, Limited, Toronto.

### Contractors' Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Gartshore, John J., Toronto.  
Hopkins, F. H. & Co., Montreal.  
Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

### Contractors' Plants

Allis-Chalmers-Bullock, Limited, Montreal.  
Hopkins, F. H. & Co., Montreal.  
Jenckes Machine Co., Sherbrooke, Que.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Williams A. R. Machinery Co., Toronto.

### Conveying Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Jeffrey Mfg. Co., Columbus Ohio.  
Link-Belt Engineering Co., Philadelphia, Pa.  
McDougall John, Caledonian Iron Works Co., Montreal.

Perrin, William R. & Co., Limited, Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

### Copper Materials

Greening, B. Wire Co., Hamilton, Ont.  
Phillips, Eugene F. Electrical Works, Montreal.  
Syracuse Smelting Works, Montreal.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

# CLASSIFIED INDEX.

(CONTINUED).

## Corrugated Iron

Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

## Cotton Banding and Rope

McLaren, J. C. Belting Co., Montreal.

## Covers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

## Cranes (Electric and Hand Power)

Smart-Turner Machine Co., Hamilton, Ont.

## Crayons

Lowell Crayon Co., Lowell, Mass.  
McLaren, J. C. Belting Co., Montreal.

## Crucibles

Dixon, Joseph, Crucible Co., Jersey City, N.J.  
Hamilton Facing Mill Co., Hamilton, Ont.  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Syracuse Smelting Works, Montreal.

## Crucible Caps

Hamilton Facing Mill Co., Hamilton, Ont.  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

## Crucible Covers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

## Cutter Grinding Machines

Becker-Brahnard Milling Machine Co., Hyde Park, Mass.

## Deep Well Engines

American Steam Pump Co., Battle Creek, Mich.

## Dies (Socket, Sewer Pipe and Tile)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Directories

Kelly's Directories, Limited, Toronto

## Draw Benches (Wire)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Dredges

Allis-Chalmers-Bullock, Limited, Montreal.

## Drills

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Petrie, H. W., Toronto.

## Drills (Pneumatic and Rock)

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Jeffrey Mfg. Co., Columbus, Ohio.

## Drop Forgings

Globe Machine & Stamping Co., Cleveland, Ohio.

## Drop Forging Dies

Globe Machine & Stamping Co., Cleveland, Ohio.

## Dry Kiln Apparatus

Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

## Dust and Shavings Separators

Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

## Dye Stuffs and Chemicals

Benson, W. T. & Co., Montreal.  
Brunner, Mond & Co., Northwich, England.  
Canada Chemical Mfg. Co., London, Ont.  
Cassella Color Co., New York City.  
Geigy Aniline & Extract Co., New York City.  
McArthur, Corneille & Co., Montreal.  
Nichols Chemical Co. of Canada, Montreal.  
Winn & Holland, Montreal.

## DYNAMOS (See Motors and Dynamos)

### Electric Meters and Transformers

Allis-Chalmers-Bullock, Limited, Montreal.  
Packard Electric Co., St. Catharines, Ont.

### Electric Mine Locomotives

Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.

### Electrical Repairs

Keystone Engineering Co., Toronto.

### Electrical Supplies

Allis-Chalmers-Bullock, Limited, Montreal.  
Bristol Co., Waterbury, Conn.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.

Forman, John, Montreal.  
Jones & Moore Electric Co., Toronto.  
Keystone Engineering Co., Toronto.  
Packard Electric Co., St. Catharines, Ont.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.

### Elevators and Conveyors

Allis-Chalmers-Bullock, Limited, Montreal.  
Darling Bros., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jenckes Machine Co., Sherbrooke, Que.  
Link-Belt Engineering Co., Philadelphia, Pa.

### Elevator Insurance

Canadian Casualty & Boiler Insurance Co., Toronto.

### Emery and Emery Wheels

Forman, John, Montreal.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Petrie, H. W., Toronto.

### Engineers (Chemical)

Heys, Thomas & Son, Toronto.  
Hunt Robert W. & Co., Chicago, Ill.

### Engineers (Civil)

Parke, R. J., Toronto.  
Vogel, C. H., Ottawa.

### Engineers (Consulting)

Aitken, K. L., Toronto.  
Canadian White Co., Montreal.  
Electrical Construction Co., London, Ont.  
Fensom, C. J., Toronto.  
Gearing, H., Toronto.  
Hunt, Robert W. & Co., Chicago, Ill.  
Keystone Engineering Co., Toronto, Ont.  
Marion & Marion, Montreal.  
Parke, R. J., Toronto.  
Perrin, William R. & Co., Limited, Toronto  
Vogel C. H., Ottawa.  
Von der Osten, E. & Co., Toronto.

### Engineers (Contracting)

Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Canadian White Co., Montreal.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
Fensom, C. J., Toronto.  
Keystone Engineering Co., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.

### Engineers (Electrical)

Aitken, K. L., Toronto.  
Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Ltd., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Canadian White Co., Montreal.  
Crocker-Wheeler Co., St. Catharines, Ont.  
Electrical Construction Co., London, Ont.  
Fensom, C. J., Toronto.  
Jones & Moore Electric Co., Toronto.  
Keystone Engineering Co., Toronto.  
Marion & Marion, Montreal.  
Toronto & Hamilton Electric Co., Hamilton Ont.  
United Electric Co., Toronto.

### Engineers (Mechanical)

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
Fensom, C. J., Toronto.  
Gearing, H., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kerr Engine Co., Walkerville, Ont.  
Marion & Marion, Montreal.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.  
Smart-Turner Machine Co., Hamilton, Ont.

### Engineers (Mill and Hydraulic)

Fensom, C. J., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Vogel, C. H., Ottawa.

### Engineers (Mining)

Heys Thomas & Son, Toronto.  
Mills, S. D., Toronto.

### Engineers and Contractors

Canadian White Co., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jenckes Machine Co., Sherbrooke, Que.  
Smart-Turner Machine Co., Hamilton, Ont.

### Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.

## FACTORY LOCATIONS.

The following Canadian municipalities are offering inducements to secure manufacturing establishments. Inquiries should be addressed to the Mayor, Town Clerk or Board of Trade of the respective cities:

- Barrie, Ont.
- Brantford, Ont.
- Hamilton, Ont.
- Peterborough, Ont.
- Regina, N.W.T.
- Sherbrooke, Que.
- Toronto, Ont.

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Water and steam power; one set Woollen Mill. Three story brick and stone 36 x 52 feet. Two story brick and stone addition 30 x 36 feet.

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## BANK OF HAMILTON

J. TURNBULL, General Manager.

HEAD OFFICE, - HAMILTON, ONT.

Capital.	Reserve.	Total Assets.
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Halifax, N.S.	Hamilton, Ont.
London, Ont.	Montreal, Que.
Ottawa, Ont.	Quebec, Que.
St. John, N.B.	Toronto, Ont.
Vancouver, B.C.	Winnipeg, Man.

THOMAS C. IRVING, Gen'l Manager Western Canada  
TORONTO.

## DO IT NOW!

ADVERTISE IN

THE  
CANADIAN  
MANUFACTURER.

## CLASSIFIED INDEX.

(CONTINUED).

Goldie & McCulloch Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Hopkins, F. H. & Co., Montreal.  
Jenckes Machine Co., Sherbrooke, Que.  
Morris Machine Works, Baldwinville, N.Y.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petrie, H. W., Toronto.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.  
Smart-Turner Machine Co., Hamilton, Ont.  
Sturtevant, B. F. Co., Boston, Mass.  
Williams, A. R. Machinery Co., Toronto.

### Engravers

Canadian Manufacturer, Toronto.  
Jones, J. L. Engraving Co., Toronto.

### Exhaust Fans

Hamilton Facing Mill Co., Hamilton, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Exhaust Heads

Darling Bros., Montreal.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park Mass.

### Exhausters

Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park, Mass.

### Factory Sites

(See Factory Locations, page 31.)  
Central Ontario Power Co., Peterboro Ont.  
Hutcheson, S. M., Paisley, Ont.

### Feed Water Heaters

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

### Files

Spence, R. & Co., Hamilton, Ont.

### Fillet (Pattern)

Hamilton Facing Mill Co., Hamilton, Ont.  
McLaren, J. C. Belting Co., Montreal.  
Sadler & Haworth, Montreal and Toronto.

### Filters (Oil)

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Perrin, William R. & Co., Limited, Toronto.

### Filters and Filtering Systems (Water)

Babcock & Wilcox, Limited, Montreal.  
Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Financial

Bradstreet's, New York City.  
Dun, R. G. & Co., Toronto.  
Neff & Postlethwaite, Toronto.  
Petrie, H. D. Hamilton, Ont.

### Finials

Metallie Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

### Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburgh, Pa.  
Elk Fire Brick Co., St. Mary's, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Harbison-Walker Refractories Co., Pittsburgh, Pa.  
Pennsylvania Fire Brick Co., Lock Haven, Pa.  
Queen's Run Fire Brick Co., Lock Haven, Pa.  
Stowe-Fuller Co., Cleveland, Ohio.

### Fire Escapes

Darling Bros., Montreal.

### Fireproof Partitions

Metallie Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

### Flour Mill Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Goldie & McCulloch Co., Galt, Ont.

### Forges and Blowers

Canada Foundry Co., Toronto.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Founders

Canada Foundry Co., Toronto.  
Goldie & McCulloch Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

### Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

### Fuel Economizers

Babcock & Wilcox, Limited, Montreal.  
Sturtevant, B. F. Co., Hyde Park, Mass.

### Furniture (Lodge, Opera and School)

Canadian Office & School Furniture Co., Preston, Ont.

### Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

### Galvanizing and Tinning Machinery and Furnaces (Wire)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

### Gas and Gasoline Engines

Morrison, T. A. & Co., Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

### Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

### Gauges (Steam)

Penberthy Injector Co., Windsor, Ont.  
Petrie, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto

### Gauges (Water)

Babcock & Wilcox, Limited, Montreal.  
Penberthy Injector Co., Windsor, Ont.

### Generating Sets

Sturtevant, B. F. Co., Hyde Park, Mass

### Generators

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Phillips, Eugene F., Electrical Works, Montreal.  
Toronto & Hamilton Electric Co., Hamilton, Ont.

### Gloves, Mittens and Moccasins

Storey, W. H. & Son, Acton, Ont.

### Government Notices

Factory Inspectors.  
Minister of Agriculture,

### Graphite

Dixon, Jos. Crucible Co., Jersey City, N.J.  
Hamilton Facing Mill Co., Hamilton, Ont.  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa

### Hardware

Butterfield & Co., Rock Island, Que.  
Gartshore, John J., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Hopkins, F. H. & Co., Montreal.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.

### Heating and Ventilating Apparatus

Darling Bros., Montreal.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Hoisting Engines

Allis-Chalmers-Bullock, Limited, Montreal  
Jenckes Machine Co., Sherbrooke, Que.

### Hoists (Chain and Pneumatic)

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Hopkins, F. H. & Co., Montreal.

### Hose (Fire and Pneumatic)

Gutta Percha & Rubber Mfg. Co., Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
Sadler & Haworth, Montreal and Toronto.

### Hotel

Gallatin Hotel, New York City.

### Hydrants

Kerr Engine Co., Walkerville, Ont.  
Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Hydraulic Accumulators

Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

### Hydraulic Leather

McLaren, J. C., Belting Co., Montreal.  
Sadler & Haworth, Montreal and Toronto

### Hydraulic Machinery

Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Perrin, William R. & Co., Limited, Toronto.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Wilson, J. C. & Co., Glenora, Ont.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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(CONTINUED).

## Insulated Wires and Cables

Phillips, Eugene F., Electrical Works, Montreal.

## Iron and Steel Specialties

Armstrong Mfg. Co., Bridgeport, Conn.  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Foundry Co., Toronto.  
 Leslie, A. C. & Co., Montreal.  
 London Rolling Mill Co., London, Ont.  
 Lysaght, John, Limited, Bristol, England and Montreal.  
 Metallic Roofing Co., Toronto.  
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
 Pedlar People, Oshawa, Ont.  
 Petrie H. W. Toronto.  
 Union Drawn Steel Co., Hamilton, Ont.

## Injectors

Canada Foundry Co., Toronto.  
 Hamilton Brass Mfg. Co., Hamilton, Ont.  
 Williams, A. R. Machinery Co., Toronto.

## Iron and Steel Inspection

Hunt, R. W. & Co., Chicago, Ill.

## Lamps—Electric

Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian General Electric Co., Toronto.  
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
 Forman, John, Montreal.  
 Packard Electric Co., St. Catharines, Ont.

## Lathes

Petrie, H. W., Toronto.  
 Williams, A. R. Machinery Co. Toronto.

## Lathes (Wood-working)

Goldie & McCulloch Co., Galt, Ont.  
 Petrie, H. W., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

## Loom Reeds

McLaren, J. C., Belting Co., Montreal.

## Lubricators

Hamilton Facing Mill Co., Hamilton, Ont.

## Machinists

Goldie & McCulloch Co., Galt, Ont.  
 Robb Engineering Co., Amherst, N.S.  
 Smart-Turner Machine Co., Hamilton, Ont.

## Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.  
 Butterfield & Co., Rock Island, Que.  
 Goldie & McCulloch Co., Galt, Ont.  
 Gutta Percha & Rubber Mfg. Co., Toronto.  
 Hopkins, F. H. & Co., Montreal.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Morrow, John, Machine Screw Co., Ingersoll, Ont.  
 Petrie, H. W., Toronto.

## Machine Tools

Becker-Brainard Milling Machine Co. Hyde Park, Mass.  
 Darling Bros., Montreal.  
 Petrie, H. W., Toronto.

## Malleable Castings

International Harvester Co., Hamilton, Ont.  
 Smith's Falls Malleable Castings Co., Smith's Falls, Ont.

## Marine and Stationary Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.  
 Jenckes Machine Co., Sherbrooke, Que.  
 Smart-Turner Machine Co., Hamilton, Ont.

## Mechanical Draft

Babcock & Wilcox, Limited, Montreal.  
 Sheldon & Sheldon, Galt, Ont.  
 Sturtevant, B. F. Co., Boston, Mass.

## Metal Doors

Metallic Roofing Co., Toronto.  
 Pedlar People, Oshawa, Ont.

## Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.  
 Metallic Roofing Co., Toronto.  
 Pedlar People, Oshawa, Ont.

## Metallurgists

Mills, S. D., Toronto.

## Mill Machinery and Supplies

Allis-Chalmers-Bullock, Limited, Montreal.  
 Armstrong Mfg. Co., Bridgeport, Conn.  
 Becker-Brainard Milling Machine Co., Hyde Park, Mass.  
 Darling Bros., Montreal.  
 Gartshore, John J., Toronto.  
 Goldie & McCulloch Co., Galt, Ont.  
 Gutta Percha & Rubber Mfg. Co., Toronto  
 Hamilton Brass Mfg. Co., Hamilton, Ont.  
 Hamilton, Wm., Mfg. Co., Peterborough, Ont.  
 Hay, Peter Knife Co., Galt, Ont.  
 Hopkins, F. H. & Co., Montreal.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Jenckes Machine Co., Sherbrooke, Que.  
 Morrow, John, Machine Screw Co., Ingersoll, Ont.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 McLaren, D. K., Montreal and Toronto.  
 McLaren, J. C. Belting Co., Montreal.  
 Petrie, H. W., Toronto.  
 Robb Engineering Co., Amherst, N.S.  
 Smart-Turner Machine Co., Hamilton, Ont.  
 Spence, R. & Co., Hamilton, Ont.  
 Wilson, J. C. & Co., Glenora, Ont.

## Milling Cutters and Machines

Becker-Brainard Milling Machine Co., Hyde Park, Mass.

## Miners' Lamps

Allis-Chalmers-Bullock, Limited, Montreal.

## Mining Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian Rand Drill Co., Sherbrooke, Que.  
 Gartshore, John J., Toronto.  
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
 Hopkins, F. H. & Co., Montreal.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Jenckes Machine Co., Sherbrooke, Que.  
 Link-Belt Engineering Co., Philadelphia, Pa.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Perrin, William R. & Co., Limited, Toronto.  
 Petrie, H. W., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

## Motors and Dynamos

Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian General Electric Co., Toronto.  
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
 Electrical Construction Co., London, Ont.  
 Forman, John, Montreal.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Jones & Moore Electric Co., Toronto.  
 Keystone Engineering Co., Toronto.  
 Petrie, H. W., Toronto.  
 Sturtevant, B. F. Co., Hyde Park, Mass.  
 Toronto & Hamilton Electric Co., Hamilton, Ont.  
 United Electric Co., Toronto.

## Moulding Sand

Hamilton Facing Mills Co., Hamilton, Ont.

## Moulders Supplies.

Hamilton Facing Mill Co., Hamilton, Ont.

## Nickel

Canadian Copper Co., New York, N.Y.  
 Orford Copper Co., New York, N.Y.

## Novelty Manufacturers

Worth & Martin, Toronto.

## Nozzles

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
 Pittsburg Crucible Works, Pittsburg, Pa.

## Office and Bank Fittings

Canadian Office & School Furniture Co., Preston, Ont.

## Oils and Lubricants

Dixon, Jos. Crucible Co., Jersey City, N.J.  
 Hamilton Facing Mill Co., Hamilton, Ont.  
 Imperial Oil Co., Petrolia, Ont.  
 Queen City Oil Co., Toronto.

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Dominion Oil Cloth Co., Montreal.

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### Phosphorizers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

### Piano Action and Key Machinery

H. Gearing, Toronto.

### Pig Iron

Bourne-Fuller Co., Cleveland, Ohio.  
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Syracuse Smelting Works, Montreal.

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Butterfield & Co., Rock Island, Que.  
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Canada Foundry Co., Toronto.  
Montreal Pipe Foundry Co., Montreal.

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Albert Mfg. Co., Hillsborough, N.B.

### Plates

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Nova Scotia Steel & Coal Co., New Glasgow, N.S.

### Plumbago

Hamilton Facing Mills Co., Hamilton, Ont.  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

### Pneumatic Tools

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Hamilton Facing Mill Co., Hamilton, Ont.

### Pointer Rolls (For Rods and Wire)

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### Power Plants—Equipments

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Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
Goldie & McCulloch, Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Keystone Engineering Co., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Packard Electric Co., St. Catharines, Ont.

Perrin, Wm. R. & Co., Limited, Toronto.

Petrie, H. W., Toronto.

Phillips, Eugene F., Electrical Works, Montreal.

Robb Engineering Co., Amherst, N.S.

Smart-Turner Machine Co., Hamilton, Ont.

Sturtevant, B. F. Co., Boston, Mass.

Toronto & Hamilton Electric Co., Hamilton, Ont.

United Electric Co., Toronto.

Wilson, J. C. & Co., Glenora, Ont.

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### Pulleys

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Jeffrey Mfg. Co., Columbus, Ohio.  
McCullough, John, Caledonian Iron Works Co., Montreal.  
McLaren, J. C., Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
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Jenckes Machine Co., Sherbrooke, Que.  
Kerr Engine Co., Walkerville, Ont.  
Morris Machine Works, Baldwinsville, N.Y.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Ontario Wind Engine & Pump Co., Toronto.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

### Punches and Shears

Globe Machine & Stamping Co., Cleveland, Ohio.  
Petrie, H. W., Toronto.

### Purifiers

Babcock & Wilcox, Limited, Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Purifying and Softening Systems (Water)

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Railroads

Chicago & North-Western Ry., Toronto and St. Paul, Minn.

### Railway Supplies

Algoma Steel Co., Sault Ste. Marie, Ont.  
Allis-Chalmers-Bullock, Limited, Montreal.  
Gartshore, John J., Toronto.  
Greening, B. Wire Co., Hamilton, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
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Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Phillips, Eugene F., Electrical Works, Montreal.

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### Rivets

Bourne-Fuller Co., Cleveland, Ohio.  
London Rolling Mills, London, Ont.

### Rock and Ore Crushers

Allis-Chalmers-Bullock, Limited, Montreal.  
Bradley Pulverizer Co., Boston, Mass.

### Rolling Mill Engineers

Bourne-Fuller Co., Cleveland, Ohio.

### Roofing

Bourne-Fuller Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

### Rubber Goods

Gutta Percha & Rubber Mfg. Co., Toronto.

### Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

### Rubber Washing Tubs

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

### Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

### Safes and Vaults

Goldie & McCulloch Co., Galt, Ont.

### Saw Mill Machinery

Allis-Chalmers-Bullock, Limited, Montreal.

### Screws

Morrow, John, Machine Screw Co., Ingersoll, Ont.

### Screw Plates

Armstrong Mfg. Co., Bridgeport, Conn.  
Butterfield & Co., Rock Island, Que.

### Shafting

Allis-Chalmers-Bullock, Limited, Montreal.  
Bourne-Fuller Co., Cleveland, Ohio.  
Goldie & McCulloch Co., Galt, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

### Shear Knives

Hay, Peter Knife Co., Galt, Ont.

### Sheets (Iron and Steel)

Bourne-Fuller Co., Cleveland, Ohio.  
Leslie, A. C. & Co., Montreal.  
Lysaght, John, Limited, Bristol, England, and Montreal.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

### Sheet Metal Goods

Globe Machine & Stamping Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

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## Sheet Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.

## Shovels.

Hamilton Facing Mill Co., Hamilton, Ont.

## Smoke Stacks

Gearing, H. Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

## Solder

Globe Machine & Stamping Co., Cleveland, Ohio.  
Syracuse Smelting Co., Montreal.

## Special Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Smart-Turner Machine Co., Hamilton, Ont.

## Speed Recorders

Bristol Co., Waterbury, Conn.

## Sprinkler Insurance

Canadian Casualty & Boiler Insurance Co., Toronto

## Stamps and Stencils

Globe Machine & Stamping Co., Cleveland, Ohio.

## Steam Pumps

Allis-Chalmers-Bullock, Limited, Montreal.  
American Steam Pump Co., Battle Creek, Mich.  
Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Williams, A. R. Machinery Co., Toronto.

## Steam Separators

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.  
Smart-Turner Machine Co., Hamilton, Ont.

## Steam Shovels

Allis-Chalmers-Bullock, Limited, Montreal.

## Steam Specialties

Darling Bros., Montreal.  
Penberthy Injector Co., Windsor, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park, Mass.

## Steam Valves

American Steam Pump Co., Battle Creek, Mich.  
Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
Kerr Engine Co., Walkerville, Ont.  
Petrie, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto.

## Steel Rails

Algoma Steel Co., Sault Ste. Marie, Ont.  
Drummond, McCall & Co., Montreal and Toronto.  
Gartshore, John J., Toronto.  
Hopkins, F. H. & Co., Montreal.

## Steel Shafting

Darling Bros., Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Leslie, A. C. & Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Wilson, J. C. & Co., Glenora, Ont.

## Stocks and Dies

Armstrong Mfg. Co., Bridgeport, Conn.  
Butterfield & Co., Rock Island, Que.  
Petrie, H. W., Toronto.

## Stoppers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

## Structural Steel

Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Hopkins, F. H. & Co., Montreal.

## Sulphate of Alumina

Nichols Chemical Co. of Canada, Montreal.

## Suspension Furnaces

Continental Iron Works Co., New York City.

## Tanks (Oil and Water)

Canada Foundry Co., Toronto.  
Goldie & McCulloch Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.

Jenckes Machine Co., Sherbrooke, Que.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Ontario Wind Engine & Pump Co., Toronto.

## Taps and Dies

Butterfield & Co., Rock Island, Que.  
Globe Machine & Stamping Co., Cleveland, Ohio.

## Tees

Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.

## Textile Manufacturers

Dominion Oil Cloth Co., Montreal.  
Storey, W. H. & Sons, Acton, Ont.

## Textile Supplies

McLaren, J. C. Belting Co., Montreal and Toronto.

## Thermometers (Recording)

Bristol Co., Waterbury, Conn.

## Tin

Leslie, A. C. & Co., Montreal.  
Syracuse Smelting Works, Montreal.

## Tool Steel

Bourne-Fuller Co., Cleveland, Ohio.  
Hopkins, F. H. & Co., Montreal.  
Leslie, A. C. & Co., Montreal.

## Trucks

Hopkins, F. H. & Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Sheldon & Sheldon, Galt, Ont.

## Trucks (Railway)

Canada Foundry Co., Toronto.

## Trucks (Wire Mill Supplies)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Tubs (Cleaning and Coating Wire)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Tumbling Barrels

Globe Machine & Stamping Co., Cleveland, Ohio.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

## Turbines

Canada Foundry Co., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough Ont.  
Jenckes Machine Co., Sherbrooke, Que.  
Wilson, J. C. & Co., Glenora Ont.

## Valves

American Steam Pump Co., Battle Creek, Mich.  
Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Hamilton Brass Mfg. Co., Hamilton, Ont.  
Kerr Engine Co., Walkerville, Ont.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Williams, A. R. Machinery Co., Toronto.

## Valves (Rubber)

Gutta Percha & Rubber Mfg. Co., Toronto.

## Varnishes

Berry Bros., Walkerville, Ont.

## Ventilators

Darling Bros., Montreal.  
Metallic Roofing Co., Toronto.  
Pedlar People, Oshawa, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

## Wagon and Carriage Wood Work

Hore, F. W. & Son, Hamilton, Ont.

## Washers or Hollinders (Cleaning Rubber)

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Water Power Development

Vogel, C. H., Ottawa.

## Water Purifying Chemicals

Canada Chemical Mfg. Co., London, Ont.

## Wheelbarrows.

Hamilton Facing Mill Co., Hamilton, Ont.

## Windmills

Ontario Wind Engine & Pump Co., Toronto.

## Wire Mill Supplies

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Wire and Wire Rope

Dominion Wire Rope Co., Montreal.  
Greening, B. Wire Co., Hamilton, Ont.  
Leslie, A. C. & Co., Montreal.  
Phillips, Eugene F. Electrical Works, Montreal

## Wire Rope Fittings

Dominion Wire Rope Co., Montreal.

## Wire Cloth

Greening, B. Wire Co., Hamilton, Ont.

## Wire Drawing Machinery

Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Wood-Working Machinery

Advance Machinery Co., Toledo, Ohio.  
Goldie & McCulloch Co., Galt, Ont.  
Petrie, H. W., Toronto.  
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Buffalo Express, Illustrated	Buffalo	Weekly	2 00	2 25	Montreal La Presse	Montreal	Daily	3 00	3 25
Builders' Journal	London	Weekly	3 50	3 75	Montreal Witness	Montreal	Daily	3 00	3 25
Camera	Philadelphia	Monthly	1 00	1 25	Motor Age	Chicago	Weekly	2 00	2 25
Canada First	Toronto	Monthly	1 00	1 25	Motoring, Illustrated	London	Weekly	2 25	2 50
Canadian Magazine	Toronto	Monthly	2 50	2 75	Municipal Journal	New York	Monthly	3 00	3 25
Cassiers' Magazine	New York	Monthly	3 00	3 25	National Builder	Chicago	Monthly	2 00	2 25
Chemical News	London	Weekly	5 25	5 50	National Monthly	Toronto	Monthly	1 00	1 25
Coaliers' Weekly	New York	Weekly	5 20	5 25	New York Clipper	New York	Weekly	4 00	4 25
Commercial Intelligence	London	Weekly	5 00	5 25	New York Commercial	New York	Daily	6 00	6 25
Compressed Air	New York	Monthly	1 00	1 25	North American Review	New York	Monthly	5 00	5 25
Cooking School Magazine	Boston	Monthly	1 00	1 25	Our Dumb Animals	Boston	Monthly	50	75
Cornhill Magazine	London	Monthly	2 50	2 75	Outing	New York	Monthly	3 00	3 25
Delineator	New York	Monthly	1 00	1 25	Ottawa Citizen	Ottawa	Daily	3 00	3 25
Electrical Engineer	London	Weekly	4 50	4 75	Ottawa Free Press	Ottawa	Daily	3 00	3 25
Electrical Magazine	London	Monthly	2 25	2 50	Pearson's Magazine	New York	Monthly	1 00	1 25
Electrical Review	London	Weekly	5 75	6 00	Photographic Journal	London	Monthly	2 00	2 25
Electrical World and Engineer	New York	Weekly	3 00	3 25	Photographic Times	New York	Weekly	1 00	1 25
Electrician	London	Weekly	7 30	7 50	Photography	London	Weekly	2 25	2 50
Electro-Chemical Industry	New York	Monthly	2 00	2 25	Popular Science Monthly	New York	Monthly	3 00	3 25
Engineering and Mining Journal	New York	Weekly	5 00	5 25	Power	New York	Monthly	1 00	1 25
Engineering Review	New York	Monthly	1 00	1 25	Queen, The	London	Weekly	10 00	10 25
Engineering Review (Fieldens)	London	Monthly	3 05	3 25	Review of Reviews	London	Monthly	2 00	2 25
Everybody's Magazine	New York	Monthly	1 50	1 75	Scientific American	New York	Weekly	3 00	3 25
Field and Stream	New York	Monthly	1 50	1 75	Scribners' Magazine	New York	Monthly	3 00	3 25
Forest and Stream	New York	Weekly	4 00	4 25	Sporting Times	London	Weekly	3 00	3 25
Four Track News	New York	Monthly	1 00	1 25	Street Railway Journal	New York	Monthly	3 00	3 25
Gentleman's Magazine	London	Monthly	4 00	4 25	Toronto Saturday Night	Toronto	Weekly	2 00	2 25
Girl's Own Paper	London	Weekly	1 75	2 00	Toronto Sunday World	Toronto	Weekly	2 00	2 25
Good Housekeeping	Toronto	Monthly	1 00	1 25	Youth's Companion	Boston	Weekly	1 75	2 00
Good Road's Magazine	New York	Monthly	1 00	1 25	Weldon's Ladies' Journal	London	Monthly	1 25	1 50
Hardware Dealers' Magazine	New York	Monthly	1 00	1 25	Winnipeg Free Press	Winnipeg	Daily	3 00	3 25
Harpers' Magazine	New York	Monthly	4 00	4 25					
Harpers' Weekly	New York	Weekly	4 00	4 25					

**The Canadian Manufacturer Publishing Co., Limited,**  
**TORONTO, CANADA.**

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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Better bars for re-working are obtained from selected scrap than from pig iron—have more life and strength.

London Bars are made from selected scrap and come in Flats, Rounds, Squares, Ovals, Half-Ovals, Half-Rounds and Bands.

Large stock always on hand, insuring prompt shipment. 51

**London Rolling Mills**  
London, Canada.



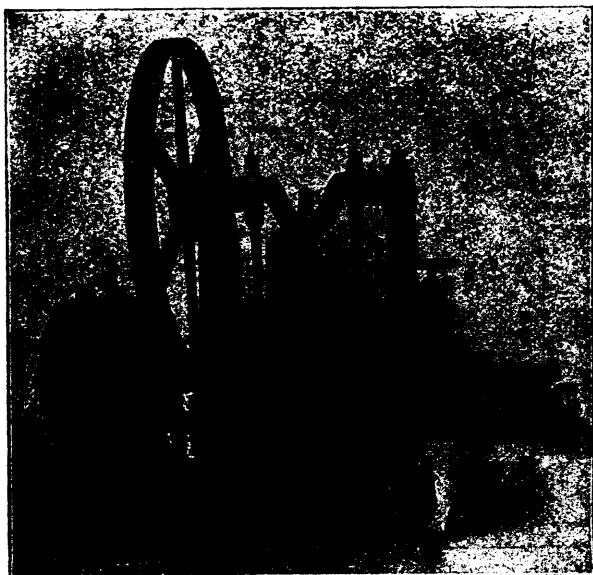
During the fiscal year ending June 30, 1905, the imports of fuel into Canada and the value thereof were as follows:—Bituminous and Dust, 4,826,535 tons, value \$8,346,352; Anthracite and Dust, 2,604,137 tons, value \$12,093,371; Coke, 371,593 tons, value \$807,842; Charcoal, value \$46,862. Under the general tariff the duty on Bituminous Coal is 53 cents per net ton, and upon Bituminous Dust or Slack, and upon Charcoal, 20 per cent. There is no duty imposed upon Anthracite or Coke.

EVERY STEAM POWER PLANT IN CANADA USES COAL

EVERY FOUNDRY USES COKE

THE  
**Canadian Manufacturer**  
REACHES THEM.





Westinghouse Induction Motor Driving Triplex Pump.

# Westinghouse Motors

Alternating and Direct Current.

A Successful Record  
is the best guarantee

Westinghouse Motors have proven their superior capacity and efficiency in every kind of service, and under the most severe conditions.

## Canadian Westinghouse Co., Limited

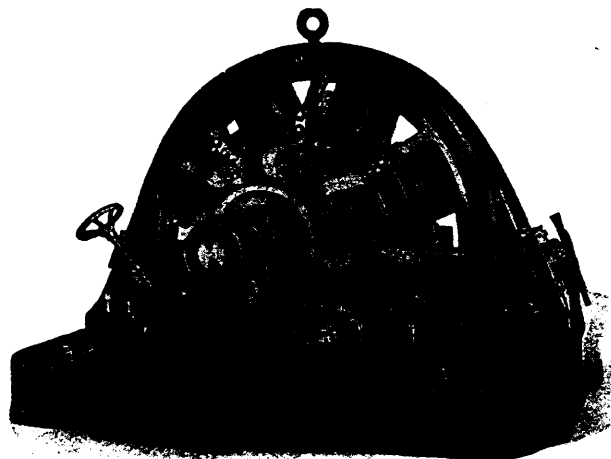
General Office and Works, HAMILTON, ONTARIO.

Lawlor Bldg., King and Yonge Sts.,  
TORONTO.  
152 Hasting Street,  
VANCOUVER.

For particulars address nearest office:  
HAMILTON.  
922-928 Union Bank Bldg.,  
WINNIPEG.

Sovereign Bank of Canada Bldg.,  
MONTREAL.  
184 Granville Street,  
HALIFAX.

# ALLIS - CHALMERS - BULLOCK LIMITED



One of four 800 K.W. rotary converters built for the Shawinigan Water & Power Co., Montreal.

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Branch Offices - NEW GLASGOW      TORONTO      WINNIPEG      NELSON      VANCOUVER

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AND  
TANNING EXTRACTS

Waxes, Gums, Shellacs,  
Glues, Gelatines, Etc.

CANADIAN AGENTS  
FOR THE  
BERLIN ANILINE CO.  
BRITISH ALIZARINE CO. and  
MILLER'S TANNING EXTRACT CO.

## THE BOILER INSPECTION and INSURANCE CO. of CANADA

CANADA LIFE BUILDING  
TORONTO

Thirty Years' Experience as Consulting Engineers

Montreal, June 17th, 1905.

THE BOILER INSPECTION & INSURANCE CO.  
OF CANADA, TORONTO, ONT.

Gentlemen:—

We beg to acknowledge receipt of your favor of the 15th instant, enclosing your cheque No. 2043, for \$250.00, in settlement of loss under our Policy with your Company on boiler at No. 1 Pit at Black Lake.

We have to thank you for the very prompt and satisfactory manner in which this claim was taken care of by you, and for the very liberal and fair treatment we have received at your hands.

Yours very truly,

BLACK LAKE CHROME & ASBESTOS  
COMPANY.  
W. J. HENDERSON, Treasurer.

## CONDUITS COMPANY LIMITED

SUCCESSORS TO

The Richmond Conduit and Mfg. Co.  
Limited

Sole Manufacturers

Under U.S. and Canadian Patents

**GALVADUCT**

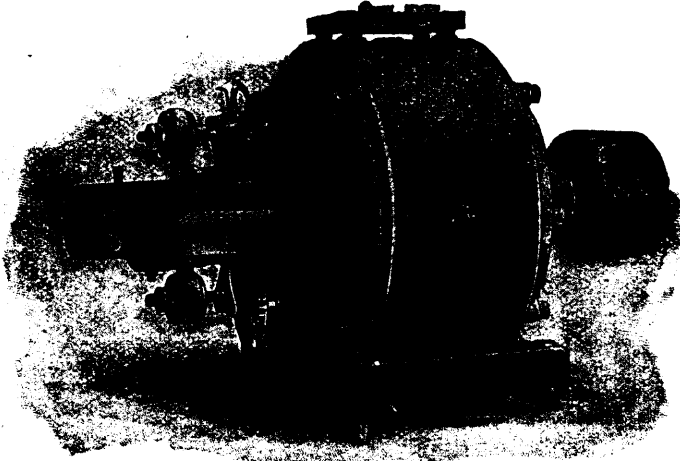
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For Interior Construction

TORONTO, CANADA



## WE MANUFACTURE GENERATORS AND MOTORS

All sizes up to 1,000 H.P. (slow speed)  
and 2,000 H.P. (high speed)

## "Johnson" (Patented) Multispeed Motors

Are the only efficient variable speed motors for driving machine tools, printing presses, and all machinery requiring variable speed motive power

"SUPERIOR" ALTERNATING CURRENT APPARATUS

*The United Electric Co., Limited, Toronto, Ont.*

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is indemnity paid for losses sustained by the accidental discharge of water from installed Sprinkler Systems.

Are you insured against Sprinkler Leakage Damages?

The  
**Canadian Casualty  
and Boiler  
Insurance Company**

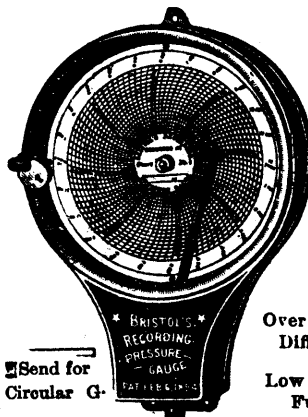
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CAPACITY 4,000 TONS

MANUFACTURERS  
OF

**MALLEABLE  
IRON  
CASTINGS**

Labor Gazette

Smith's Falls, Ont., Can.

# You Must Buy Well to Sell Well

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HAMILTON, ONT. Manufacturers of Ceylon Flourbags, SERRIES & also Extra Fine Quality MOULDING SAND WHITE FOR PROCESS. THEM FOR YOU.