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The Classified Index

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Vol. 49. TORONTO, NOVEMBER 4, 1904. No. 9.

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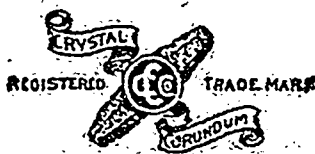
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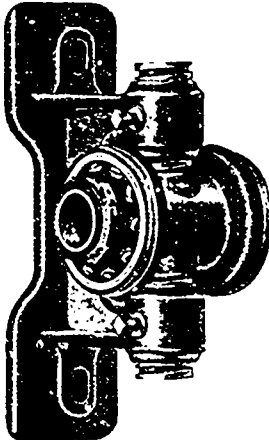
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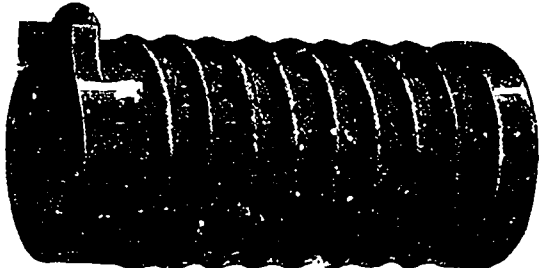
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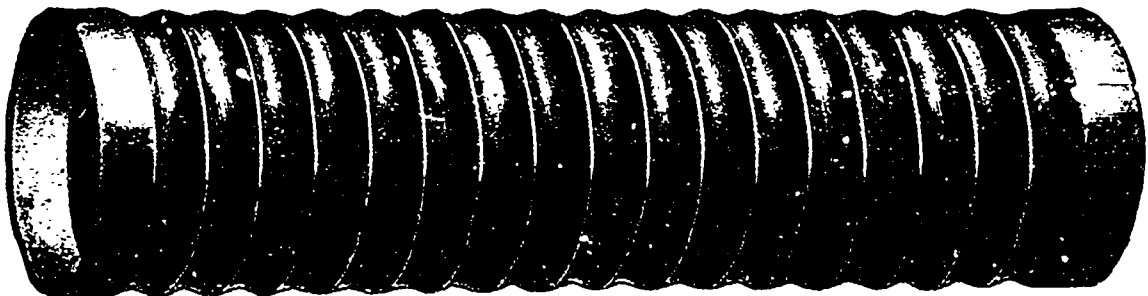


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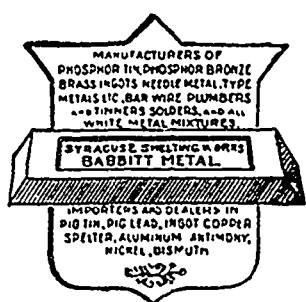
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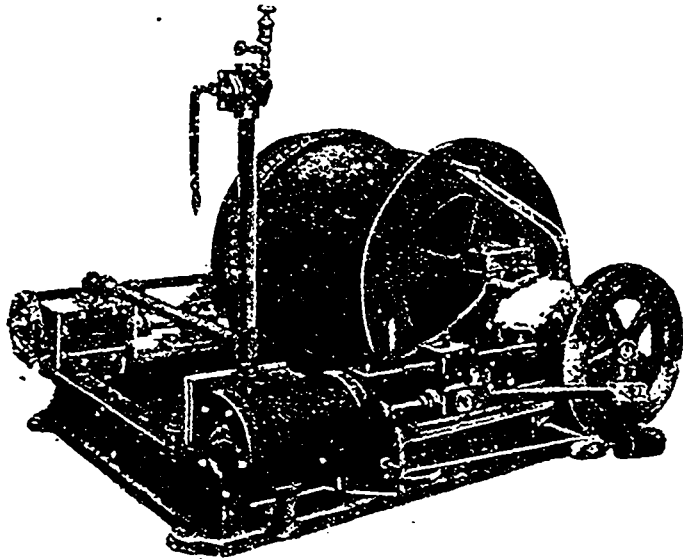
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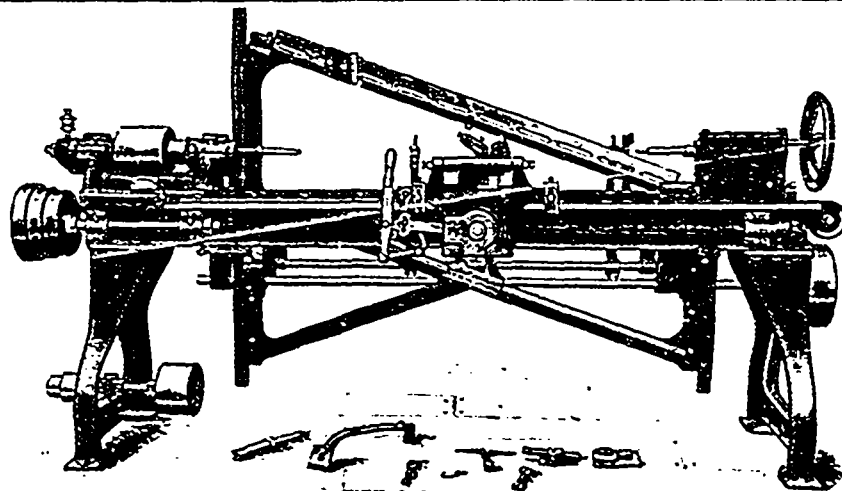
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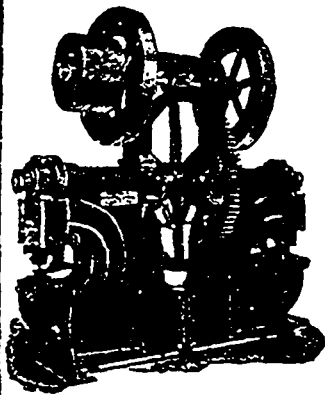
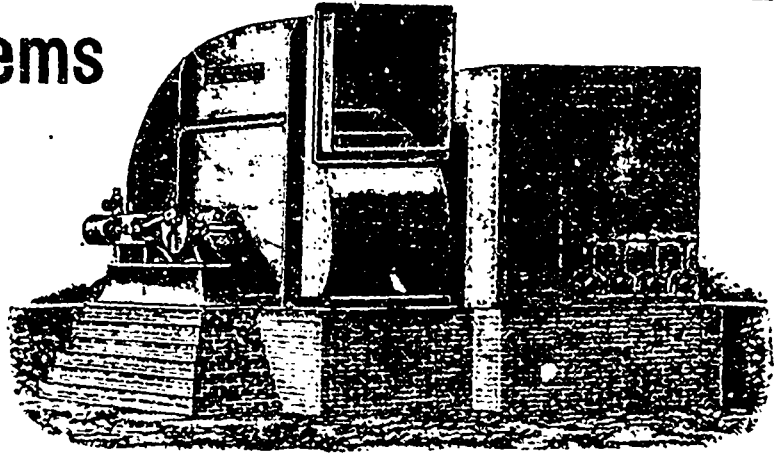
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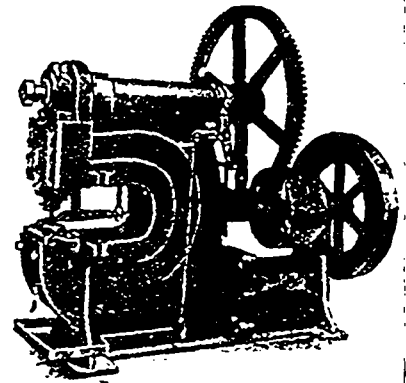
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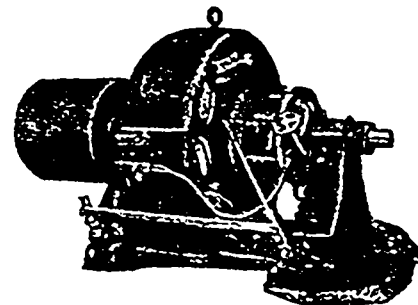
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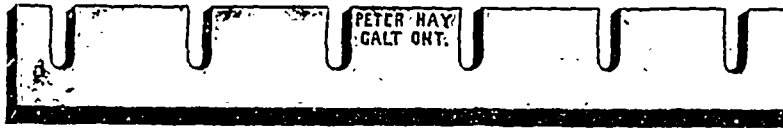


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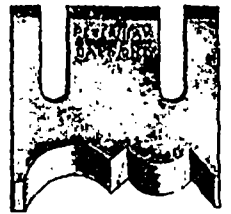
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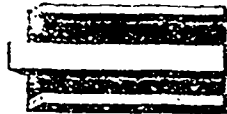
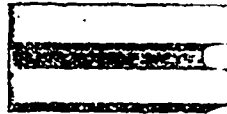
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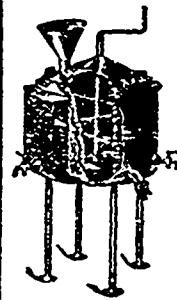
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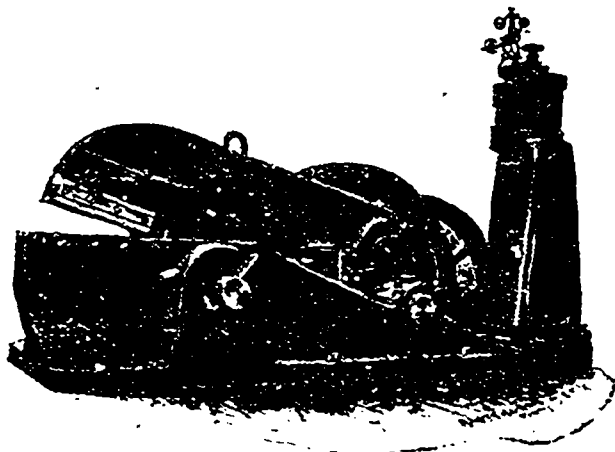
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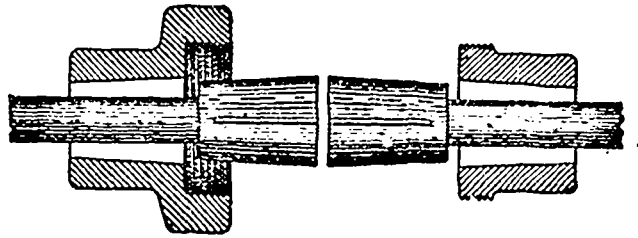
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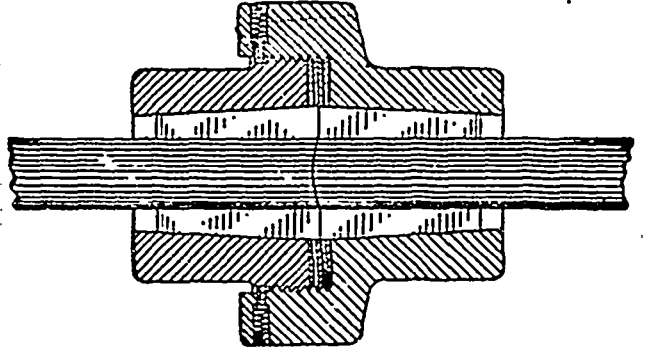
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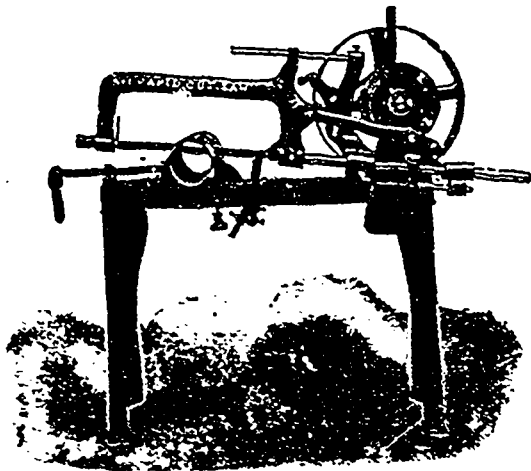


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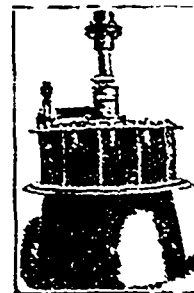
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Cable address: "CANAMAN." Western Union Telegraphic Code used.

SUBSCRIPTIONS:

Canada and United States \$1.50 per year. All other Countries in Postal Union ten shillings sterling, including postage.

J. J. CASSIDY, Editor and Manager

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AN APPRECIATED COMPLIMENT.

The following letter explains itself:—

Dun's Review, International Edition.

R. G. Dun & Co., Publishers.

290 Broadway, New York,

October 18, 1904.

Editor CANADIAN MANUFACTURER, Toronto, Ont.

DEAR SIR,—Some time ago you published a most instructive analysis of the results under the Canadian preferential tariff. This was two or three years ago and I had hoped to see a similar study of the figures for the last fiscal year, and if one was published I have probably overlooked it. I shall greatly appreciate it if you will send me a copy of the number containing your earlier article, and also your latest if you have taken up the subject again, as you no doubt have.

By the way will you see if Dun's Review is still on your mailing list; I do not recall having seen your excellent paper recently, but have certainly given no orders to have it removed from our exchange list, as I regard it as the most valuable Canadian publication that comes into our office.

Yours respectfully,

Edw. N. Vose, Editor.

International Edition, Dun's Review.

CANADIAN IMPORTS OF MANUFACTURES OF METALS.

In the issue of THE CANADIAN MANUFACTURER of January 3, 1902, was published an exhaustive tabulated statement relating to "Canadian Imports of Manufactures of Metals from Great Britain and the United States in 1898, 1899, 1900 and 1901." In this statement was given the values of seventy-five different lines of dutiable products, chiefly of iron and steel, imported from the two countries alluded to. During the four years under consideration the proportion of these dutiable goods received from Great Britain amounted to 8.9 per cent. and from the United States 91.1 per cent. The statement also related to the values of thirty-three different lines of

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non-dutiable products of metals, those received in 1901 from Great Britain being 10.0 per cent. and from the United States 90.0 per cent. The value of all foreign merchandise, dutiable and free, entered for consumption in Canada in 1901 was

Great Britain . . . . .	\$43,018,164 or 27.7	per cent.
United States . . . . .	110,485,008 or 61.0	"
All other countries . . . . .	27,734,816 or 15.3	"
Total . . . . .	\$181,237,988 or 100.0	"

In our issue of January 2, 1903, was published a similar tabulated statement showing in detail the values of 84 different lines of manufactures of dutiable goods, chiefly of iron, steel, and other metals, and of some other products allied therewith, during the fiscal years 1898, 1900 and 1902, and the duties imposed thereon by the general tariff, a discount of one-third being allowed upon goods made in Great Britain; bearing in mind that 1898 was the first full year in which the British preference was in effect. The statement also showed in like detail the values of a selected list of non-dutiable goods. The statement was intended to emphasize three things—first, the large values of Canadian imports of dutiable goods, which, to a great extent, should have been produced at home; second, the relatively small imports from Great Britain, notwithstanding the preferential tariff in her favor; and, third, the great value of such imports from the United States.

The values of these 84 different lines of dutiable goods imported in 1902 were as follows:—From Great Britain, \$3,047,812, or 12.9 per cent.; United States, \$18,738,143, or 75.3 per cent.; and from all countries, \$23,528,516.

The values of the non-dutiable goods imported in 1902 were:—Great Britain, \$3,621,514, or 14.1 per cent.; United States, \$19,236,847, or 75.1 per cent.; and from all countries, \$25,595,244.

The value of all foreign merchandise, both dutiable and free, entered for consumption in Canada in 1902 was: Great Britain, \$49,206,062, or 24.2 per cent.; United States

\$120,814,750, or 59.5 per cent.; and from all countries, \$202,791,595.

In our issue of December 18, 1903, was presented a similar tabulated statement, showing the trade of Canada with Great Britain, United States and all countries in the fiscal year 1903. The statement showed in detail the values of a selected list of 200 different manufactures of dutiable goods imported into Canada in that year, and the rates of duty imposed thereon under the general tariff, a discount of  $33\frac{1}{2}$  per cent. being allowed upon certain imports manufactured in Great Britain, admitted under the tariff preference in favor of that country. The statement also showed in like detail the values of 80 different non-dutiable manufactures, and products of similar character, which indicated the sources of origin of what, to Canadian manufacturers, were their raw materials.

The values of these 200 different lines of dutiable goods imported into Canada in 1903, and the sources from which they were drawn, were:—Great Britain, under the preferential tariff, \$4,702,490, or 9.3 per cent.; United States under general tariff, \$42,526,606, or 83.5 per cent., and all other countries under general tariff \$3,582,674, or 7.2 per cent., the total of such imports being \$50,812,770.

The sources from which the 80 different non-dutiable articles were imported in 1903 were:—Great Britain, \$5,610,733, or 10.9 per cent.; United States \$40,658,727, or 79.5 per cent.; all other countries, \$4,952,308, or 9.6 per cent., the total value of them being \$51,221,768.

The total value of all merchandise imported into Canada for consumption in 1903 was \$233,790,516, of which \$136,796,065 was dutiable, and \$96,994,451 was non-dutiable, the dutiable goods paying \$37,110,354, or at the rate of 27.1 per cent.

The value of all goods imported from Great Britain in that year was:

Dutiable under general tariff.....	\$7,046,411
Under preferential tariff .....	35,163,754
<hr/>	
Total dutiable ..	\$42,210,165
Free goods .....	16,686,736
<hr/>	

Total dutiable and free .....

\$58,896,901

The value of all goods imported for consumption in Canada in 1903 from the United States was:

Dutiable ..	\$68,538,323
Free.....	69,066,872
<hr/>	

Total .....

\$137,605,195

The amount of duty collected upon these dutiable goods from the United States was \$17,069,881, or at the rate of 25 per cent.

#### RETALIATION AND ITS REMEDY.

Recently at a Republican convention in Boston, Mr. Moody, the Attorney-General of the United States, announced that the American Government will soon invite Canada to enter upon an arrangement involving, as he said, "real, not sham, reciprocity." We presume

that Mr. Moody's idea is that Canada is to be invited to enter into an arrangement that will result in a reciprocity treaty between the two countries. Time was when Canada would have welcomed such a treaty; but having been rebuffed time and again, and discriminated against in every tariff law that the United States has enacted since the expiring of the old treaty, self respect has impelled her to look elsewhere for other markets for her products, and for more friendly terms for entrance into other countries. Canada is not hankering at this time for a reciprocity treaty with the United States. But she is now as ready and willing as ever to deal fairly with other nations, including the United States. We buy more merchandise from that country than we do from Great Britain—a great deal more; more per capita than any other country except, perhaps, Great Britain. Last year our purchases of American manufactures were valued at \$123,000,000 but there was a scant showing of reciprocity in the purchase of Canadian products by the United States.

The jug-handled arrangement has become unbearably tiresome, and, as Sir Wilfrid Laurier says, we are going to "do something." No one comprehends better what this means than Attorney General Moody. But while he sees the gathering clouds he imagines that their effects may be diverted by a reciprocity treaty. In this, however, he will find himself mistaken. He does not comprehend the temper and disposition of the Canadian people. He does not diagnose the case correctly, and he does not prescribe the proper remedy. His idea seems to be that, while maintaining his present unfriendly tariff rates on Canadian products, Canada meanwhile continuing her present low rates, important concessions are to be made on both sides. Canada will agree to no such arrangement. The jug-handle business won't work. No, there must be two handles to the jug. Mr. Moody need not worry about his "real, not sham, reciprocity"—it takes two to make a bargain; but while it is none of our business how our American friends regulate their tariff, we suggest that as a basis for more equitable and friendly trade relations between the two countries there be a lowering of those features of the American tariff that were intended to cripple Canadian trade.

It will be noticed that this journal has on frequent occasions suggested the adoption by Canada of a system of dual tariffs, and that Sir Wilfrid Laurier has fallen in with the idea. He made a declaration to this effect in his speech at Hamilton on October 10, and again at Peterborough on October 20, at which latter place he said:

The tariff is a live issue, but the Government has taken the position that it is not advisable to have frequent changes in the tariff. What is wanted in the tariff is stability. By this it is not intended that it was to be like the laws of the Medes and Persians. This is a young and growing country, and conditions are changing, and this makes it imperative that there should be changes in the tariff. I believe that the time is approaching when there should be another revision of the tariff. When this is decided upon, and it will probably

take place next year, we will first of all, before making any changes, have an ample and careful investigation of the conditions and needs of all classes, both manufacturers and farmers. The Government will also make an absolute departure. The present is a revenue tariff, and applies to all countries equally, with the exception of Great Britain. They intended to have a minimum and a maximum tariff. The minimum tariff will apply to all countries who are prepared to treat and trade with us on friendly and equal terms. The countries which are not prepared to deal fairly with us will come in under the maximum tariff. The Government will deal out measure for measure.

#### FREE TRADE AS THEY HAVE IT.

Mr. John Mitchell, president of the United Mine Workers of America, who was recently in London investigating the condition of the working classes there, in a letter to the United States press, gives among other interesting matter, the following:

"In London hundreds of thousands of people swarm in dirty houses and rookeries, in cellars, in back alleys and in tumble-down shanties, compared to which some of the worst tenements of New York are like palaces. The overcrowding becomes worse with each succeeding year. If we count those people as overcrowded who live two or more in a room it will be found that considerably over a million of London's inhabitants would come within this class. There are many who live four in a room; many who live six and eight; and there are even places where twelve persons occupy one room.

"In certain sections of the city the overcrowding is even more intense. Taking London as a whole, thirty out of every hundred persons are living in an overcrowded condition—in other words, two or more to a room; in some sections 55 to 60 per cent. live in a similar state. In the famous Whitechapel district over one-seventh of the population are living four or more to a room.

"We hear terrible stories of how the poorer classes of this giant metropolis live, or rather exist, in the houses which their means permit them to occupy. A room may be divided between two families; lodgers may be taken in, or a bed may be leased or divided between a man who works by the day and one who works by night. It is impossible to see the conditions, and quite impossible to realize them.

"When one compares the average wage of the workman in London with the prices of rooms the latter seem extremely exorbitant. Rent of rooms seems to average from 50 cents to \$1 and more per week, and this rent often rises to one-fourth, and not infrequently to one-third, of the income of the workman. There is a movement now on foot to compel a minimum wage of 25 shillings (or \$6.25) per week, since below that sum it is practically impossible for a workingman to live with his family in any decent comfort in London.

"As one walks through the sections of the metropolis chiefly occupied by wage-earners one is forcibly and painfully struck by the pallor of many of the inhabitants and their sickly and anaemic condition."

The American Economist, commenting upon Mr. Mitchell's letter, says:

"This testimony of Mr. Mitchell is only corroborative of the testimony of both Englishmen and other Americans who have investigated the conditions and given the results of their investigations to the public. It shows what free trade will do toward leveling down a once rich and powerful country. For the past quarter of a century England has been seeing other countries under protection doing more and more of their own work, and in addition doing a larger and larger portion of England's work besides which her own laborers should have the opportunity to perform at living wages. But, where a man has to work for less than a dollar a day and has to pay a dollar a week for a single room, he can not be said to more than exist, particularly if he has a family of four or five dependent upon his earnings."

#### WATER POWER DEVELOPMENT.

The utilization of water power is undergoing a rapid development all over Canada, and manufacturers and others now fully realize that in the absence of coal for fuel purposes the abundance of water power is one of the most valuable resources of the country.

There are many factors that enter into the location of a water power plant other than the engineering difficulties which must be overcome. The expense of an undertaking of this character is considerable and to make it a paying investment great care must be exercised in calculating what the income of such a plant will be. The operating expenses of a water power plant are nearly constant compared to a steam plant. In the steam plant, the cost of coal used varies with the output, but with the water power plant there is usually no such factor to consider. In a water power plant, the interest on the money invested, taxes, insurance and depreciation are the principal items involved, other than running expenses. While these factors enter, of course, into every plant, the fact that they are the most important things to consider makes it important that a plant of this kind should have a commercial output equal to the maximum capacity of the machinery, the variable cost depending on the load being very small. The important feature of this problem is to obtain purchasers for the current produced and to sell it to them at a less cost than they can buy it elsewhere or produce it themselves. Many plants are depending on the future to make their operation profitable, it being hoped that the constant increase in the price of coal and freight rates will drive steam users to their locality. If this does not happen, there must necessarily be trouble ahead for many plants upon which fortunes have been spent, and upon which an income on the money invested is looked for.

#### A MISTAKE.

The Montreal Star, speaking of the organization of the Montreal branch of the Canadian Manufacturers' Association, in 1899, says that at the time of that or-

ganization there were exactly two members of the Association in that city, the late Samuel Coulson and Mr. C. C. Ballantine. The Star is misinformed. The Montreal membership of the Association in 1899 included the following well-known concerns: Belding, Paul & Co.; Canadian Axe & Harvest Tool Co.; Canada Iron Furnace Co.; Canada Paper Co.; Consumers' Cordage Co.; Thomas Davidson Mfg. Co.; Dominion Oilcloth Co.; Dominion Bridge Co.; Dominion Cotton Mills Co.; Dominion Wire Mfg. Co., P. D. Dodds & Co.; S. Davis & Sons; N. K. Fairbanks & Co.; John Forman; Garth & Co.; Robert Mitchell & Co.; D. Morrice Son & Co.; Montreal Cotton Co.; Colin McArthur & Co.; McArthur, Corneille & Co.; Pillow-Hersey Mfg. Co.; J. D. Rolland Paper Co.; Royal Electric Co.; Sadler & Harworth; St. Lawrence Sugar Refining Co.; Watson, Foster & Co. and J. C. Wilson & Co.

All of these important concerns had been identified with the Association for many years, Mr. George E. Drummond, of the Canada Iron Furnace Co., the late incumbent, having been first vice-president in 1894-95.

The Star says that while the Association was organized in 1874 it was not until 1899 and 1900 that it began to be a power in the land. Mistaken again. Sir John A. Macdonald was made Premier of Canada upon the occasion of the birth of the Dominion, July 1, 1867, and was succeeded as such by Hon. Alexander Mackenzie on November 7, 1873, whose ministry resigned five years later; but Sir John, the father of the National Policy, would never have succeeded Mr. Mackenzie as he did, and again become Premier on October 17, 1878, had it not been for the active support of the Manufacturers' Association. And still the Montreal Star says that the Association did not begin to be a power in the land until 21 years later.

#### EDITORIAL NOTES.

Elections were held throughout Canada yesterday, November 3, for members of the Dominion House of Commons. Our hope is that the best men have been elected—men who advocate adequate protection for our manufacturing industries.

The trade of the United States with Canada is shown from the standpoint of the United States in a series of tables included in the annual report of the Chief of the Bureau of Statistics, just made public by the Department of Commerce and Labor, while tables also received by the Bureau of Statistics from the Canadian government present a picture of that trade from the Canadian standpoint. Curiously, while the two statements relate to the same trade and are presented for fiscal years which terminate in each case on June 30, the figures of values differ materially. The statement of the United States exports to Canada for the fiscal year ending June 30, 1904, shows a total of \$131,274,346, while the Canadian statement of imports from the United States which should include only the articles classified

as exports from the United States to Canada shows a total value of such imports of \$143,010,578, or a total 12 million dollars greater than the United States statement of export values of presumably the same articles. An examination of the Canadian and United States figures for other years also shows a material difference of statement. In the fiscal year, 1903, the Canadian figures of imports from the United States exceed by five millions the figures of the United States showing exports to Canada, and this is true of the figures for the fiscal year 1902.

Canada is slowly learning from her own expensive experience a lesson that she could have learned without cost from the past experience of the United States, that the woolen industry cannot exist under an ad valorem tariff of 30 or 40 per cent. The practical abolition of the British preference on woolen goods some months ago has not helped the woolen mills. The woolen tariff is now only 30 per cent., and the difference between the old and new rates is so slight as to be negligible. Even if an adequate specific duty had been imposed the enormous stocks of cheap English goods now in Canada would alone have been sufficient to delay for years the revival of the domestic woolen industry. The general curtailment of production and bankruptcy of leading Canadian mills forced the Government to abolish the preference to British goods some months ago, but failures and shut-downs have continued without interruption.

It will be apparent to anyone who has studied the new Customs regulations of Canada, which came into force on October 1, that, designedly or not, they constitute a second line of Protection of a formidable character. We do not refer particularly to the "dumping clause," which may be regarded as an honest attempt to deal with unfair competition, but to the new restrictions on import trade generally. British goods shipped to order have now to be accompanied by a certificate of value, a certificate of origin, and a surtax certificate, while the invoice values must be set out in a particular order. It is quite certain that it would not pay a shipper to master these various forms and regulations, and go to the expense of printing these certificates to execute a chance order from the Dominion. The cost of the additional printing and stationery, not to speak of the time occupied in preparing the documents, forms a substantial addition to the sum paid in import duties, and we calculate that through the new Canadian regulations British shippers have already been mulcted in some £5,000. This is the equivalent of a new 10 per cent. duty on half-a-million of our export trade. Shippers of goods on consignment (i.e., not sold prior to shipment) are treated as a class apart, as probable "dumpers," and with their invoices must send a sworn declaration of value. In the above estimate we have not reckoned the fees they may have to pay when attesting such documents, so that £5,000 is probably well within the mark.—Commercial Intelligence.

# DR. HAANEL'S REPORT.

Rarely has a report of greater public interest or importance been issued by any department of the Federal Government than that which was sent out this week from the office of the Superintendent of Mines of the Department of the Interior. The report in question contains the results of the investigation made by the Haanel Commission into the different electro-thermic processes for the smelting of iron ores and the making of steel in operation in Europe. This inquiry has excited the keenest curiosity throughout Canada, the United States and Europe, and numerous requests have been made by scientific journals, scientists and manufacturers for copies of the report. The conclusions of the commissioners are the result of careful, exhaustive inquiries. The report contains nothing of a speculative or imaginative character, and every statement made is based upon authoritative data.

In addition to the report on the smelting of iron ores and the making of steel in Europe, there is a special report on the Marcus Ruthenburg process of electric smelting of magnetite, in which demonstrations were given at Lockport, N.Y.; likewise a series of important papers on the electro-metallurgy of steel and iron by Henri Harmet, Gustave Gui and Capt. Ernest Stassano, and of copper by M. Ch. Vattier. The whole volume, consisting of 223 pages, is enriched and illustrated by many handsome plates and drawings.

The commission sent from Canada consisted of Dr. Haanel, Superintendent of Mines for Canada; Mr. Brown of Peterborough, Ont., electrician; Mr. Eric Nyström, M.E., Ottawa, draftsman, and Mr. Thomas Cote, Montreal, secretary. In England the services of Mr. F. W. Harbord, consulting metallurgist and analytical chemist to the Indian Government and the Royal Engineering College, were engaged as metallurgist of the commission. Electric smelting plants were then visited in the order named at the following places:—Gysinge and Korfors, Sweden; La Praz, France; Turin, Italy, and Livet, France.

At the Gysinge works steel of superior quality is made by the smelting together of charcoal-pig and scrap in electric furnaces of the induction type, i.e., furnaces without electrodes. The cost of a furnace of this type of 600 h.p. is, according to Mr. Kjellin, about \$4,000. The metallurgist, Mr. Harbord, estimated the cost of steel by this process to be \$34 per ton of 2,000 pounds. The amount of energy delivered to the electric furnace is 225 h.p., costing \$2,585, or \$11.50 per electric h.p. year.

Steel at the works of the French Electro-Metallurgic Co. at La Praz is made from scrap melted down, purified by the making of a number of slags, and carbonized in the furnace by carburite. This process, unlike that adopted at Gysinge, permits of the purification of the materials employed, and different grades of steel are made without difficulty. Mr. Heroult stated that the cost of the furnace (charge 2,500 kgs.), building and necessary equipment, exclusive of turbines and electrical machinery, is about \$10,000. The absorption of electric energy per ton of steel

amounted to 0.153 electric h.p. year (English units). If tapped before completion of purification, the product to be employed for structural steel, the energy consumed amounted to only 0.1 electric h.p. year per ton. In a memorandum furnished by Mr. Harbord at La Praz, the estimated cost of converting scrap into steel by the Heroult process, exclusive of cost of scrap and metal, amounted to \$14 per ton of product. The following classes of steel are made at the La Praz works, the selling price per ton of 2,000 pounds being given in each case:

Steel of exceptional hardness.....	\$363 00
Class 1, extra hard steel.....	272 60
Class 2, very hard steel.....	272 60
Class 3, hard steel.....	218 00
Class 4, medium hard steel.....	218 00
Class 5, tough, medium hard steel.....	145 40
Class 6, tough steel.....	145 40
Class 7, tough mild steel.....	123 20

Correspondence with Captain Stassano elicited the fact that the furnace built for the Italian Government, and erected in the Government gun foundry in Turin, had not been in operation for a number of months, the refractory lining of the roof having fallen in, and the new magnesite bricks ordered from Austria for the purpose of relining the furnace not having been received. The product of the Stassano process depends upon the charge, which is calculated beforehand, and in the form of briquettes subjected to the radiation of heat from an electric arc situated above the charge to be treated. The rotation of the furnace during the operation produces a proper intermixture of the melting mass, which, according to the inventor, results in accelerating reduction with great advantages from the point of view of the utilization of the heat and the preservation of the fire-proof lining of the furnace.

By far the most important experiments witnessed by the commission were those made by Keller, Leleux & Co. at their works in Livet. Some ninety tons of iron ore were used for the various experiments made to demonstrate the commercial feasibility of making pig iron and steel direct from the ore by the electric process. The furnaces employed for these experiments were the furnaces used in their regular work of making, by the electric process, ferro-silicon, ferro-chrome, etc. The company at the time was engaged in filling a rush order for ferro-silicon, but generously interrupted their pressing regular work to undertake experiments for the commission. Three sets of experiments were made for the commission, viz.:

- (1) Electric reduction of iron ore and obtaining different classes of pig, grey, white and mottled.
- (2) Electric reduction of iron ore containing a definite amount of carbon in the charge, with a view of ascertaining the amount of electric energy absorbed in the production of one ton of pig iron.
- (3) The manufacture of ordinary steel of good quality from the pig manufactured in the preceding experiments.

The different classes of pig iron—grey, white and mottled—were obtained without difficulty

At the close of the experiments for determining the electric energy absorbed per ton of pig, Mr. Keller, at Dr. Haanel's request, made trials of substituting charcoal for coke as the reducing material in the charge, and although the experiment in the form it was tried proved a failure, Mr. Harbord agreed with Mr. Keller that charcoal could be used provided it were first briquetted with the ore and the briquettes broken up to the size of one inch cubes.

Peat bogs in Ontario and Quebec, and peat coke, which is much more solid than soft wood charcoal, could doubtless be substituted with good success for the mineral coke which had been used in the experiments described.

Mr. Keller's estimate of cost per ton of product, based on the energy consumed in the second experiment, and found to be 0.226 e. h.p. year is as follows:

Ore, hematite, 55 per cent. iron, 1.842 tons at \$1.50 per ton.....	\$2 76
Coke, 0.34 at \$7 per ton.....	2 38
Consumption of electrodes, \$45 per ton, 34 pounds per ton of iron.....	77
Lime, 300 pounds at \$2 per ton.....	30
Labor at \$1.50 per day.....	94
Electric energy, 0.226 h.p. year at \$10 per h.p. year.....	2 26
Miscellaneous materials.....	40
Repairs and maintenance.....	20
General expenses.....	20
Amortization (machinery and buildings).....	50

Total, exclusive of royalty..... \$10 71

Mr. Harbord, the metallurgist, has furnished reasons for assuming the mean of the determinations of the two sets of experiments made, i.e., 0.350 e.h.p. year, to be a safer figure on which to base the calculation of cost per ton of pig produced. With this change in the amount of e.h.p., and 100 pounds additional of lime, the cost per ton of pig is \$12.05.

The experiments produced at Livet showed that to produce 100 tons per day would require 9,750 electric h.p. at the electrodes of the furnace.

It was found that Mr. Harmet, who has obtained patents for an electric process of smelting iron ore and the making of steel, has as yet no plant in operation by which his process might be tested.

Mr. Gui has patented an electric process for the making of steel from pig and hematite. He informed Dr. Haanel by letter of March 5th that his experimental furnaces had been dismantled and therefore no experimental demonstration could be given of his process, but that the process would be exploited by a company which has just been established at Plattenburg by Wilhelm Bruninghaus, the electrical firm Lahmeyer, of Frankfurt, and by the company of Siemens & Halske.

The conclusions arrived at by the metallurgist, Mr. Harbord, as a result of his investigation into the metallurgy of the electric production of steel and the electric reduction of iron ore, are as follows:

- (1) Steel equal in all respects to the best Sheffield crucible steel can be produced, either by the Kjellin, Heroult or Keller processes,

at a cost considerably less than the cost of producing a high-class crucible steel.

(2) At present structural steel, to compete with Siemens or Bessemer steel, cannot be economically produced in the electric furnaces, and such furnaces can be used commercially for the production of only very high-class steel for special purposes.

(3) Speaking generally, the reactions in the electric smelting furnaces, as regards the reduction and combination of iron with silicon, sulphur, phosphorus and manganese, are similar to those taking place in the blast furnace. By altering the burden and regulating the temperature, by varying the electric current, any grade of iron, grey or white, can be obtained, and the change from one grade to another is effective more rapidly than in a blast furnace.

(4) Grey pig iron, suitable in all respects for acid steel manufacture, either by Bessemer or Siemens processes, can be produced in the electric furnace.

(5) Grey pig iron, suitable for foundry purposes, can be readily produced.

(6) Pig iron, low in silicon and sulphur, suitable either for the basic Bessemer or the

basic Siemens process, can be produced, provided that the ore mixture contains oxide of manganese, and that a basic slag is maintained by suitable additions of lime.

(7) It has not been experimentally demonstrated, but from general considerations there is every reason to believe that pig iron low in silicon and sulphur can be produced, even in the absence of manganese oxide in the iron mixture, provided a fluid and basic slag be maintained.

(8) Pig iron can be produced on a commercial scale to compete with the blast furnace only when electric energy is very cheap and fuel very dear. On the basis taken in this report, with electric energy at \$10 per electrical h p year, and coke at \$7 per ton, the cost of production is approximately the same as the cost of producing pig iron in a modern blast furnace.

(9) Under ordinary conditions, where blast furnaces are an established industry, electric smelting cannot compete, but in special cases where ample water-power is available and blast furnace coke is not readily obtainable, electric smelting may be commercially successful.

It is impossible to define the exact condi-

tions under which electric smelting can be successfully carried on. Each case must be considered independently after a most careful investigation into local conditions, and it is only when these are fully known that a definite opinion as to the commercial possibilities of any project can be given.

Dr. Haanel adds some observations, in which he points out the gratifying nature of the experiments, made off-hand, in furnaces not designed for the production of pig, as to the future of electric smelting.

"I am credibly informed," he remarks, "that the water-power at Chats Falls, on the Ottawa River, can be developed at a cost to produce an electrical h.p. year at the rate of \$4.50. There are probably many water-powers favorably situated as regards good bodies of ore in the Provinces of Ontario and Quebec, which can be developed as cheaply. When such power is owned by the company intending to use it for electric smelting, and peat, coke or briquetted charcoal, made from mill refuse, which would probably not cost more than \$4 per ton, is employed for reduction, the cost of two of the heaviest items entering into the cost of producing pig by the electric process is reduced to one-half."

#### AN ECONOMICAL ARC LAMP.

So rapidly is the field of electric lighting being developed that information concerning the most successful lighting appliances is becoming of greater interest throughout Canada and in this connection the Jandus interchangeable arc lamp, sold in Canada by the



JANDUS INTERCHANGEABLE ARC LAMP.

Packard Electric Co., St. Catharines, Ont., is commanding much attention. This lamp has practically instituted a revolution in arc lighting and is of exceptional merit because of its adaptability to many uses. Among the many strong points of excellence the following are some for which convincing claims are made: One lamp interchangeable for all circuits, individually superior burning qualities, long life, quickest trimmed, low expense for carbons and trimming, compact and neat appearance, uniform 12 inch upper

When writing to

carbon trim, handsome ornamental case of colonial design, accessibility of parts for inspection, non breaking inner globe that is easily cleaned, etc.

The Packard Electric Co. have recently prepared a special pamphlet describing the Jandus arc lamp in detail, which will be of interest to every arc lamp user. This pamphlet they will be pleased to send free upon application.

#### THE WESTINGHOUSE COMPANIES.

Following is a list of the special awards and grand prizes assigned to the several different Westinghouse Companies by the International Jury of the Louisiana Purchase Exposition at St. Louis.

##### SPECIAL AWARD.

In the Department of Machinery for "the best, most complete, and most attractive installation."

##### TWELVE GRAND PRIZES

To the Westinghouse Electric & Mfg. Co., for "Alternating current generators and motors, alternating current turbo-generator installation, static transformers, and rotary converters." Group 67.

To the Westinghouse Electric & Mfg. Co., for "Direct current generators and motors." Group 67.

To the Westinghouse Electric & Mfg. Co., for "Electric railway motors, alternating current and direct current, and control systems for single and multiple unit operation and for mining and industrial locomotives." Group 67.

To the Westinghouse Machine Co., for "Horizontal gas engines and steam turbines." Groups 62 and 63.

To the Westinghouse Air Brake Co., for "Air brakes and friction draft gears." Group 74.

To the Westinghouse Traction Brake Co., for "Brakes for electric cars." Group 74.

To the American Brake Co., for "Driver brakes." Group 74.

To the Westinghouse Automatic Air & Steam Coupler Co., for "Air and steam couplers." Group 74.

To the Westinghouse Brake Co., Limited, London, England, for "Air brakes and accessories."—Group 74.

To the Westinghouse Co., Limited, St. Petersburg, Russia, for "Air brakes and accessories"—Group 74.

To the Union Switch & Signal Co., for "Signal system."—Group 74.

To the Cooper Hewitt Electric Co., for "The development of the mercury vapor arc lamp."—Group 69.

##### EIGHT GOLD MEDALS.

To the Westinghouse Electric & Mfg. Co. for "Complete switchboards and controlling apparatus, and the application of electric motors for mechanical purposes."—Group 67.

To the Westinghouse Electric & Mfg. Co., for "Alternating current, direct current, and Bremer arc lamps and arc lighting systems." Group 69.

To the Westinghouse Electric & Mfg. Co., for "Electric measuring instruments."—Group 71.

To the Nernst Lamp Co., for "Nernst lamps."—Group 69.

To the Cooper Hewitt Electric Co., for "Vapor lamps for photo engraving." Group 15.

To the Pittsburg Meter Co., for "Water and gas meters."—Group 64.

To the Westinghouse Electric & Mfg. Co., for "Industrial betterment work." Group 138.

To the Westinghouse Air Brake Co. for "The housing of the working classes."—Group 136.

##### FOUR SILVER MEDALS.

To the Westinghouse Electric & Mfg. Co., for "Switches, fuses, and wiring appliances." Group 69.

To the Sawyer-Man Electric Co., for "Incandescent lamps."—Group 69.

To the Bryant Electric Co., for "Electric light fittings."—Group 69.

To the Societe Anonyme Westinghouse, Havre, France, for "Gasolene automobiles."—Group 72.

##### ONE BRONZE MEDAL.

To the Perkins Electric Switch Mfg. Co., for "Electric switches."—Group 69.

Advertisors kindly mention THE CANADIAN

MANUFACTURER.

EXHIBIT OF THE H. B. SMITH  
MACHINE COMPANY AT THE  
ST. LOUIS EXPOSITION.

Lumbermen and others who use wood working machinery, or who are interested in converting lumber into merchantable shapes, will be edified at the liberal display of wood working machinery at the Universal Exposition at St. Louis. One of the largest exhibits of this class of machinery is that of the H. B. Smith Machine Co., Smithville, N. J., who occupy some 5,000 square feet in the Machinery Hall, where they show some thirty-five modern wood working machines of latest design and embodying all improvements to date. A number of the machines are electrically driven, thus exemplifying the modern plan of utilizing what might be called the "20th Century Power." The H. B. Smith Machine Co. are pioneers in the manufacture of wood working machines, the business having been continuous

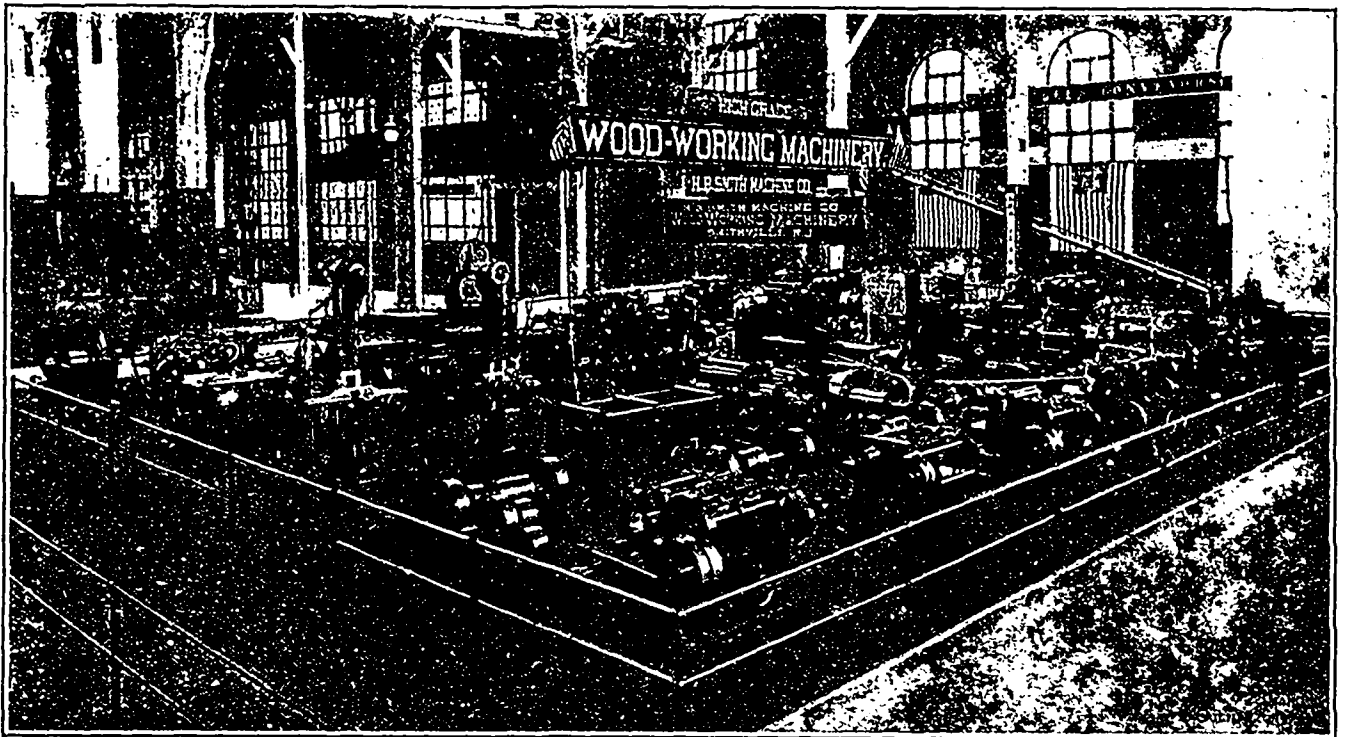
long as 6½ feet by 28 inches wide between shoulders, the movable or adjustable end of the machine being accurately adjusted by power.

They also show a smaller machine of the same character adapted for general purposes, which in some respects is of similar construction to the larger machine, except that the movable end is adjusted by hand and the cope heads are attached to the cutter head stocks.

They exhibit a single end tenoning machine for working hard wood in door, sash and blind factories, the table of which is fitted with a peculiar style of roller bearing so that it moves very easily and accurately across the ways. This is a standard machine of which large numbers are in use. They also exhibit a smaller tenoning machine somewhat similar in construction and design except the table is fitted with a new style of roller bearing which is journaled in the table but so connected that both ends of the carriage move parallel and accurately across the ways.

wood or making deep cuts, and the same crank by a single turn will slacken the belts when working soft wood and making light cuts, thus saving unnecessary wear and tear on machinery and belting.

Another important machine is a new style of triple drum sander. This machine differs from others in the fact that the sand drums are over the work and the feed is that of an endless bed. This feed-bed is composed of lags joined together in a novel and durable manner, and faced with rubber so as to present a slightly yielding face, thus enabling the operator to fill the entire bed full of work. Even if the pieces are small and of slight different thicknesses, each one will be discharged from the machine in a finished condition, hence some of the users of these machines say that its capacity is from four to six times greater than the ordinary. The table raises and lowers by power and has hand adjustment for fine setting. The sand drums being over the work, by their action assist in



H. B. SMITH MACHINE CO.'S EXHIBIT OF WOOD-WORKING MACHINERY AT THE ST. LOUIS EXPOSITION.

since 1847, and if experience is worth any thing they ought to know something about their class of machinery. They keep on hand a corps of draughtsmen and designers and perhaps have contributed to the trade more original wood working machines than any other person or company in the business. Within the last few years they have remodelled their machines and have added many new ones to the list and it is this latter class they are exhibiting.

We refer to a few of the more important machines shown by the H. B. Smith Machine Co., at the St. Louis Exhibition:

A large double end tenoning machine of modern design and especially adapted for working hard wood and heavy pieces of stock such as used in the manufacture of furniture and railway cars. The machine has double heads so as to cut long tenons and is capable of working stock as short as 4½ inches and as

A large 6 roll fast feed flooring machine is also shown, which appears to have every necessary adjustment for convenient operation. It will plane, and the side heads will work as thick as 6 inches, and the one on exhibition will work as wide as 12 inches. The under cutter head is placed next to the upper or thicknessing head so as to work both sides of the board before being acted upon by the side heads, thus insuring a better class of work and which will also enable the operator to work flooring with the face side down which is a conceded advantage. All of the adjustments are made from the work side of the machine and the clamps used for holding the cutter heads in place are made compensating. This machine is also fitted with a belt compensating device by which the turning of a crank will make all of the cutter head belts taut as might be required in working very hard

lifting the dust into a hood overhead, whence it is withdrawn by the usual exhaust fans without passing through the working parts of the machine. Two of these drums are preferably oscillated so as to balance one another and the paper is fastened on by an improved method so that it cannot come off and remains automatically taut.

Several styles of sawing machines are exhibited, consisting of a large circular resawing machine fitted with 48 inch segmental saw; a 36 inch standard hand saw machine; a large universal saw bench with tilting table; a medium size universal saw table with boring attachment; a large gang lath and picket mill; a small self-contained or cabinet electrotype saw bench; a medium size swing saw; and a 26 inch right hand gang ripping and edging machine of superior construction and design.

There is a double spindle shaner of sub-



stantial design, and having treadle for starting and stopping the spindles, which can be lowered entirely beneath the table. Also a single spindle shaper with frictional cone reverse, of similar design.

There are a door and blind clamp; a universal stair router; a hollow frame arm sander, a disk and spindle sander, and a self-feed blind slat tenoner; besides a number of accessories and articles useful for wood workers.

The exhibitors have published a 600-page bound catalogue which contains cuts and descriptions of nearly all of the machines they build, which they will send to intending purchasers.

### THE ALLIS-CHALMERS-BULLOCK WORKS.

The new works of the Allis-Chalmers-Bullock, Limited, situated at Rockfield, Que., near Montreal, comprise five shops. All the buildings are of the most improved construction, and there is every facility for the handling of the work. The main machine shop is a building 400 feet long and 100 feet wide, divided into a centre and two aisles. In the centre are the heavy tools and heavy assembling department, while the smaller tools and detail departments are in the side aisles. The tool equipment is excellent and is to be further improved by the addition of many new tools, especially adapted to the class of work to be carried on. It is intended to extend this shop and to erect beside it a twin shop, the two to open into a large assembly and store room, fully equipped with cross tracks and travelling cranes for the handling of all material. This, when completed, will make a machine shop 700 feet long and 200 feet wide.

Another building which is to be enlarged is the present power house. A large direct-current Bullock generator is to be installed to furnish power for the multiple voltage system of tool drive, developed by the Bullock Co. will be used throughout the shops. The power house will be extended to a length of 300 feet and a width of 60 feet, the greater part of it being used for the winding and assembling of the electrical apparatus. The foundry, a most important factor in a well ordered plant, is a building 200 feet long and 100 feet wide. The pig iron is unloaded directly from the railroad to the charging floor. A cupola of large capacity, a core oven, travelling crane, etc., make the equipment complete. There is ample room for the extension of this building.

A blacksmith shop, 100x80 feet, with modern forges and steam hammers, and a pattern shop, 200x80 feet, complete the present plant; but it is expected that additions other than named above will be made in the near future.

A new and well appointed office building will be erected in the spring to accommodate the Montreal sales organization as well as the the works staff.

The Y.W.C.A., of Brantford, Ont., will enlarge their building in that city.

The Carney Lumber Co., Massey, Ont., will erect a two band sawmill in Owen Sound, Ont., 186x60 feet, with an annual capacity of twenty million feet; a brick boiler house, having a capacity of nine boilers, and a brick engine house.

## 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 on these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

If a new manufacturing enterprise of any kind is being started, or an electric lighting plant instituted, or an electric railroad, or a telephono, or a telegraph line is being constructed; or a saw mill, a woolen, cotton, or knitting mill; or if any industrial establishment has been destroyed by fire with a probability of its being rebuilt, our friends should understand that possibly there may be something in the event for them. Do you catch on to the idea?

The starting of any such concern means a demand for some sort of machines, machinery, or supplies, such as steam engines and boilers, shafting, pulleys, belts, lubricants, machinery supplies, wood or iron working machinery, ventilating and drying apparatus; pumps, valves, packing, dynamos, motors, wire, arc and incandescent lamps, and an infinite variety of electrical supplies, chemicals, acids, alkalies, etc. It is well worth the while of every reader of the Canadian Manufacturer to closely inspect all items under the head of Captains of Industry.

It is expected that the fisheries protected Toronto, have been incorporated with a capital of \$250,000, to manufacture straw fuel machines, farm implements, etc. The provisional directors include J. H. Macabe, W. D. Earngey and J. A. Morden, Toronto.

The Ballarat Mining Co., Toronto, have been incorporated with a capital of \$300,000 to carry on a mining, milling and reduction business. The provisional directors include J. S. Lovell, Wm. Bain, and R. Gowans, Toronto.

The Big Master Mining Co., a United States incorporation, have been licensed to carry on a mining, milling and reduction business in Ontario with a capital of \$500,000. P. E. MacKenzie, Rat Portage, Ont., is their attorney.

Two weeks ago Jos T Vosper, Campbellford, Ont., sent to Ottawa, to Prof. Wilmot, director of the Government Geological Survey, a sample of corundum found on his property in the township of Methuen, County of Peterborough, and at the same time requesting that gentleman to make an assay of it. Assisted by Profs. West and O'Brien, Prof. Wilmot made the assay in the Government Laboratory, and they gave it as their opinion that the corundum was the finest that they had ever assayed, and of a color unlike anything they had ever seen. Its specific gravity as determined upon by them was 3.99, while that of good corundum is 3.85. It is next in hardness to diamond, lacking only four points of being as hard. Its value was placed at \$300 per ton. The felspar in which the corundum is found is, they said, very valuable. The sample was labelled with the name of the contributor and the location of the property and placed among the Government's mineral exhibits at Ottawa. Prof. Wilmot expressed a desire to visit Campbellford and accompany Mr. Vosper to his property in Peterborough Review.

Mr. J. K. Griffin, formerly of the Bradley Pulverizer Co., Boston, Mass., has located in Galt, Ont. Mr. Griffin has designed a new cement and mineral ore grinder and has obtained a contract for 50 of these mills for the Belleville Portland Cement Co., Belleville, Ont. A machine shop has been fitted out in the old McGregor-Gourley plant in Galt, and a company to be known as the Senator Mill Mfg. Co., are being organized by Mr. Griffin and a number of well known Canadian and American capitalists.

The Peninsular Tool Co., in which Mr. Jno E. Wright, of the Peninsular Tool & Mfg Co., Detroit, Mich., and other Detroit and Windsor capitalists are interested, has been formed and are preparing to erect a large plant in Windsor, Ont., for the manufacture of moulders, masons, and plasterers' tools and butchers' supplies. This will be an entirely new industry in Canada and will supply the heavy demand for such goods which has heretofore been imported. A factory 125x30 feet and two stories high will be erected in Windsor, Ont.

The Canadian Straw Fuel Machine Co.,

have been incorporated with a capital of \$250,000, to manufacture straw fuel machines, farm implements, etc. The provisional directors include J. H. Macabe, W. D. Earngey and J. A. Morden, Toronto.

The Ballarat Mining Co., Toronto, have been incorporated with a capital of \$300,000 to carry on a mining, milling and reduction business. The provisional directors include J. S. Lovell, Wm. Bain, and R. Gowans, Toronto.

The Big Master Mining Co., a United States incorporation, have been licensed to carry on a mining, milling and reduction business in Ontario with a capital of \$500,000. P. E. MacKenzie, Rat Portage, Ont., is their attorney.

Two weeks ago Jos T Vosper, Campbellford, Ont., sent to Ottawa, to Prof. Wilmot, director of the Government Geological Survey, a sample of corundum found on his property in the township of Methuen, County of Peterborough, and at the same time requesting that gentleman to make an assay of it. Assisted by Profs. West and O'Brien, Prof. Wilmot made the assay in the Government Laboratory, and they gave it as their opinion that the corundum was the finest that they had ever assayed, and of a color unlike anything they had ever seen. Its specific gravity as determined upon by them was 3.99, while that of good corundum is 3.85. It is next in hardness to diamond, lacking only four points of being as hard. Its value was placed at \$300 per ton. The felspar in which the corundum is found is, they said, very valuable. The sample was labelled with the name of the contributor and the location of the property and placed among the Government's mineral exhibits at Ottawa. Prof. Wilmot expressed a desire to visit Campbellford and accompany Mr. Vosper to his property in Peterborough Review.

The Leeds Lumber & Power Co., Limited Brockville, Ont., have been incorporated with a capital of \$40,000, to manufacture timber lumber, etc. The provisional directors include J. G. Gardner, F. B. Cossitt and C. T. Wilkinson, Brockville.

The North American Bent Chair Co., Owen Sound, Ont., have increased their capital from \$190,000, to \$500,000.

Mr. Willis Chupman, C.E., Toronto, has presented his report to the Stratford, Ont., city water commissioners, recommending the sinking of two wells of 220 feet each, and many other improvements, at a cost of \$100,000.

The Construction Corporation, Limited, Ottawa, have been incorporated with a capital of \$500,000, to carry on a general contracting and construction business. The provisional directors include Sir A. P. Caron, J. H. E. Secretan, Ottawa, and J. H. Jewell, Toronto.

The Canadian Otis Elevator Co., Hamilton, Ont., have recently closed the following contracts for elevators. Toronto—The W. R. Brock Co., two electric freights, one electric passenger and one sidewalk elevator; Douglas & Ratcliffe, one electric freight; Garside & White, one electric freight, Atlantic Soap & Oil Co., one hydraulic freight, Bradshaw & Sons, two electric elevators; H. S. Howland & Sons, electric and hydraulic elevators for new warehouse; McClary Mfg. Co., one electric elevator; Rolph & Clark, one electric freight; Canada Cycle & Motor Co., one electric elevator; and Standard Woolen Mills Co., one electric freight. To Montreal—New Sovereign Bank Building, two electric elevators; also Metropolitan Bank Building, Bell Telephone Co.'s new plant and Montreal Amateur Athletic Association new plant. To Winnipeg—Adams Bros., Massey-Harris Co., Olafson & Co., Thos. Black, J. W. Peck & Co., T. H. Davies, Tees & Persse, Ontario Wind Engine & Pump Co., Royal Furniture Co., McCall Bros., Telfer Bros., J. C. Gordon, Telegram Printing Co., R. A. Rogers, A. F. Bamfield, The Ballour Block; Union Bank, three electric passengers; Manitoba Free Press, three elevators, R. J. Whitlaw & Co., six; Scott Furniture Co., two; and Bullman Bros., two.

The plans of the new power house for the Southwestern Traction Co., at London, Ont., have been completed and tenders will be called for shortly. The structure, with its machinery, will cost about \$200,000. It will furnish power for thirty miles of road.

The Owen Sound, Ont., gas works were damaged by fire, October 20. Loss about \$1,000.

The Kawartha Lake's Navigation Co.'s steamer, Kenosha, was destroyed by fire at Lindsay, Ont., October 22. Loss about \$8,000.

The Mickle-Dymont's works at Brantford, Ont., were damaged by fire, October 19. Loss about \$3,000.

Mr J. A. Aylmer, of Brown & Aylmer, Peterboro, Ont., contractors for the construction of the Lake Simcoe division of the Trent Valley canal, reports construction work as well advanced on his section of about seven miles, which includes five locks, three dams and two piers or breakwaters to form an entrance to and an exit from the canal. These piers are of concrete and contain 5,000 odd cubic yards. At the shore line at the canal outlet, they are fifty feet apart and splay outward to a distance each of 500 feet till their outer terminus are 300 feet apart. This forms a capacious receiving basin. There is some work to do on the gates of the locks and details incident to a work of this kind to be looked after. The adjoining section under Larkin & Sangster, contractors, is a similarly forward state. The lift lock at Kirkfield is completed so far as the concrete work is concerned, and now ready for the iron work. If this is finished in time the canal from Balsam Lake to Lake Simcoe will be opened next summer and the we shall have continuous navigation from Healey's Falls to Orillia, Barrie, etc.

The Trenton section will be built next and it won't be long till Peterboro has water connection with Montreal and Quebec and Liverpool.

Contracts aggregating \$120,000 have been awarded by Architect E. J. Lennox, Toronto, for the construction of the Electrical Development Co.'s subsidiary power station at Niagara Falls, Ont., to cost \$300,000. The concrete and brick contract for the subsidiary station has been let to Thos. Mumford, Niagara Falls, for \$40,000, the steel work to the Canada Foundry Co., Toronto, for \$45,000 the carpenter work to T. Gearing, Toronto, painting and glazing to E. Bolton, Toronto; galvanized iron work to Wheeler & Bain, Toronto; and the roofing to Hudson & Son, Toronto.

The Canadian Locomotive Works, Kingston, Ont., have received an order from the Grand Trunk Railway Co. for the building of twenty-five Richmond-Compound mogul freight locomotives, at a cost of about \$400,000.

The Canada Foundry Co., Toronto, have just completed a new locomotive engine of the consolidation type, compound cylinders, high pressure, 23 inch diameter, and low pressure 35 inch diameter; 26 inch stroke, with four coupled driving wheels on each side, each 57 inches in diameter. The combined weight of the engine and tender without either coal or water is 208,000 pounds. The tender has a capacity of 5,000 imperial gallons, equalling 25 tons of water, and eleven tons of coal. The company have received an order for eleven locomotive engines of the above type from the Canadian Pacific Railway Co.

The Helen mine of the Lake Superior Corporation at Michipicoten, Ont., are now employing about 160 men and the output is averaging between 800 and 1,000 tons per day. A considerable part of the ore is being shipped to the United States on contracts, but some of it will be used at the blast furnaces of the Lake Superior Corporation at the Soo.

Messrs. H. Dighton & Sons, Philadelphia, Pa., probably the oldest saw manufacturing firm in the United States, have been negotiating for the establishment of works in Canada for some time. In reply to an inquiry regarding their proposals they state: The location of the place we expect to start our Canadian plant is Toronto.

The Standard Ideal Sanitary Co., Port Hope, Ont., will erect a two story brick warehouse, also an iron building for their smelting and enamelling furnaces.

The Southwestern Traction Co., are considering the erection of a power house at London, Ont., at a cost of \$200,000.

The Ontario government has offered to contribute \$100,000 to a hospital in connection with the university at Toronto.

The Canadian Pacific Railway Co. are making negotiations with the city of Ottawa for the site now used as a central station upon which they state they would erect a large hotel and a new railway station.

The Toronto Picture Frame Mfg. Co., and J. T. Dryden, machinist, Toronto, had their works damaged by fire, October 28. Loss about \$10,000.

The Sovereign Bank will open a branch bank in Galt, Ont.

Messrs. G. Howes and G. Booty, Galt, Ont., have entered into partnership and they will erect a factory in or near Galt for the manufacture of artificial stone and cement brick.

Messrs. Clark & Demill, Galt, Ont., manufacturers of woodworking machinery, have awarded the contract for their new shops, at Hespeler, Ont., to W. A. Kribs. A main building, 21x67 feet with portable ends, to allow for enlarging, and a boiler house, 28x24 feet, will constitute the plant.

The town council of Rat Portage, Ont., have decided to change the name of the town, and that it shall be called Kenora.

Dr. J. M. Bell, who has been exploring the Michipicoten iron ore district, reports to the Ontario Bureau of Mines that the iron-bearing area has been found to be considerably more extensive than he supposed. New deposits have been discovered in several places, the most promising being at Cameron lake and on the Tucaswa river, where bodies of magnetic occur.

The Taylor Forbes Co., Guelph, Ont., are enlarging their works by the erection of a new plant for the manufacture of radiators and hot water and steam heating boilers, cast iron fittings, also a complete line of steamfitters' supplies. This plant is being built by the Hamilton Bridge Co., Hamilton, Ont.

The Canadian Westinghouse Co., Hamilton, Ont., have opened an office in Halifax, N.S., under the management of Mr. C. C. Starr, formerly of the firm of John Starr, Son & Co. Mr. Starr has just closed a contract for the Westinghouse Co. to equip the Nova Scotia Water Power Co. with generators, motors, etc., for the development of 500 h.p. at Liscomb Falls and the transmission of the electrical energy eight miles to the gold mines at Goldenville, N.S.

The German American Co., Brockville, Ont., recently organized with a capital of \$75,000, have secured over 2,000 acres of mineral land in the township of Burgess, Ont. The phosphate will be shipped to Germany.

The ratepayers of Toronto have passed the following by-laws. Granting \$50,000 towards the Landsdowne Avenue subway, \$25,000 for erection of a fire hall in the Kew Beach district, and \$20,000, for erection of a new fire station on Cowan Avenue.

The ratepayers of Preston, Ont., have voted favorably on a by-law granting \$15,000, to the Metal Shingle & Siding Co., for the erection of a new plant to replace the one destroyed by fire recently.

The Brantford Screw Co. Brantford, Ont., will build a large storage warehouse.

The F. Williams Co.'s warehouse, at Morrisburg, Ont., was damaged by fire, October 24. Loss about \$10,000.

The Lake Superior Corporation's charcoal plant will be in operation in a few days. It will add 225 to the number of men employed about the corporation's industries. As by-products the plant will make 400 tons of grey acetate and 900 gallons of wood alcohol every month. The coke blast furnace, which was started a few days ago, is running satisfactorily. It will be supplemented shortly by the charcoal furnace which will be in

readiness when the charcoal plant is in a position to supply the fuel.

Contractor A. C. Douglas has completed the tunnel of the Canadian Niagara Power Co., on which he has been working for over three years. The Jenckes Machine Co., Sherbrooke, Que., finished the conduit of the Ontario Power Co., a few days ago. It is over a mile long, eighteen feet in diameter, and constructed entirely of steel. The Toronto & Niagara Power Co. have awarded the contract for the erection of their transformer house to Thos. Munford, Niagara Falls, Ont. The contract for the Ontario Power Co.'s transforming and distributing station was given to Horne & Elmsley, Toronto.

According to the returns of the Canadian Trade and Commerce Department, just issued, Canada's exports of paper during the month of July amounted to \$96,037, of which Great Britain took \$57,754, the United States, \$12,841, and other countries, \$25,442. Of rags the exports in the same month amounted to \$14,700, the United States taking \$9,875 worth. Pulp wood to the value of \$261,862 went out of the country, all to the United States. Of pulp also the United States was the only foreign buyer in July, taking \$138,285 worth. Canada's imports of paper in July amounted to \$108,365; Great Britain contributing \$46,606, the United States \$137,286, and other countries, \$14,473.

The Stewart Straw Cutter & Mfg. Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture threshing separators, straw cutters, etc. The provisional directors include D. A. Stewart, Molesworth, Ont., D. Lamont and W. E. Rothwell, Toronto.

A great stimulus has been given to the iron and steel industries of this country by recent legislation. The 5% duty on steel rails went into effect November 1, and there has consequently been a rush on the part of American rail mills to fill existing contracts before that time, while new orders are going to Canadian producers. The "anti-dumping" amendment to the tariff is being rigidly enforced. Where contracts are made by American firms for the installation of machinery, duty has now to be paid not merely on the articles imported, but on the whole contract price, including the cost of the labor employed in Canada in the work of installation. The effect of this is to confine American contracts to the shipment of machinery and give installation work to Canadian firms. The result of these tariff changes, coupled with the great prospective demands caused by railroad construction, has been to stimulate activity in iron and steel manufacture and to increase the tendency on the part of American capitalists to retain a share of the Canadian market by investing in Canadian enterprises. A rumor has had currency that the United States Steel Corporation had secured control of the Northern Iron & Steel Co., whose plant is situated at Collingwood, Ont. While it has been denied as premature, it turns out to have some foundation. Major J. A. Currie, president of the Northern Iron & Steel Co., states that overtures looking towards securing control had been made by a prominent official of one of the large American steel companies and negotiations entered into. The proposition contemplated the enlargement of the Collingwood plant by the addition of two blast furnaces and perhaps a

steel rail plant. In the meantime, however, further legal proceedings have been taken in the name of the Cramp Steel Co., to obtain an injunction restraining the transfer of the plant and assets of that company to the Northern Iron & Steel Co.

The Mount McKay Brick & Tile Co., Fort William, Ont., have installed a complete plant capable of producing upwards of 3,000,000 brick in the season.

The Peterborough Shovel & Tool Co., Peterborough, Ont., have been incorporated with a capital of \$50,000, to manufacture shovels, spades, implements etc. The provisional directors include T. Fortye, A. L. Sykes and A. Elliott, Peterborough.

The Nipissing Lumber Co., Cache Bay, Ont., will increase their capital from \$40,000, to \$125,000.

The St. Catharines & Niagara Power & Fuel Co., St. Catharines, Ont., will increase their capital from \$40,000 to \$100,000.

The Algoma Power Co., Berlin, Ont., have been incorporated with a capital of \$100,000 to produce electricity for heat and power purposes, etc. The provisional directors include D. B. Detwiler, O. Kinzie and C. K. Hagedorn, Berlin.

The Hay Foundry, Limited, Listowel, Ont., have been incorporated with a capital of \$40,000, to manufacture farm implements, machinery, castings, etc. The provisional directors include J. C. Hay, F. W. Hay and J. N. Hay, Listowel.

The Public Drug Co., Atwood, Ont., have been incorporated with a capital of \$50,000, to manufacture drugs, medicines, etc. The provisional directors include J. A. Mitchell, C. H. McFarlane and S. Petrie, Atwood.

The Dominion Natural Gas Co., Hamilton, Ont., have been incorporated with a capital of \$500,000, to produce electricity, natural gas, petroleum oil, etc. The provisional directors include W. J. Aikens, H. Coekshutt and J. S. Hamilton, Brantford, Ont.

Messrs. Grafton & Co., Limited, Dundas, Ont., have been incorporated with a capital of \$500,000, to manufacture dry goods, carpets, etc., and to acquire the business of Grafton & Co. The provisional directors include J. B. Grafton, J. J. Grafton and C. J. O'Connor, Dundas.

The building operations in Toronto continue with unprecedented activity. The aggregate value of buildings for which permits were issued in October was \$902,531, and in October, 1903, \$437,810, an increase of \$464,722. For the current year to October 31, the showing is equally satisfactory. The total to October 31 was \$5,166,920, and for the same period of last year \$3,755,257, the increase this year being \$1,410,763. The total for the whole of last year was \$4,359,457, and that was then the largest aggregate for any year in the city's history.

Steps are being taken to establish another new industry in Peterborough, Ont., the Peterborough Radiator & Boiler Co., with a capital of \$40,000, to manufacture the Sturgeon heater, invented and patented by a local plumber, Mr. R. G. Sturgeon.

A contract has just been closed by the Canadian Westinghouse Co., Hamilton, Ont., whereby they will provide air brakes for the Grand Trunk Pacific Railway Co.'s rolling stock and equipment, at a cost of about \$700,000.

To supply them will require half the output of the factory for the next four years, and the 150 men employed in the air brake department will be assured of steady work for this length of time at least. The company's new buildings will soon be completed. They will be devoted to the manufacture of electrical machinery and appliances, and from 800 to 1,000 hands will be employed in this department.

The Department of Railways and Canals at Ottawa are inviting tenders for a \$200,000 lift lock at Kirkfield, on the Trent Canal. The location will be between Lake Simcoe and Balsam Lake, or about one hundred miles from the Peterborough, Ont., lift. The Kirkfield lock will be about ten feet shorter than the one at Peterborough, and the lift will be 55 feet. The towers at Peterborough are of concrete; at Kirkfield they will be of steel. The lock, as well as that portion of the canal it is located on, will be completed next autumn.

The North American Saw Co., Philadelphia, Pa., will erect a branch works in Toronto.

Mr. E. H. Mann's planing mill at Peterborough, Ont., was destroyed by fire October 31. Loss about \$8,000.

The Hamilton, Ont., city council will submit a by law to the ratepayers to raise \$50,000 for an extension to the City Hospital.

Messrs. Walter, Woods & Co's broom factory at Hamilton, Ont., was destroyed by fire October 29.

Messrs. A. C. Leslie & Co., Montreal, inform us that the Mond Nickel Co., Victoria Mines, Ont., are roofing their new smelter with galvanized corrugated iron supplied by Messrs. H. S. Howland, Sons & Co., Toronto. The iron is Lysaght's "Orb" brand, extra heavily coated and made specially for exposure to fumes such as those at the smelting works, and it may be of interest to other consumers to note that galvanized iron can be obtained of extra grade for such purposes.

Col. Jas. McNaught, New York City and H. R. Melville, Boston, Mass., have contracted to sell to the Canadian Northern Railway of Canada, the Montford and Gatineau roads. These roads will give the Canadian Northern an entrance to Montreal.

The Canada Car Co., Montreal, recently organized with a capital of \$3,000,000, of which Mr. W. P. Coleman, is president and general manager, will commence the erection of their plant at once so as to be in operation by next summer. The buildings will cover 360,000 square feet and will be equipped with modern electric overhead travelling cranes. The plant will have a capacity of twenty-five wooden cars, fifteen steel cars and fifteen passenger coaches; also steel underframes for twenty-five cars and about forty steel truck frames per day. They will handle 600 tons of material per day and will give employment to about 2,000 men.

Mr. Chas. Boutelle's furniture factory and planing mill at Danville, Que., was destroyed by fire October 25.

The first of the two ice-breakers ordered by the Department of Marine and Fisheries from Messrs. Fleming & Ferguson, Paisley, Scotland, the Champlain, arrived at Quebec October 25. This steamer will run in connection with the Intercolonial Railway from St. Denis, county of Kamouraska, to points on the north shore, the service being most

required in winter when all the passenger steamers have stopped running. The Champlain is a steel sea-going passenger steamer, length 120 feet, beam 30 feet, depth of hold, 17.6; tonnage of register, 225; gross, 522; draft, 11 feet, with a freeboard of eight feet.

The Jenckes Machine Co., Sherbrooke, Que., are supplying two giant ore crushers for the Granby Mines, B.C.

The Department of Public Works, Ottawa, are inviting tenders for the construction of a public building at Levis, Que.

The following are the Canadian patents recently secured through the agency of Messrs Marion & Marion, patent attorneys, Montreal and Washington, D.C.—Geo. Hutton, Richmond, Que., truck; P. E. Heina, Paris, France, telegraph apparatus; H. P. Martin, Paris, France, explosion engines and cylinders for internal combustion engines; P. Noiseux, Beranger, Que., cream cooling apparatus, L. P. Dexter, New York City, gas burners, J. E. Hamel, Three Rivers, Que., log counting and conveying machine. The "Inventor's Adviser" is just published, any one interested in patents or inventions should order a copy from the above company.

The J. B. Sparrow Music Hall Circuit, Limited, Montreal, have been incorporated with a capital of \$20,000, to carry on a music printing and publishing business, etc. The provisional directors include J. B. Sparrow, W. A. Edwards and A. J. Brown, Montreal.

The Nova Scotia Steel & Coal Co., Sydney Mines, C.B., commenced the manufacture of pig iron on August 29 last, and have steadily continued operations. They have made a claim to the Trade and Commerce Department Ottawa, for \$5,362 in bonuses. This represents an output of about 3,575 tons of pig iron at \$1.50 per ton.

The Department of Public Works, Fredericton, N.B., are inviting tenders for the erection of Ketchum's Wharf over Kennebecasis River in Hampton, N.B., and for Roberts' Hotel wharf over Kennebecasis River in Rothesay, N.B.

The Rosebank Lumber Co., Douglastown, N.B., have been incorporated with a capital of \$75,000, to manufacture lumber, etc. The provisional directors include O. W. Norden, K. Norden, and A. M. Sundin, Rosebank.

The Department of Public Works, Fredericton, N.B., will receive tenders for rebuilding Louisa Brook Bridge in Restigouche County, N.B., and also for rebuilding the Lucy Bridge in York County.

Great interest has been awakened during the past few days in the petroleum resources of New Brunswick in consequence of the strike of oil in Kent county. The fields in Westmorland and Albert are developing very rapidly, and Mr. Frank Denton, K.C., Toronto, has obtained a lease of a large area on the Albert county side of the Petitcodiac River. This district has been partly developed, and is known to be underlain with oil. Four good wells have already been struck. Abundance of capital is available for developing the field, and work will be proceeded with at once.

The Portland Cement Co., Winnipeg, Man., have been incorporated with a capital of \$1,000,000, to manufacture cement, brick, pottery, pulp, paper, etc. The provisional directors include D. A. Keizer, T. C. Doherty, and R. R. Sutherland, Winnipeg.

The Trade and Commerce Department Ottawa, have received from the chief inspector of the Manitoba grain inspection district, a comparative statement showing the number of licensed elevators and warehouses, with the capacity of each, in his district, for the years 1902-3 and 1903-4. In the former years there were 822 elevators and warehouses with a total capacity of 30,356,440 bushels. In the latter years there were 982 elevators and warehouses, with a capacity of 41,186,000 bushels. The elevators increased by 178 and the warehouses decreased by 18. There was a gain in capacity of 10,829,560 bushels. In Manitoba the Canadian Northern last year had 37 more elevators than it had the year before, and seven less warehouses. The Canadian Pacific Railway had 56 more elevators and six less warehouses. In the North West Territories the Canadian Pacific Railway have increased the elevators by 85, but have five less warehouses.

The Winnipeg Casket Co.'s factory, Winnipeg, Man., was destroyed by fire October 25. Loss about \$20,000.

Messrs. Sherlock, Freeman & Co., Lethbridge, N.W.T., will erect a new warehouse.

A by-law will be submitted to the ratepayers of Lethbridge, N.W.T., to grant exemption from taxation to the Canadian Pacific Railway Co., who agree to build a brick and stone passenger depot, a freight shed 500 feet long, a ten-stall round-house, and several miles of siding.

The ratepayers of Red Deer, N.W.T., have passed a by-law granting \$15,000 for the installation of a water works system.

The Edmonton Brewing & Malting Co., Edmonton, N.W.T., are erecting a brick malt-house at a cost of \$11,500.

B. Hollinquist will erect a hotel building at Heward, N.W.T. at a cost of \$10,000.

The town of Indian Head, N.W.T. will have a new waterworks system installed.

The Imperial Hotel at Indian Head, N.W.T. will be enlarged.

W. N. Lailey, architect, Brandon, Man., has prepared plans for a new immigration hall 60x31 feet, two stories high to cost about \$7,000.

A new boiler room will be built at the Brandon, Man., asylum at a cost of about \$8,000.

Mr. Thos. Steel will erect a business block at Coleman, N.W.T.

R. J. Manson, has been awarded the contract for the erection of the new school building at Edmonton, N.W.T., at a cost of \$32,000.

A new town hall will be erected at Arcola, N.W.T., at a cost of about \$6,000.

The Alberta Grain Co., are erecting a 40,000-bushel grain elevator at Wetaskiwin, N.W.T.

A new steel bridge will be erected in Saskatoon, N.W.T. at a cost of \$250,000.

Messrs. Tees & Persse, Winnipeg, Man., are erecting a new warehouse 240x66 feet at a cost of about \$100,000.

Mr. F. Williamson is erecting a new implement warehouse in Belmont, Man.

Messrs. Snyder Bros. Portage la Prairie, Man., have been awarded the contract for the erection of the provincial agricultural building at Winnipeg, which will cost about \$100,000.

Messrs. Lewis Bros & Co., Montreal, manufacturers of hardware, will erect a six-story warehouse in Winnipeg, Man., at a cost of \$75,000.

The Royal Lumber & Fuel Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture lumber, contractor's supplies, etc. The provisional directors include I. E. Gaudin, T. C. Bullock and A. M. Stewart, Winnipeg.

The Henderson Roller-Bearing Co., Toronto, who have recently opened an office in Winnipeg, Man., will now erect a large plant in that city for the manufacture of their bearings.

The Department of Public Works, Ottawa, are inviting tenders for the construction of a post office building in Winnipeg, Man.

F. O. Maber & Co.'s departmental store in Winnipeg, Man., was destroyed by fire, October 24. Loss about \$35,000.

The Leland Hotel and the Canada Territory & Corporation Implement Agency's warehouse at Hague, near Rosthern, N.W.T., were destroyed by fire October 24. Loss about \$75,000.

A large and valuable section of mineral land has been discovered in the neighborhood of Moose Jaw, N.W.T., which contains large deposits of fire clay, coal, china clay and glass sand. Coal being in such close contiguity to these other minerals, particularly fire clay, no doubt the Western demand for fire brick could be supplied from that quarter.

The Vancouver Tug-Boat Co., Vancouver, B.C., have been incorporated with a capital of \$15,000 to build tug-boats, barges, etc.

The Burrard Sanitarium, Limited, Vancouver, B.C., have been incorporated with a capital of \$50,000, to erect a hospital building in that city.

The Electric Water Heater Co., have been incorporated at Victoria, B.C., with a capital of \$50,000, to acquire the patent of the Instantaneous Electric Water Heater and to manufacture same.

D. V. and A. J. Mott have been granted a franchise to install a telephone system at Fernie, B.C.

H. W. Warrington, superintendent of the Kettle Valley Railway, and a party of engineers are laying out the proposed extension of the railway from Grand Forks, B.C., to Spencer's Bridge, a distance of 300 miles.

The Montreal Hotel, Kamloops, B.C., will be enlarged.

The town council of Nanaimo, B.C., will improve their water works system at a cost of \$25,000.

The Laurie Lumber Co.'s saw mill at Marysville, B.C., was destroyed by fire October 22. Loss about \$5,000.

A number of Ludington, Mich., capitalists have purchased a large tract of land in the Toba Valley, B.C., where they will erect a lumber mill.

Victoria may become, like Vancouver, an important shipping port for the Oriental trade, if the development of the pulp, fishery, mineral, and other industries of the Province, attracts the new vessels by which the Great Northern Railway are inaugurating a trans-Pacific service. That company is stated to have the intention of making Victoria a regular port of call, both eastward and westward, when the new service is commenced,

and if a sufficiency of freight can be maintained, a considerable future is before that city. There is a vast expanse of country, for which Victoria is the natural outlet; but hitherto the citizens appear to have somewhat exclusively regarded their beautiful city more in the light of a residential than a trading centre.

The Fraternal Order of Eagles will erect a new building at Nelson, B.C.

The steamer *Nell*, owned by the Georgetown Lumber Co., was destroyed by fire at Port Simpson, B.C., October 17. Loss about \$25,000.

The Canadian Pacific Railway Co. are calling for tenders, which will be received at the office of Geo. H. Webster, Dominion Engineer, Vancouver, B.C., for the erection of a seven-story stone and brick hotel in that city.

The Elk Lumber & Mfg. Co. will erect a sawmill with a capacity of 100,000 feet per day of ten hours at Fernie, B.C.

The Northern Power & Lumber Co., Atlin, B.C., have been incorporated with a capital of \$50,000 to acquire the business of the Northern Lumber Co., and to manufacture mining and agricultural machinery, etc.

The Gold King, Limited, have been incorporated at Victoria, B.C., with a capital of \$120,000, to carry on a mining, smelting and refining business.

The Nelson Brewing Co., Nelson, B.C., have been incorporated with a capital of \$100,000, to carry on a brewing and malting business.

The Vernon Hardware Co., Vernon, B.C., have been incorporated with a capital of \$20,000, to acquire the business of Wm. Vallance and to manufacture hardware etc.

The Eagle Mining & Development Co., Nelson, B.C., have been incorporated with a capital of \$100,000, to carry on a mining, milling and smelting business.

The Canadian Metal Co. have been incorporated at Victoria, B.C., with a capital of \$1,100,000, to carry on a mining, smelting, milling and refining business, etc.

Among the many recent installations for heating and ventilating public buildings is that for the Worcester City Hospital, Worcester, Mass. The buildings, seven in number, are located a short distance from the centre of the city at the top of a long hill and are therefore exposed to severe weather in the winter. The arrangement in the New Ward Building is typical of the Sturtevant system. A Sturtevant fan draws the fresh air from the top of the building, a distance of about 45 feet from the ground, through brick flues, and into galvanized iron ducts to the tempering coil, where the chill is taken from the air. It is then drawn through the fan which runs at a slow speed, typical to public building work, and forced through a heater containing coils of 1 inch steam pipes enclosed in a fire-proof steel plate jacket and thence to the plenum chamber, which is divided horizontally into two chambers, one for the hot air and one for the tempered air, the latter passing underneath the heater from the fan. By means of mixing dampers, automatically controlled, the air is mixed to a desired temperature and is forced by the pressure from the fan through the distributing ducts to the different rooms. To assure positive ventilation in the rooms, a

Sturtevant electric propeller fan located in the basement draws the air through registers in the floor into galvanized iron ducts and discharges it outside.

The United States Cement Shingle Machinery Co., Saginaw, Mich., are said to be the only one of the kind in the world. Their purpose is to supply machinery and process for the making of cement shingles. A factory has been built to supply the local demand and to act as demonstrator for the company. Orders for the machinery are already being received from all parts of the United States and from Mexico. Cement shingles are new and can be made cheap. At the same time they are ornamental and indestructible.

A significant fact bearing upon the turpentine industry is the announcement that Mr. Buckner Chipley of Pensacola, Fla., has been given the privilege of tapping, upon payment of one cent a tree, of 12,500,000 pine trees in British Honduras. About one-third of the area of British Honduras is pine ridge, and though the trees are not large, the wood is very heavy and rich in sap. The exploitation of the pine woods will necessitate large purchases of mechanical and food supplies. The concession was secured primarily for the purpose of making turpentine and exporting timber, but the enterprises that will develop later will not be confined to these aims. Tramways, permanent roads and agriculture will surely follow, and the opening of the unexplored lands of a colony will be effected, or at least largely advanced.

The Sherwood Mfg. Co., Buffalo, N.Y., manufacturers of boiler and engine supplies, are now occupying their new plant. The main building is 120x50 feet, the converter building, 35x10 feet; and the foundry 100x50 feet.

The International Power Co. have just completed the purchase of the entire works and plant of the Cosmopolitan Condenser Co., of Chicago, and have also obtained the exclusive manufacturing contract for these condensers for the United States as well as Canada and all foreign countries.

The increase in mechanical efficiency of engines with forced lubrication has been clearly shown by recent engines built by the B. F. Sturtevant Co., at Hyde Park, Mass., and fitted with a forced pump lubricating system. An increase of from eight to ten per cent. is shown, and with their latest type of vertical single engines a mechanical efficiency averaging 94 per cent. is attained.

## ELECTRICITY.

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

The Electrician Printing & Publishing Co., 1, 2, and 3 Salisbury Court, Fleet Street, London England, inform us that they have in preparation "The Electrician" Electrical Trades' Directory & Handbook for 1905, which will be published in January. This will be the twenty-third edition of this most valuable book. It will include a carefully compiled list of British, Colonial and foreign electricians, electrical engineers, etc., throughout the world; also useful tables and data relating to all electrical industries. The

editor informs us that he would be glad to receive the names of members of the electrical profession for insertion without charge in the forthcoming new edition of the Directory and Handbook here alluded to.

The construction of a water supply and electrical system is projected for Umtata, South Africa. The falls on the Umtata River, located about 3½ miles from the town, will be utilized for generating the electric energy to be used during the day for pumping and at night for lighting. E. G. C. Jones and W. Oliver, of Cape Town, have been appointed consulting engineers for the work.

A. Vandam & Co., have opened offices in Johannesburg, South Africa. This firm is successor to Vandam, Marsh & Co., Limited. Considerable equipment, chiefly electrical, will be handled for the South African market.

A power plant will be constructed at the Eldorado station on the Parral branch of the Mexican Central Railway, State of Chihuahua, from which the electric current will be carried to the Central Mining property at Almoloya. The property has lately been purchased by N. O. Bagge, of Los Angeles, Cal., who proposes to utilize electricity on a somewhat extensive scale.

The Central Railway, of Brazil, whose head offices are in Rio de Janeiro, are about to consider figures on the construction of an extensive telephone system.

The Esperanza Mining Co., which operates one of the largest properties in the El Oro district, Mexico, will abandon the use of steam power for electricity. The current will be transmitted from the Necaxa plant of the Mexican Light & Power Co., 29 Broadway, New York. Mr. J. T. Hill, electrical engineer, Mexico City, is in charge of the Esperanza installation work.

An up-to-date telephone system will be installed in the city of Pretoria, Transvaal, South Africa, at a cost of about \$65,000.

The ratepayers of Glace Bay, N.S., have voted favorably on a by-law granting \$25,000, for improvements to the electric lighting plant of that town.

The town of Espinar, Segovia, Spain, will install an electric lighting plant.

The towns of La Paz, Bolivia, and Fray Bentos, Uruguay, are projecting the erection of electric works for lighting purposes.

The town of Gubbio, Italy, will have an electric plant and waterworks installed.

The city of Madras, East India, will provide several electric power stations for lighting purposes.

The municipality of Edmonton, county of Middlesex, England, will install an electric lighting plant.

D. Moore, Qu'Appelle, N.W.T., will install an electric lighting plant in his mill.

D. G. McNeil, Denver, Col., is reported to have purchased from John H. Knight of London, the street car lines in the city of Colima, Mexico, and will convert them to electricity.

The Quebec Electric Co., Quebec City, will purchase about 6,000 h.p. of hydraulic electric generating machinery and the necessary appurtenances for their plant at Ste. Anne and Seven Falls, Que.

The municipality of Reichenberg, Bohemia, intend to erect a large electric plant to supply

light for neighboring small towns and industrial establishments, and another plant to furnish electric light to the suburbs of the city.

An electric tramway line is projected in Lisbon, Portugal.

#### A VALUABLE ELECTRIC FRANCHISE

The Scarborough Township Council have given a perpetual franchise to the Toronto & Scarborough Railway Co. The franchise is for twenty-five years, renewable in perpetuity for periods of twenty-five years. In return for this, the company give a railway as far as the Highland Creek or West Hill post-office, that is to say, about six miles beyond the present terminus. They are to commence laying the line within seven days, and to have it finished by the end of November, 1905. There is no clause enabling the public authority at any future time to acquire the property, though they may get a share of the gross earnings of the company at the end of twenty-five years if the parties arrange between themselves regarding a revision of the rates, or if an arbitrator so decide. The fares will be based on the ordinary statutory rate.

There is no clause obliging the company to provide fenders, but they take the responsibility of all accidents. The company undertake to run a freight car each way daily as soon as they can run freight cars over the city lines.

The only check the township has is the provision that if the company fail to run the cars for a month at any one time, the charter is forfeited upon a fifteen days' notice.

The time-table provides for a half-hour service as far as the Half way House, and an hourly service from the Half-way House to Highland Creek from 6 a.m. to 11:30 p.m.

#### J. W. LANGMUIR HONORED

His Honor Lieut.-Governor Clark, Premier Ross, and several other gentlemen associated with the Queen Victoria and Niagara Falls Park Commission Board, a few days ago paid a united compliment to Mr. J. W. Langmuir, Toronto, chairman of the Board. The Lieut.-Governor and the Premier, with a number of other gentlemen, were the guests of Mr. Langmuir on a tour of inspection of the power development works now being constructed, and after a luncheon to which they were entertained, Mr. Geo. Wilkes, one of the members of the board, said on behalf of his colleagues that they wished to emphasize their appreciation of Mr. Langmuir's valuable services during seventeen years by a slight gift of their own. After reading on behalf of the Board a handsomely bound resolution, he presented it, with a magnificent cut-glass bowl, to the chairman, whose health was drunk forthwith.

Mr. Langmuir told his friends that his work had been a labor of love. He hoped to see the development works completed and the park restored, so that it would be by far the finest on the continent.

Lieut.-Governor Clark and Premier Ross joined in expressing their pleasure in assisting at the presentation, and Premier Ross recalled that he was a member of the Government when the commission was inaugurated. He added that nothing had been given to the power companies for which the people could not expect value in return.

It is expected that next May will see the completion of the power development plants in course of construction for the Canadian Niagara Power Co., the Ontario Power Co., and the Toronto & Niagara Power Co. The plant will represent an investment of over \$20,000,000 and 325,000 h.p. The revenue to the Province when they are completed will be \$275,000 per annum.

## 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.

The Mining Record says: The Dominion Coal Co. are picking up handsomely, and have made the whole of the 300,000 tons deficit disappear. The shipments for the ten months ending October should show a gain over the same period of 1903. The Cumberland Railway & Coal Co. are also doing well, but perhaps it will be impossible for them to recover the ground lost early in the year.

The Lackawanna Steel Co., Buffalo, N.Y., have contracted for the purchase of 900 tons of coke daily for delivery during the remainder of the year. It is believed that about 1,000 tons will be used every day after the middle of November, when additional furnace capacity will be in operation.

G. G. S. Lindsey, general manager of the Crow's Nest Pass Coal Co., reports that the output of the company's British Columbia mines is now larger than at any previous time since they were opened, the average daily production being over 3,000 tons, which is about 33 per cent. larger than the average for last year. The Canadian Pacific Railway are taking a large proportion of the coal, and some 100 cars of coke, which is produced at the various coking plants, is shipped every day to the smelters of British Columbia and Montana.

Cleveland city authorities have taken a hand in abating the smoke nuisance from the large apartment houses in the city. With advent of cool weather a storm of protests have come into the city offices from residents in the neighborhood of the apartment houses. It has been decided to inform the owners of these buildings that they must use anthracite or smokeless coal in their furnaces. As a usual thing the furnaces are not large enough to equip with smoke consumers and the chimneys do not have sufficient draught to make them work properly.

An exhibit at the recent meeting of the Society of German Plumbers which attracted considerable attention was that showing an invention of Chemist Blau, of Ausburg, for the manufacture of fluid gas from the residuum of petroleum and heavy mineral oils. The inventor says this gas may be manufactured very cheaply where there is an abundance of petroleum, and that it may be transported from one place to another in cylinders as easily as carbonic acid gas. The gas may be used for lighting churches, halls, and detached buildings, and small tanks may be used in lighting automobiles. The Blau gas makes a very brilliant light for street lighting, and is very difficult to explode.

#### RED JACKET COAL.

Messrs. H. T. Wilson & Co., Majestic Building, Detroit, Mich., who have met with much success in introducing their Red Jacket coal, have lately entered the Canadian field and this coal is now in use in Toronto and other Ontario manufacturing centres and also in Winnipeg.

Red Jacket coal is a purely bituminous coal, mined in West Virginia, along the line of the Norfolk & Western Railroad, and controlled entirely by the Hull Coal & Coke Co.

Among the good points of this coal for domestic use may be mentioned. Clean to handle, easy to kindle, lasting hot fires, low in ash, better than cannel.

Its advantages for steam purposes are: Low in sulphur, low in ash, not subject to spontaneous combustion, nothing better for malleable iron works, one of the strongest steam coals, will not clinker.

It is claimed for it that more nearly than any other American coal, it has the qualities of the renowned Ince Hall English Cannel coal, admittedly the greatest of all fuels for domestic use.

Comparative heat units per pound of coal. Anthracite, see "Steam," published by Babcock & Wilcox Co., 13,985. Red Jacket, determined by 30 week's test at Cincinnati Edison Plant, in 1901-2, the daily use of the coal tested being two hundred tons, 13,600. Boiler test of the Cincinnati Edison Co., of Cincinnati. Water apparently evaporated under actual conditions per pound of coal, 10½ pounds, equivalent evaporated from and at 212 degrees per pound of combustible pounds, 12.33.

It is characterized by a tough and blocky structure and consequently handles better than many other soft coals, the percentage of fine coal being very small.

Red Jacket coal has been used in the public schools of Detroit, Mich., for the past year or two and by the waterworks in that city. The Goderich waterworks, Goderich, Ont., have also used it with the best results. It is being handled in Toronto by the Elias Rogers Coal Co., and in Winnipeg by Windatt & Co. Mr. H. T. Wilson is manager of the H. T. Wilson Coal Co., and Mr. R. J. Sinclair, of Detroit, and Mr. Thos. Christie, of Toronto, are looking after the Canadian trade.

#### FINE COAL AND COAL DUST AS FUEL.

At the World's Fair in St. Louis is a coal testing plant erected and maintained by the United States Government for determining the composition and testing the fuel value of American coals. The plant includes machinery for the manufacture of briquettes. The government made an appropriation of \$60,000 to cover the cost of erecting and maintaining this plant, though some of the machinery was contributed by manufacturers, and the railroads made no freight charges on the equipment. The object of the tests is to put on record a mass of carefully compiled data that shall have all the weight that comes from government supervision and shall serve to establish certain standards for comparison of chemical composition and fuel value. A prominent manufacturer pertinently suggests to the Engineering and Mining Journal, that the tests be further elaborated by testing the practicability of burning coal in the form of dust as well as in the form of briquettes. This

suggestion is so reasonable that we gladly call attention to the matter. The manufacture of briquettes, while an attractive possibility in this country, is at present practically confined to the State of California and its growth is scarcely likely to be of importance, except in certain localities where low-grade coal can be briquetted at a profit, owing to the high price of good coal. No doubt the process will be utilized some day for making good fuel from dirty and friable lignite deposits in the West, or for utilizing mine waste at some of the great coal-burning centres of the East.

As a fuel pulverized coal is an actuality, not a possibility. In the manufacture of Portland cement, it has been of high value in reducing the cost of burning clinker, indeed, it is perhaps the one factor that has done most for the rapid advance of the American Portland cement industry to its present commanding position. As a boiler fuel it offers these special advantages: Thorough combustion, small amount of ash to be handled, and reduction of manual labor. Special devices for burning coal dust have been installed at a number of manufacturing plants and the results reported show a large percentage of saving. It would seem, therefore, that official tests of coal dust as boiler fuel should form part of the work now under way at St. Louis. The wastefulness of boiler firing by shovel as ordinarily practiced needs no reminder. Hence the utilization of the highest possible percentage of the heat units in a pound of coal should appeal not only to the man who pays for the coal, but to every man who thinks of the importance of conserving the fuel resources of this country.

## OPPORTUNITIES.

**Manufacturers and others in need of machinery, supplies, etc., of any kind are requested to consult our advertising columns, and if they cannot find just what they want, if they will send us particulars we will make their wants known free of cost, and in this way secure the attention of those who may be able to supply them. No charge for publishing what is wanted nor for giving information. When writing to enquirers kindly mention The Canadian Manufacturer.**

A. J. Matrzek, manager of the Orscha Wire Works, Russia, is in the market for machinery for making wire, wire nails, welded and weldless chains, shovels, forks and horse-shoe nails. He is expected to place some very large contracts. He is at the Inside Inn, World's Fair grounds, St. Louis, Mo., at present.

A bridge will be built in the city of Rio Segundo, province of Santa Fé, Argentina.

The Tanjong Pagar Dock Co., Singapore, Straits Settlements, will expend \$7,000,000 for new harbor works in that city.

An iron bridge is to be erected across the river Piron, Spain. Apply to the director-general of public works, Madrid, for particulars. A steam tramway line will be built from Piedrahita to Bejar, with a branch line to Plasencia. The Deposito Flotante de Carbones Co., Barcelona, will construct a floating coal depot at the port of Valencia to supply steamships.

Machinery for paper manufacture is in demand in Japan, as the trade in paper is

largely increasing owing to exportation to China and enlarged home consumption, due to the growth of Japanese newspapers.

The city of Simla, British India, will expend \$225,000 on a hydro-electric plant to improve its water supply.

The Roumanian government will soon award contracts for the delivery of 500 freight trucks, at an estimated cost of \$520,000.

The municipal electric railway of The Hague, Holland, will receive tenders for the delivery of 9,000 tons of steel rails. Apply to the municipality for particulars.

The Italian Mediterranean Railway Co will purchase fifty special cars for carrying grain, at a cost of \$71,000. The company's chief offices are in Rome. The electric plant of the city of Genoa is to be enlarged.

The sum of \$1,110,000 will be expended by the Mersey docks and harbor board, Liverpool, England, for dock extension and the erection of storage sheds.

The town of Woodstock, Cape Colony, has voted a grant of \$1,300,000 for public improvements, drainage, etc.

The municipality of Heidleberg, South Africa, contemplate installing an electric-lighting plant and establishing water works.

A new bridge will be built across the Pasig river at Manila. For details apply to the municipality of Manila.

The government of Paraguay will expend \$125,000 for building a market hall in the city of Asuncion.

The Pyrenees-Orientales prefecture at Perpignan, France, will expend \$57,000 for purchasing impregnated pine and oak railroad ties.

The Minister of the Interior at Santiago, Chili, has granted a concession for extending the railroad across the Cordilleras to Mendoza, Argentina. Chili guarantees the interest payment of 5 per cent on the construction capital of \$7,500,000.

The steam tramway line of Tiel-Buren-Culemborg, Holland, are open for bids on rails, ties and other materials.

O. Braniff and T. Braniff, jr., who are among the largest handlers of American machinery, etc., in the southern republic, have concluded arrangements for the development of their Caderayta mining properties, located in the State of Queretaro, which will mean the purchase of large quantities of equipment. They have organized a company, which will be known as the Braniff Mining & Smelting Co., with a capital of \$3,000,000. Fully \$500,000 will be expended in development work. A wagon road will be constructed from the centre of the mining camp through Caderayta and on to Bernal, a station on the National Railway. The length of the road will be about forty miles. The road is needed, as the installation of considerable heavy machinery is projected. A large concentrating plant will be erected at Maconi, with initial capacity of 200 tons, the ultimate capacity will be 500 tons or more. Considerable cable-way work will also be carried out. E. A. H. Tays will be the resident engineer in charge of the development work, etc. J. Thomson, president of the United Mining & Development Co., of New York City is also interested.

The Chicago Gold Placer Co., which is operating in the Yac River, near Sauqui

Graude, Mexico, are about to place a contract for dredges, which will entail an expenditure of almost a quarter of a million dollars.

A waterworks and sewerage system will be installed at Mendoza, Argentine Republic, at a total cost of \$3,300,000.

J I Anaya, Guanajuato, Mexico, will purchase considerable machinery for installation in copper mines.

A M Carpanello, Aguacalientes, Mexico, is interested in a project to build a large smelting plant in the State of Jalisco, in or around Guadalajara.

A bill is before the Legislature of Argentina, granting the Government \$25,000,000 for the purpose of building various new lines of railroad and for the purchase of towboats and freight barges.

A municipal tramway line will be built in the town of Crajowa, Roumania.

A new railroad line, 60 miles long, from the Rio Paraguay to the Chaco district is projected in Asuncion.

The Government of Chile will build docks in the harbor of Talcahuano.

The building of new harbor works in Odessa, Russia, is projected. The South-western Railroad Co. of Russia are building several large grain elevators at that port.

The ministry for Commerce and Public Works in Rio de Janeiro, Brazil, are about to extend the railroad line Estrada de Ferro de Baturite.

Seven hundred and sixty freight cars, each of 15 tons carrying capacity, will soon be required by the Belgian railroad department.

The Chilean Government has granted a concession for constructing a line of railroad from Boea de Reloncavi to the Argentine frontier. Proposals for building this line may be submitted within eighteen months.

The town of Ceara, Brazil, propose to erect waterworks and to adopt a system of drainage.

A company have been organized with a capital stock of \$300,000 for the purpose of building a malt factory in Mexico. Lic. Domingo Barrios Gomez of 13 Cordobanes street, City of Mexico, is manager, and E. S. Ware, St. Louis, Mo., is president.

Messrs. Van der Linde & Teves, Semarang, Soerabaja, Amsterdam, Holland, want prices on chemical fire extinguishers packed in a seaworthy manner for export to Java and delivered f.o.b. New York, cash payment. They want the extinguishers consisting of iron tube filled with fire-extinguishing chemical, provided with a hook to hang on wall. They are also in want of hydraulic tools, such as hammers, drills, chisels, etc.

Messrs. R. K. Mutishaw & Co., 9 Love Lane, Bombay, India, desire full particulars regarding enameled and embossed tiling for floors and walls, metal ceilings, cornices, borders, rubber mats, novelties, etc. Manufacturers and exporters are invited to send catalogues, etc.

Messrs. Rauscher & Anders, Weinstrasse 45, Vienna, Austria, are desirous of obtaining particulars and prices on electrical hammers for working castings. They are also interested in other machinery driven by electricity and in innovations that are useful in factories using steam power.

## 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.

"Graphite for the Motor" is the title of an attractive 24-page illustrated booklet from the Joseph Dixon Crucible Co., Jersey City, N.J., which is devoted to the subject of graphite lubrication for automobiles. Copies of this booklet will be freely sent to all interested in the operation of motor cars and motor boats.

The Halifax, N.S., City Council, have issued a neat booklet, entitled, "The Advantages of Halifax as a Manufacturing Centre," which states why Halifax is an ideal location for manufacturing purposes. Copies may be had upon application to the above council.

Hon. O. P. Austin, chief of the Bureau of Statistics of the United States Department of Commerce and Labor has favored us with a copy of the annual review of the foreign and internal commerce of the United States for the fiscal year ending June 30, 1904, which appears in the July summary of commerce and finance, just issued. It contains many statements regarding the commerce, finances, production, transportation, etc., of the United States. Great care has been exercised to bring them down to the latest possible date, with the purpose of supplying the latest and most complete information possible. Attention is called to the tables, "Progress of the United States in its Material Industries," to which the figures of the fiscal year, 1904, have been added wherever possible, thus supplying the very latest available data in regard to the commerce, production, transportation, finance, currency, population, etc. of the country. Tables show the commerce, revenue, expenditure, currency, etc. of the principal countries of the world, brought down to the latest available date. Other tables show the totals of the trade of the United States with each of the principal countries of the world in each year from 1894 to 1904. A table shows the figures of commerce between the United States and Canada for a long term of years.

The Canadian Westinghouse Co., Hamilton, Ont., have issued an illustrated circular having reference to Westinghouse generators for three-wire direct current service.

The Schutte & Koerting Co., Twelfth and Thompson Streets, Philadelphia, Pa., have sent us a circular relating to the furnace blowers made by them. The blower for boiler firing is described as producing a blast always under control and at the least expenditure of steam or water. Firing with blast is always necessary where inferior grades of fuel, such as screening, gas works breeze and other refuse products, must be burnt, and provides a means of increasing the steaming capacity of boilers with any kind of fuel. These blowers have no moving parts and require no driving machinery. They cannot get out of order, and never need attention of any sort. They are used with great advantage for heating or forging furnaces, heating and gas producing furnaces in chem-

ical works and glass works, and steam boiler furnaces. Low priced fuel is burned with perfectly good effect. These blowers are made for working with steam or water jet.

The Joseph Dixon Crucible Co., Jersey City, N.J., have issued a neat illustrated folder which relates to the protection of steel by the use of Dixon's Silica Graphite Paint.

The Cassella Color Co., New York, have sent us a very useful publication giving instruction for dyeing Immedial colors on loose cotton. The samples contained therein show the excellent effects of the dyeings.

The Westinghouse Companies have sent us a list of the prizes awarded to them at the Louisiana Purchase Exposition, at St. Louis, which is probably the longest and most comprehensive list of highest honors ever received, by associated interests at a World's Fair. We have pleasure in publishing the list in another page.

The Kinleith Paper Co., St. Catharines, Ont., for which Mr. C. Howard Smith, Toronto, is sales agent, are sending out a circular in which it is stated that owing to the recent disastrous fire in Toronto, their series of sample bulletins was unavoidably interrupted, but having now become settled in their new quarters, they will, in a few days, resume this method of submitting samples. They will be pleased to send samples of any of their different lines upon request.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have just issued Circular No. 1092, which gives illustrated descriptions of the Westinghouse Multiple Alternating Arc Lamps.

Mr. John Charlton has completed arrangements with Morang & Co., Toronto, for the publication of a volume of his speeches and lectures. The work will be issued before Christmas, and will include many addresses that made a deep impression on the public mind at the time of their delivery. The latest is the speech to the Boston Chamber of Commerce in December, 1903, a few days before Mr. Charlton was compelled by serious illness to relinquish participation in public life. The following partial list of the speeches and lectures shows the wide range covered:—The National Transcontinental Railway 1903; Terms of Peace in South Africa, 1902; Brown Draft Treaty, 1874; National Self-protection—Canada's Position, 1902; British Preference—American Reciprocity, 1903; Sabbath Observance, 1894; Queen's University—Speech Before Assembly, 1903; A Layman's View of Christian Evidences, 1901; Irredeemable Currency, 1879; Official Dual Language in the North-West, 1890; The Jesuit Estates Act, 1889; Conditions of Success in Life, 1901; Abraham Lincoln, 1898; David Livingstone, 1904; George Washington, 1900; American Humor, 1889; American Poets, 1886.

A work of art—Have you seen it? A delicately tinted half-tone of a fascinating young girl, against a dark back-ground, conspicuously mounted on an extra heavy white card. This, in the form of a panel, with the fly leaves of a calendar near the lower edge, is the 1905 greeting that the Burt Mfg. Co., Akron, Ohio, are sending out to their agents, who represent them in nearly every country on the globe. This is one way the Burt Mfg. Co., have of showing their appreciation of the good work being done by their representatives, both at home and abroad. A good example and well worthy of imitation.

The Detroit Graphite Mfg. Co., Detroit, Mich., have issued a bulletin entitled "A Lesson from the Baltimore Fire." It is the picture of the Union Trust Building of Baltimore, Md., after the fire. While the terra cotta and brick covering were destroyed by the intense heat, the steel structural part of the building is absolutely intact. Of particular interest is the condition of the paint upon the steel. Its appearance would indicate it to have been recently applied instead of during the year of construction, 1897-98. It is glassy, free from cracks and adheres firmly to the metal. There is no evidence whatever of corrosion. The company concluded that the condition of this building is a striking evidence of the excellence of Superior Graphite paint.

## PERSONALS.

The well known coal firm of Ayers & Morse, Detroit, Mich., have undergone a change, and the business will hereafter be conducted by Mr. H. S. Ayres, under his own name, Mr. W. C. Morse having retired. Mr. Ayres announces that he has secured an interest in the Victor Mines. Mr. F. L. Ten Eyck will look after the Canadian business of the company.

F. E. Myers & Bro., Ashland, Ohio, were awarded the grand gold prize at the St. Louis Exposition for their exhibit of pumps, hay tools and door hangers.

At a well-attended meeting of the Master Plumbers' Association, held a few days ago at their headquarters, 56 Richmond Street West, Toronto, it was decided to convene the annual convention of the Ontario association on Thanksgiving Day. The provincial association has been organized for about three years, during which period its membership has greatly increased. At the coming convention matters of particular importance to the plumbing trade will be discussed, and an enquiry will probably be instituted into the reasons why the profits of a number of the city plumbers are so small. Mr. W. Mansell, of Toronto, is the president, and Mr. W. H. Meredith the secretary.

At the November 24 meeting of the Engineers' Club, of Toronto, Mr. C. H. Heys will read a paper on "Peat Fuel."

The officers of the Mining Society of Nova Scotia have received the gratifying intelligence that at the next semi-annual meeting of the organization in Halifax on November 9, Dr. Eugene Haanel, Dominion Superintendent of Mines, will be present and will address the society on the important question of electric blast furnace treatment for iron ore—a subject which Dr. Haanel went to Europe last year to investigate.

Cornelius Shields, General Manager of the Consolidated Lake Superior Corporation, died suddenly at Sault Ste. Marie, Ont., October 28. Mr. Shields, who was one of the best known experts on steel and iron in America, came to take the management of the Soo industries from the steel plant at Sydney. He was made General Manager of the Consolidated Lake Superior Co., and all of the subsidiary companies. When the reorganization of the companies was completed and the management of the business was taken over by the Lake Superior Corporation he was made General Manager of it, as well as of all of the subsidiary companies. He was held in the highest esteem by the directors of the corpora-



tion. Mr. Shields, who was 49 years of age, was born in the State of New York. When a young man he secured a position with the Northern Pacific Railway Co., and became the close friend of J. J. Hill. He learned much of the resources of the western country, and as a result of the energy he displayed, the Canadian Pacific Railway Co. secured his services as Superintendent of one of the main divisions, in which capacity he served some time with complete success. Later he accepted the management of the plant of the Dominion Iron & Steel Co., Sydney, N.S. His success brought him to the notice of the Consolidated Lake Superior Co., which was then in financial difficulties. He became president of that company in April, 1903, to straighten out the tangle. He was a hard worker, giving the management his personal attention. He knew the details of every one of the subsidiary industries, and was widely known in financial circles as one of the most successful business men in the country. Death came at the hour of his greatest success, when he had placed the great Lake Superior Corporation on their feet

#### THE TRENT VALLEY CANAL OUTLET

The Hamilton, Ont., Board of Trade recently held a special meeting to hear an illustrated address by Mr. J. A. Culverwell, Managing Director and Advisory Engineer of the Central Ontario Power Co., of Peterborough, Ont., on the "Merits of the Proposed Outlets of the Trent Valley Canals, and the Waterways of the World."

Mr. Culverwell is a strong and untiring advocate of the completion of the Trent

Valley canal and of the Port Hope outlet, both on the platform and in the Press.

A unanimous resolution was passed favoring the Port Hope outlet, particularly from a return freight point of view, and requesting the Government to make a thorough and comparative survey and report of both proposed outlets, giving an eight and one-third feet depth of water on locksills, the necessary nine and one-half feet in canal cuttings and ten and one-half feet in lake and river channels.

#### TORONTO CITY ENGINEER'S REPORT.

City Engineer Rust reports on increased fire protection as follows:—It is proposed to install five gas-driven pumps at an independent station to be erected on Harbor Square, opposite the Cobban Co.'s premises. Four of these pumps are to have a capacity of 1,200 gallons a minute each, and the other 750 gallons a minute, their combined capacity to be 7,992,000 gallons in 24 hours. The pressure at the pumps will be about 300 pounds, which will give about 250 pounds at the hydrants. The engines and pumps will be similar to the ones in use in Philadelphia.

The water supply will come from the Bay by a four foot steel pipe, and the entire service will require 12,000 feet of 8-inch pipe, 17,412 feet of 12 inch pipe, and 3,240 feet of 20-inch pipe.

It is proposed to install in the high pressure district, bounded by Queen street, Simcoe street, Jarvis street and the bay, 120 hydrants.

It is intended to keep the pipes under city pressure when not in use for fire purposes.

Gas engines have proved a success in

Philadelphia, but it might be found that electrically driven pumps would be as satisfactory in cost of manufacture in view of the early delivery of electric energy to this city from Niagara Falls.

Regarding the annual cost of maintenance, the following estimate was submitted. Labor \$6,004, gas, \$2,400, oil, repairs, etc., \$1,596, total, \$10,000. The probable length of time to install the system would be 18 months.

#### REPORT OF CONSUMERS' GAS COMPANY OF TORONTO.

The annual report of the Consumers' Gas Co., presented to the meeting of shareholders this week, has been issued. The report shows the output of gas for the year at 1,232,961,000 cubic feet, an increase of 106,434,000 over the previous year, bringing an increase of revenue, at 80 cents per thousand, of \$85,147.20. That all this increased output, however, does not bring this rate is shown by the following comparative statement in the report:

	Street lamps.	Meters.	Gas rental.
Year ending Sept 30, 1904	984	36,428	\$905,858.63
Year ending Sept 30, 1903	944	33,677	\$855,522.57
Showing an increase of . . . .	40	2,751	\$50,336.06

During the year 2,629 new services were put in, and eight and one-half miles of new mains were laid, making a total mileage of 287. A new twenty-four-inch trunk main is being laid from the Bathurst street gasholder to



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**Grinding  
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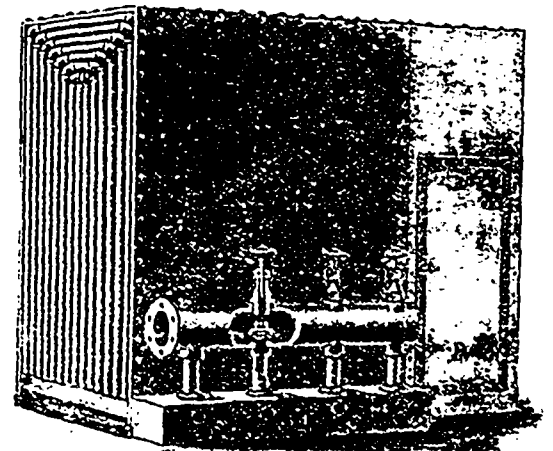
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Bloor street, to give an increased supply of gas to the north-western portion of the city. Contracts have been let for the erection of a new gasholder with a capacity of 3,000,000 cubic feet, and for an overhead coke storage and coke-measuring plant, by which it is expected a large saving in the handling of coke will be effected. Other improvements already made are a new machine shop and storage house, larger boilers and exhausters, the remodelling and enlargement of the boiler house, and a larger chimney. These and other renewals and alterations have largely increased the amount chargeable against the plant and buildings renewal fund. A large lot has been purchased on Eastern avenue, on which to construct an additional set of works.

#### THE BRITISH COLUMBIA ELECTRIC RAILWAY CO.

The British Columbia Electric Railway Co., which is the largest individual industrial concern in British Columbia, having extensive street line systems in New Westminster, Vancouver and Victoria, with the interurban line on the mainland, are having incorporated another subsidiary company, similar to the Vancouver Power Co. The work of this latter organization at Lake Beautiful, will cost about \$2,000,000, before the ultimate completion next May. Work of a similar character though not on so extensive a scale is to be conducted on Vancouver Island, near Victoria. To obtain a large increase of electric force, the Victoria Power Co. have been formed with authority to issue debentures to the value of \$750,000.

The scheme contemplated is to dam the Koksilah river or any of the small lakes therein and the 5,000 miner's inches of water thus obtained will be diverted into Shawnigan lake, across the outlet of which a small weir will be constructed to regulate the flow of water from the lake, and to conserve it for dry seasons. It is calculated to obtain 7,000 miner's inches of water altogether, which will be conveyed from Shawnigan lake to Mill bay, on Saanich inlet, 375 feet, where the power house will be situated. The energy thus obtained will be used for industrial, lighting and street railway service in Victoria and Esquimalt. The work will be started as soon as possible, and will be completed in a couple of years.

It has been announced that the Victoria Terminal Railway, operating between Sidney and Victoria, will be run by electric power.

If the Canadian Pacific Railway Co. favorably consider the proposition of the British Columbia Electric Railway Co., to operate the Vancouver & Lulu Island Railway, considerably more mileage will be added to their system. The Electric Railway Co. some time ago made an offer, which has been under consideration by the Canadian Pacific Railway, and when Sir Thomas Shaughnessy, president of the road, was in Victoria a few weeks ago, he went over the line in view of this proposition having been submitted.

#### CALIFORNIA.

The Chicago & North Western Railway has issued a new publication entitled "California." It contains a beautiful colored map of the state, a list of hotels at California tourist

resorts with their capacity and rates; and a most interesting series of pictures showing California's resources and attractions. The prospective visitor and settler should be in possession of a copy of this profusely illustrated folder. Sent to any address on receipt of two cents in stamps. Low rates from all points. B. H. Bennett, 2 East King St., Toronto, Ont.

#### THE NEW TORONTO POSTOFFICE AND CUSTOM HOUSE.

With characteristic farsightedness Sir William Mulock has been laying his plans for perfecting the post office system of this city. It has become the greatest revenue-producing point, and more mail matter is handled here than at any other place in the Dominion. As much thought and ability is employed nowadays in solving postoffice problems as in grappling with any of the problems which this high-pressure age forces to the front.

In the old days it was not recognized that there was any difference between a city and a village. There was one office in both, and that was considered sufficient for the one as for the other. The modern idea is to get the postoffice conveniences as near the people as possible. Letter-boxes were a departure along this line, then followed sub-stations, and the latest is the extension of that idea by connecting them with the main office by pneumatic tubes. To get the full advantage of the speed and saving of time that the pneumatic service will effect it is essential that the main distributing point should be close to the railway station. The fact that in Toronto all mails come in at one station

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fits in with this plan admirably. The sub-stations in Parkdale, on Spadina avenue, or College street, Yonge and some point in East Toronto will receive their mail in much shorter time than it now takes to carry the letters from the Union Station to the main office on Adelaide street. The sub-stations will have all the essential conveniences of the head office.

The enlargement of the custom house, though not of such widespread interest, is nevertheless of great importance to the commerce of the city. The business of that branch of Government service here has grown equally with the postoffice service. For the first time in the history of the city the collections for duty amounted for the month of August last to somewhat over a million dollars. The Government is to be heartily congratulated on its recognition of the needs and growth of Toronto.—Toronto Globe.

**PROSPECTIVE ADVANCES IN THE USE OF ELECTRICITY.**

If we compare the efficiency realized in the production of light from electric energy, of perhaps 5 per cent. as a maximum, with the efficiency of producing mechanical energy

in the electric motor, or electric energy from mechanical energy in the electric generator, where values of 90 per cent. to 97 per cent. are commonly realized, the present methods of electric lighting appear rather crude in their principle; it is really heat that we produce, and light appears almost as a mere by-product. While, therefore, no very essential advance in the efficiency of electric motors, generators, etc., is possible, electric lighting is still in its very beginning. The amount of light produced from electric energy may well be increased ten-fold, and the efficiency of light production would still be low compared with the efficiency of the electric motor.


In this direction, then an enormous advance in the use of electricity can be hoped for in the future. If the efficiency of production of light from electric energy could be raised only to the efficiency of the poorest electric motor on the market, electric light would sweep all other illuminants out of existence by its cheapness. This is well realized by those in control of the electrical industry of to-day, and some years since many of the giant electrical manufacturing companies of this country and abroad established extensive laboratories for the investigation and study of improved methods of electric lighting. In the last years avenues of research have been

opened and are being energetically pursued in these laboratories, which promise to replace the present indirect and inefficient methods of light production by a more direct transformation of electric energy into light, with a far higher efficiency.—C. P. Steinmetz, in the "Electric Power Number" of Cassier's Magazine.

**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:

- Brantford, Ont.
- Fort William, Ont.
- Hamilton, Ont.
- Lindsay, Ont.
- Orillia, Ont.
- Peterborough, Ont.
- Sherbrooke, Que.
- Toronto, Ont.



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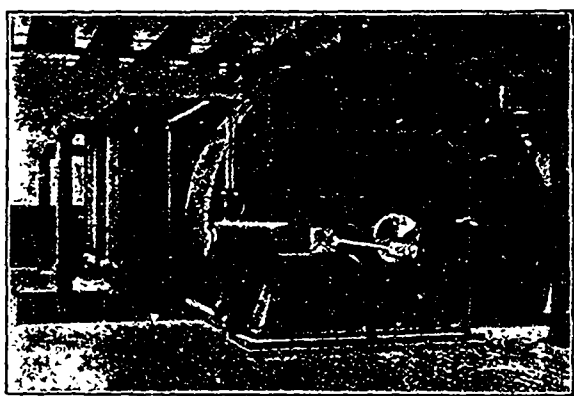
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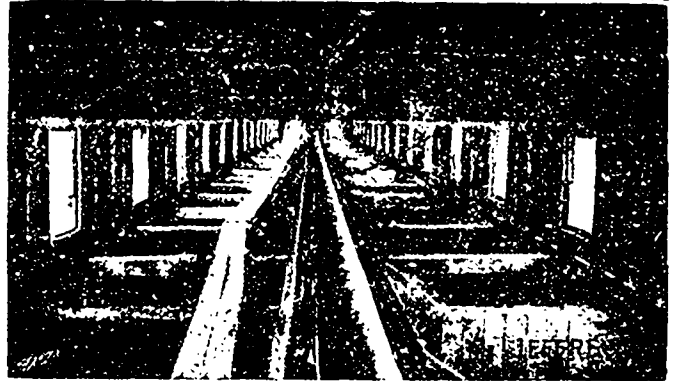
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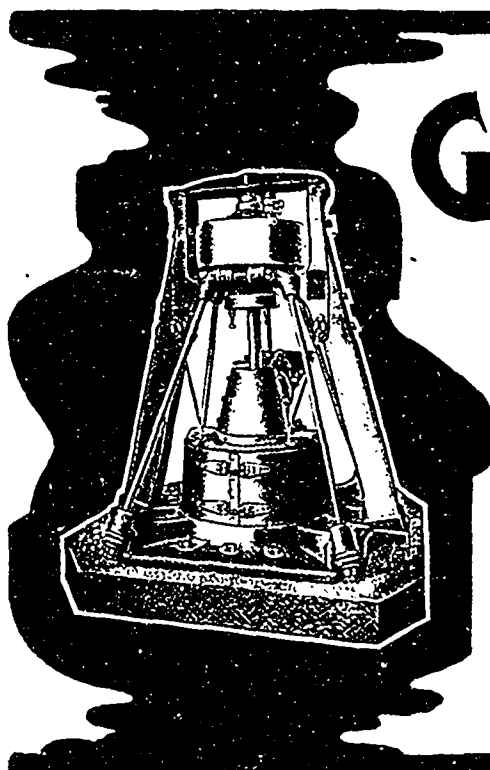
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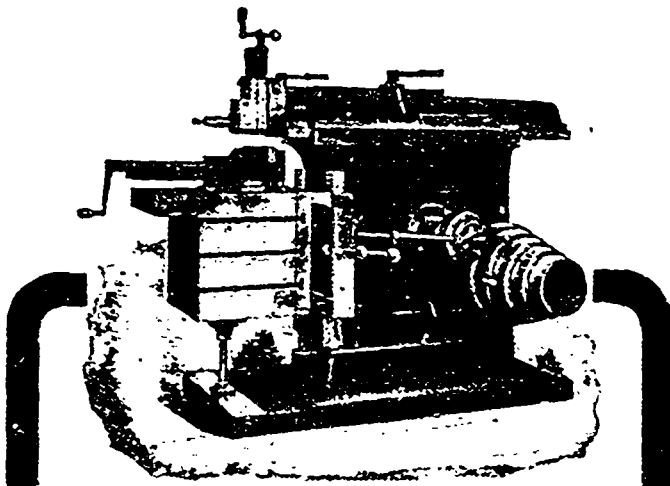
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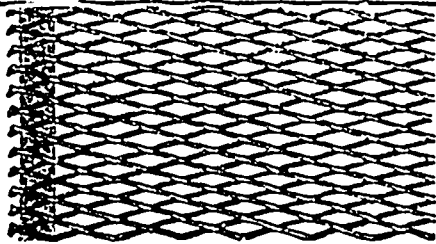
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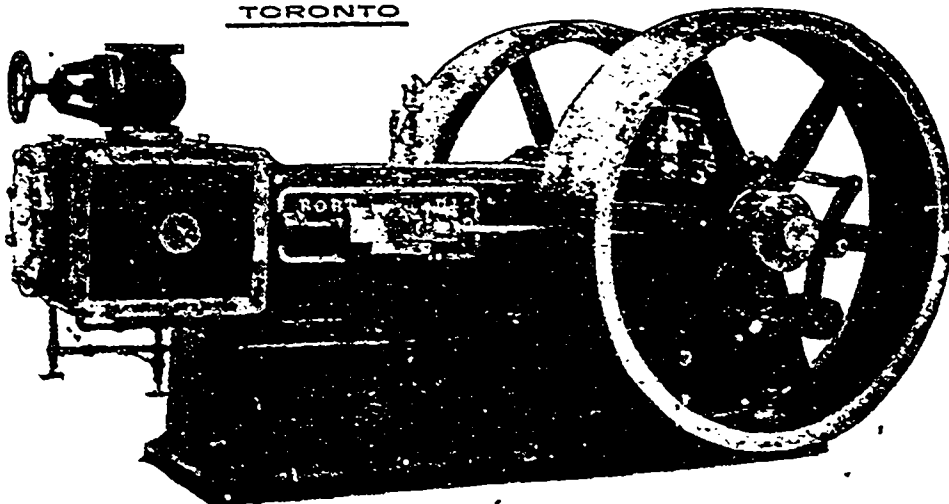
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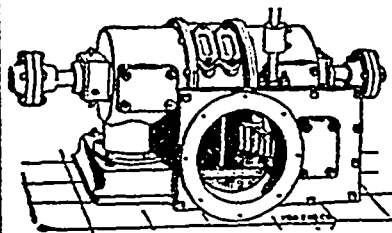
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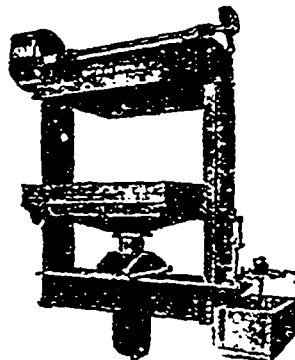
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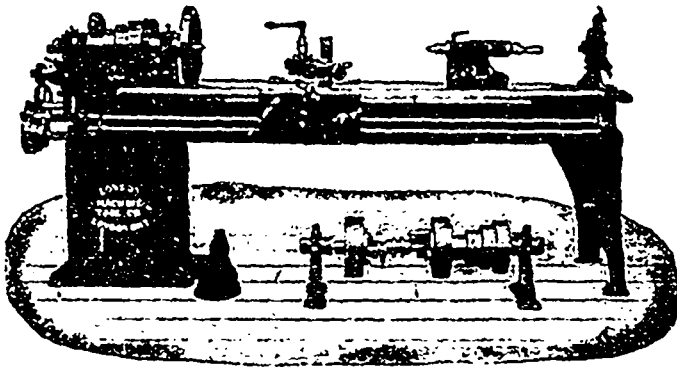
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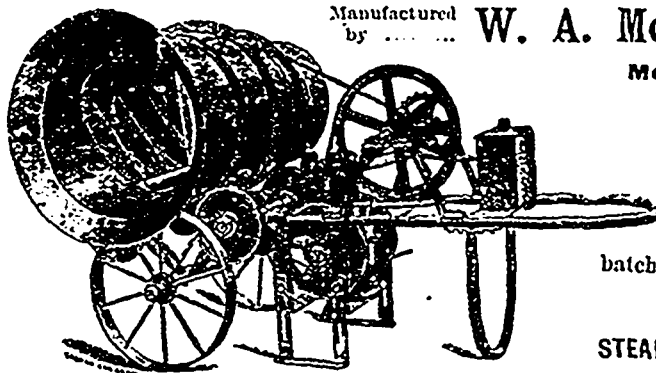
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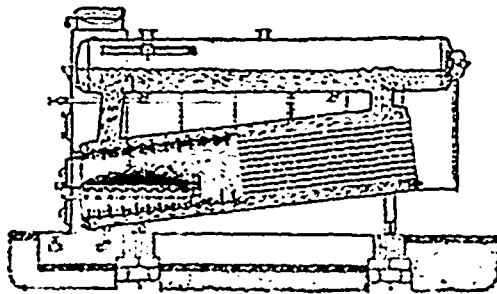
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McLaren, J. C. Belting Co., Montreal and Toronto.  
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Rossendale Belting Co., Toronto.  
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Greay, Wm. & J. G., Toronto.  
McLaren, D. K., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
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Pittsburgh Shafting Co., Detroit, Mich.  
Rossendale Belting Co., Toronto.  
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McLaren, D. K., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
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Pittsburgh Shafting Co., Detroit, Mich.  
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Williams, A. R. Machinery Co., Toronto.
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Gutta Percha & Rubber Mfg. Co., Toronto.  
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Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.

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## Belting and Supplies

Bristol Co., Waterbury, Conn.  
 Canadian Oak Belting Co., Brockville, Ont.  
 Dominion Belting Co., Hamilton, Ont.  
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 Greig, Wm. & J. G., Toronto.  
 Gutta Percha & Rubber Mfg. Co., Toronto.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 McLaren, D. K., Montreal and Toronto.  
 McLaren, J. C. Belting Co., Montreal and Toronto.  
 Petrie, H. W., Toronto.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Rice Lewis & Son, Toronto.  
 Rosendale Belting Co., Toronto.  
 Wilby, P. H., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

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 Hamilton Facing Mill Co., Hamilton, Ont.  
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 Pennsylvania Fire Brick Co., Lock Haven, Pa.  
 Pittsburgh & Buffalo Co., Buffalo, N.Y.  
 Reese-Hammond Fire Brick Co., Boliver, Pa.  
 Stowe-Fuller Co., Cleveland, Ohio.  
 Wynn, W. H. & Co., West Decatur, Pa.

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 Sleeth, D., Montreal.

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## BOILERS (See Engines and BOLLERS)

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 Canadian Otis Elevator Co., Toronto.  
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 Expanded Metal & Fireproofing Co., Toronto.  
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## Metallic Roofing Co., Toronto.

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 Pittsburgh & Buffalo Co., Buffalo, N.Y.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Rice Lewis & Son, Toronto.  
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 Phillips, Eugene F. Electrical Works, Montreal.  
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 Rice Lewis & Son, Toronto.  
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 McDougall, John, Caledonian Iron Works Co., Montreal.

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 Ohio & Michigan Coal Co., Detroit, Mich.  
 Pittsburgh & Buffalo Co., Buffalo, N.Y.  
 Pittsburgh Coal Co., Pittsburgh, Pa.  
 Shawmut Coal & Coke Co., St. Mary's, Pa.  
 Shepard, Charles G., Buffalo, N.Y.  
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## Coil Chains

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## Concrete Mixers

Hopkins, F. H. & Co., Montreal.  
 McKelvey, W. A., Toronto.

## Contractors' Machinery

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 Gartshore, John J., Toronto.  
 Hopkins, F. H. & Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Sinclair, G. S. & Sons, Warton, Ont.

## Contractors' Plants

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 Van der Osten, E. & Co., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

## Conveying Machinery

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 Dodge Mfg. Co., Toronto.  
 Greig, Wm. & J. G., Toronto.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
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 Pittsburgh Shafting Co., Detroit, Mich.  
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## Copper Materials

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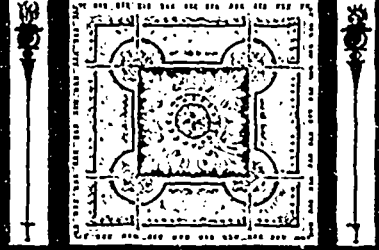
Dixon, Joseph, Crucible Co., Jersey City, N.Y.  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
 Pittsburg Crucible Works, Pittsburg, Pa.  
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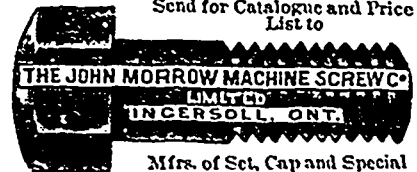
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Sturtevant, B. F. Co., Boston, Mass.

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Geigy Aniline & Extract Co., New York City.  
Klipstein, A. & Co., New York City.  
McArthur, Cornelie & Co., Montreal.  
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United Electric Co., Toronto.  
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Allis-Chalmers-Bullock, Limited, Montreal.  
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Darling Bros., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.

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Canadian Casualty & Boiler Insurance Co., Toronto.  
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**Emery Grinders**  
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Hunt Robert W. & Co., Chicago, Ill.

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

**Engineers (Consulting)**  
Delano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Electrical Supervision Society, Toronto.  
Hunt, Robert W. & Co., Chicago, Ill.

Kelsch, R. S., Montreal.  
Marion & Marion, Montreal.  
Parke, R. J., Toronto.  
Perrin, William R. & Co., Limited, Toronto.  
Simpson, T. T., Deschenes, Que.  
Vogel, C. H., Ottawa.  
Volta Electric Repair Works, Toronto.  
Von der Osten, E. & Co., Toronto.

**Engineers (Contracting)**  
Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.

**Engineers (Electrical)**  
Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Delano-Osborn Engineering Co., Toronto.  
Electrical Engineering & Supply Co., Montreal.  
Electrical Construction Co., London, Ont.  
Electrical Supervision Society, Toronto.  
Kelsch, R. S., Montreal.  
Jones & Moore Electric Co., Toronto.  
Marion & Marion, Montreal.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Volta Electric Repair Works, Toronto.  
Worth & Martin, Toronto.

**Engineers (Mechanical)**  
Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Borden & Selck Co., Chicago, Ill.  
Buhl Malleable Co., Detroit, Mich.  
Darling Bros., Montreal.  
Delano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Greedy, Wm. & J. G., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kelsch, R. S., Montreal.  
Kerr Engine Co., Waukegan, Ont.  
Marion & Marion, Montreal.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.

**Engineers (Mill and Hydraulic)**  
Buhl Malleable Co., Detroit, Mich.  
Delano-Osborn Engineering Co., Toronto.  
Vogel, C. H., Ottawa.

**Engineers (Mining)**  
Buhl Malleable Co., Detroit, Mich.  
Heys, Thomas & Son, Toronto.  
Mills, S. D., Toronto.

**Engineers (Municipal)**  
Von der Osten, E. & Co., Toronto.

**Engineers and Contractors**  
Buhl Malleable Co., Detroit, Mich.  
Jeffrey Mfg. Co., Columbus, Ohio.

**Engines and Boilers**  
Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Bertram Engine Works Co., Toronto.  
Canada Foundry Co., Toronto.  
Canadian Heine Safety Boiler Co., Toronto.  
Carlett, R. B., Brooklyn, N.Y.  
Goldie & McCullough Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Hopkins, F. H. & Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.

**McEnchren Heating & Ventilating Co., Galt, Ont.**  
Petrie, H. W., Toronto.  
Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, 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**  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

**Exhaust Heads**  
Burt Mfg. Co., Akron, Ohio.  
Darling Bros., Montreal.

**Factory Sits**  
Central Ontario Power Co., Peterboro, Ont.  
**Feed Water Heaters**

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

**Files**  
Spenco, R. & Co., Hamilton, Ont.  
**Financial**

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

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### Filters (Oil)

Babcock & Wilcox, Limited, Montreal.  
Burt Mfg. Co., Akron, Ohio.  
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.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburgh, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Harrison-Walker Refractories Co., Pittsburgh, Pa.  
Pennsylvania Fire Brick Co., Lock Haven.  
Pittsburgh & Buffalo Co., Buffalo, N.Y.  
Reese-Hammond Fire Brick Co., Boliver, Pa.  
Scioto Fire Brick Co., Sciotoville, Ohio.  
Stowe-Fuller Co., Cleveland, Ohio.  
Wynn, W. H. & Co., West Decatur, Pa.

### Fire Escapes

Darling Bros., Montreal.  
Meadows, Geo. B., Wire, Iron & Brass Works, Toronto.

### Flour Mill Machinery

Goldie & McCulloch Co., Galt, Ont.  
Greycy, Wm. & J. G., Toronto.

### Forges and Blowers

Canada Foundry Co., Toronto.  
McEachren Heating & Ventilating Co., Galt, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Founders

Canada Foundry Co., Toronto.  
Cowan & Co., Galt, Ont.  
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.  
Goldie & McCulloch Co., Galt, Ont.  
Greycy, Wm. & J. G., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Sinclair, G. S. & Sons, Wiaraton, 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

Goldie & McCulloch Co., Galt, Ont.  
Morrison, T. A. & Co., Montreal.  
Robertson Mfg. Co., Buffalo, N.Y. and Bridgeburg, Ont.

### Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

### Gauges (Steam)

American Steam Pump Co., Battle Creek, Mich.  
Penberthy Injector Co., Windsor, Ont.  
Petric, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Gauges (Water)

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

### 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.  
Volta Electric Repair Works, Toronto.

### Gloves, Mittens and Moccasins

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

### Glue Heaters

Advance Machinery Co., Toledo, Ohio.  
Greycy, Wm. & J. G., Toronto.

### Glue Room Equipment

Advance Machinery Co., Toledo, Ohio.

### Government Notices

Factory Inspectors.  
Minister of Agriculture.

### Graphite

Dixon, Jos., Crucible Co., Jersey City, N.J.  
McCullough-Datzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

### Grease Cups

Penberthy Injector Co., Windsor, Ont.

### Grinding Machinery

Canadian Corundum Wheel Co., Hamilton, Ont.  
Greycy, Wm. & J. G., Toronto.

### Grinding Pans

Carlin's, Thomas Sons Co., Allegheny, Pa.

### Hardware

Butterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Gartshore, John J., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Hopkins, F. H. & Co., Montreal.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
Rice Lewis & Son, Toronto.  
Ryall Machine Screw Co., Montreal.  
Stanyon Metallic Furniture Co., Toronto.

### Heating and Ventilating Apparatus

Darling Bros., Montreal.  
McEachren Heating & Ventilating Co., Galt, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Stevens, Alfred J., Toronto.  
Sturtevant, B. F. Co., Boston, Mass.

### Hoisting Engines

Bertram Engine Works Co., Toronto.

### Holsts (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.

### Hydrants

Kerr Engine Co., Walkerville, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.

### Hydraulic Accumulators

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

### Hydraulic Machinery

Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Perrin, William R. & Co., Limited, Toronto.  
Petric, H. W., Toronto.  
Wilson, J. C. & Co., Glenora, Ont.

### Industrial Plants

Von der Osten, E. & Co., Toronto.

### Insulated Wires and Cables

Phillips, Eugene F., Electrical Works, Montreal.  
Wire & Cable Co., Montreal.

### Iron and Steel Specialties

Abbott, William, Montreal.  
Armstrong Mfg. Co., Bridgeport, Conn.  
Bailey-Underwood Co., New Glasgow, N. S.  
Bourne-Fuller Co., Cleveland, Ohio.  
Brown & Co., Paris, Ont.  
Buhl Malleable Co., Detroit, Mich.  
Canada Foundry Co., Toronto.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Leslie, A. C. & Co., Montreal.  
Lysaght, John, Limited, Bristol, England and Montreal.  
Meadows, Geo. B., Wire, Iron & Brass Works Co., Toronto.

Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Petric, H. W., Toronto.

Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.

Rice Lewis & Son, Toronto.  
Ryall Machine Screw Co., Montreal.

Sinclair, G. S. & Sons, Wiaraton, Ont.

### Injectors

Canada Foundry Co., Toronto.  
Hamilton Brass Mfg. Co., Hamilton, Ont.  
Penberthy Injector Co., Windsor, 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.  
Sunbeam Incandescent Lamp Co., Toronto and St. Catharines, Ont.

### Lathes

Cowdrey, C. H. Machine Works, Fitchburg, Mass.  
London Machine Tool Co., London, Ont.  
Petric, H. W., Toronto.  
Williams, A. R. & Co., Toronto.

### Lathes (Wood-working)

Cowan & Son, Galt, Ont.  
Goldie & McCulloch Co., Galt, Ont.  
Petric, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Lubricators

Penberthy Injector Co., Windsor, Ont.

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St. John, N.B.	Toronto, Ont.
Vancouver, B.C.	Winnipeg, Man.

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Oil-Cloth, Stair Oil-Cloth, etc.

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GENERAL MANAGER. GEN. PASS. AND  
FREIGHT AGENT

HEAD OFFICES—SHERBROOKE, QUE.

## Advertisers

will thank you if, when you  
write them, you will say  
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ment in

**The Canadian Manufacturer.**

## CLASSIFIED INDEX.

(CONTINUED).

### Machinists

Bertram Engine Works Co., Toronto.  
Buhl Malleable Co., Detroit, Mich.  
Goldie & McCullough Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
London Machine Tool Co., London, Ont.  
Worth & Martin Toronto.

### Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.  
Buhl Malleable Co., Detroit, Mich.  
Butterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Goldie & McCullough Co., Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hopkins, F. H. & Co., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
London Machine Tool Co., London, Ont.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Robertson Mfg. Co., Buffalo, N.Y. and Bridgeburg, Ont.  
Ryall Machine Screw Co., Montreal.  
Sinclair, G. S. & Sons, Warton, Ont.  
Worth & Martin, Toronto.

### Machine Tools

Abbott, William, Montreal.  
Bertram, John & Sons Co., Dundas, Ont.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Cowdry, C. H. Machine Works, Fitchburg, Mass.  
Darling Bros., Montreal.  
London Machine Tool Co., London, Ont.  
Petrie, H. W., Toronto.  
Robertson Mfg. Co., Buffalo, N.Y. and Bridgeburg, Ont.

### Machinery Repairs

Bertram Engine Works Co., Toronto  
Greay, Wm. & J. G., Toronto.

### Malleable Iron Castings

Buhl Malleable Co., Detroit, Mich.  
McKin, A. Dash & Metal Works, Co., St. Catharines, Ont.  
Smith's Falls Malleable Castings Co., Smith's Falls, Ont.

### Marine and Stationary Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.  
Bertram Engine Works Co., Toronto.

### Mechanical Draft

Babeock & Wilcox, Limited, Montreal.  
McEachren Heating & Ventilating Co., Galt, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

### Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.  
Stanyon Metallic Furniture Co., Toronto.

### Metallurgists

Mills, S. D., Toronto.

### Mill Machinery and Supplies

Allis-Chalmers-Bullock, Limited, Montreal.  
Armstrong Mfg. Co., Bridgeport, Conn.  
Buhl Malleable Co., Detroit, Mich.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Cowan & Co., Galt, Ont.  
Darling Bros., Montreal.  
Fleming, W. A. & Co., Montreal.  
Gartshore, John J., Toronto.  
Goldie & McCullough Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
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.  
London Machine Tool Co., London, Ont.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
McLaren, D. K., Montreal and Toronto.  
Penberthy Injector Co., Windsor, Ont.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Robb Engineering Co., Amherst, N.S.  
Robertson Mfg. Co., Buffalo, N.Y. and Bridgeburg, Ont.  
Ryall Machine Screw Co., Montreal.  
Sinclair, G. S. & Sons, Warton, Ont.  
Spence, R. & Co., Hamilton, Ont.  
Wilson, J. C. & Co., Glenora, Ont.

### Miners' Lamps

Allis-Chalmers-Bullock, Limited, Montreal.  
Anton, John & Son, Monongahela, Pa.

### Mining Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Buhl Malleable Co., Detroit, Mich.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Corbett, R. B., Brooklyn, N.Y.  
Gartshore, John J., Toronto.  
Hamilton, Wm., Mfg. Co., Peterborough, Ont.  
Hopkins, F. H. & Co., Montreal.

Jeffrey Mfg. Co., Columbus, Ohio.  
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.  
Corbett, R. B., Brooklyn, N.Y.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Petrie, H. W., Toronto.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Volta Electric Repair Works, Toronto.

### Moulding Sand

Hamilton Facing Mills Co., Hamilton, Ont.

### Novelty Manufacturers

Worth & Martin, Toronto.

### Nozzles

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

### Office and Bank Fittings

Canadian Office & School Furniture Co., Preston, Ont.  
Meadows, Geo. B., Wire, Iron & Brass Works Co., Toronto.

### Oils and Lubricants

Dixon, Jos. Crucible Co., Jersey City, N.J.  
Fleming, W. A. & Co., Montreal.  
Hart & Co., Chicago, Ill.  
Imperial Oil Co., Petrolia, Ont.  
Queen City Oil Co., Toronto.

### Oil Cloth

Dominion Oil Cloth Co., Montreal.

### Oil Cups

Penberthy Injector Co., Windsor, Ont.

### Paints and Colors

Bellhouse, Dillon & Co., Montreal.  
Fleming, W. A. & Co., Montreal.  
Geigy, Aniline & Extract Co., New York City  
Klipstein, A. & Co., New York City.  
McArthur, Coraellie & Co., Montreal.

### Paper Manufacturers

Barber, Wm. & Bros., Georgetown, Ont.  
Toronto Paper Mfg. Co., Cornwall, Ont.

### Patents

Budden, Hanbury, A., Montreal.  
Case, Egerton R., Toronto.  
Fethers'onaugh & Co., Toronto.  
Marion & Marion, Montreal.

### Perforated Metals

Globe Machine & Stamping Co., Cleveland, Ohio.  
Greening, B. Wire Co., Hamilton, Ont.  
Stanyon Metallic Furniture Co., Toronto.

### Personal Accident

Canadian Casualty & Boiler Insurance Co., Toronto

### Phosphorizers

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

### Pig Iron

Bourne-Fuller Co., Cleveland, Ohio.  
Canada Iron Furnace Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Shepard, Charles G., Buffalo, N.Y.  
Syracuse Smelting Works, Montreal.

### Pipe (Riveted, Iron and Steel)

Babeock & Wilcox, Limited, Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petroleum Iron Works Co., Washington, Pa.

### Pipe Threading Machines

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

### Pipes and Tubes

Abbott, William, Montreal.  
Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.  
Montreal Pipe Foundry Co., Montreal.  
Rice Lewis & Son, Toronto.

### Plaster

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

### Plates

Bourne-Fuller Co., Cleveland, Ohio.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Rice Lewis & Son, Toronto.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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**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.

**Pointer Rolls (For Rods and Wire)**

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

**Portland Cement**

Canadian Portland Cement Co., Deseronto, Ont.  
Owen Sound Portland Cement Co., Owen Sound, Ont.  
Rathbun Co., Toronto.  
St. Lawrence Portland Cement Co., Montreal.

**Power Plants—Equipments**

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Corbett, R. B., Brooklyn, N.Y.  
Darling Bros., Montreal.  
Delano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Goldie & McCullough, Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Kelsch, R. S., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Packard Electric Co., St. Catharines, Ont.  
Perrin, William R. & Co., Limited, Toronto.  
Petrie, H. W., Toronto.  
Phillips, Eugene F., Electrical Works, Montreal.  
Pittsburgh Shafting Co., Detroit, Mich.  
Robb Engineering Co., Amherst, N.S.  
Sinclair, G. S. & Sons, Warton, Ont.  
Sturtevant, B. F. Co., Boston, Mass.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Wilson, J. C. & Co., Glenora, Ont.

**Presses (Flie, Sawyer Pipe, Nozzles and Sleeves)**

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

**Pulleys**

Darling Bros., Montreal.  
Goldie & McCullough Co., Galt, Ont.  
Greyc, Wm. & J. G., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
McLaren, J. C., Belting Co., Montreal and Toronto.  
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Wilson, J. C. & Co., Glenora, Ont.

**Pumps and Pumping Machinery**

Allis-Chalmers-Bullock, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Darling Bros., Montreal.  
Downie Pump Co., Downieville, Pa.  
Goldie & McCullough Co., Galt, Ont.  
Kerr Engine Co., Walkerville, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Ontario Wind Engine & Pump Co., Toronto.  
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**Punches and Shears**

Globe Machine & Stamping Co., Cleveland, Ohio.  
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**Purifiers**

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

**Purifying and Softening Systems (Water)**

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Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.

**Railroads**

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**Railway Supplies**

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Gutta Percha & Rubber Mfg. Co., Toronto.  
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**Rock and Ore Crushers**

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Bradley Pulverizer Co., Boston, Mass.

**Roller Bearings**

Pittsburg Shafting Co., Detroit, Mich.

**Rolling Mill Engineers**

Bourne-Fuller Co., Cleveland, Ohio.

**Roofing**

Bourne-Fuller Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.

**Rubber Goods**

Gutta Percha & Rubber Mfg. Co., Toronto.  
Pittsburg Shafting Co., Detroit, Mich.

**Rubber Packing**

Gutta Percha & Rubber Mfg. Co., Toronto.

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

**Rural Mail Boxes**

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Goldie & McCullough Co., Galt, Ont.

**Screws**

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Pittsburgh & Buffalo Co., Buffalo, N.Y.

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Petrie, H. W., Toronto.  
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**Shafting Coupler**

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Carlin's, Thomas Sons Co., Allegheny, Pa.  
Hay, Peter Knife Co., Galt, Ont.

**Sheets (Iron and Steel)**

Abbott, William, Montreal.  
Bourne-Fuller Co., Cleveland, Ohio.  
Leslie, A. C. & Co., Montreal.  
Lysaght, John, Limited, Bristol, England and Montreal.

**Sheet Metal Goods**

Globe Machine & Stamping Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.  
Stanyon Metallic Furniture Co., Toronto.

**Sheet Metal Stamping**

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Stanyon Metallic Furniture Co., Toronto.

**Ship Builders**

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Allis-Chalmers-Bullock, Limited, Montreal.  
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Stanyon Metallic Furniture Co., Toronto.

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**Steam Pumps**  
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**Steam Specialties**  
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McEachren Heating & Ventilating Co., Galt, Ont.  
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Steptoe, John Shaper Co., Cincinnati, Ohio.  
Williams, A. R. Machinery Co., Toronto.

**Yachts**  
Bertram Engine Works Co., Toronto.

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

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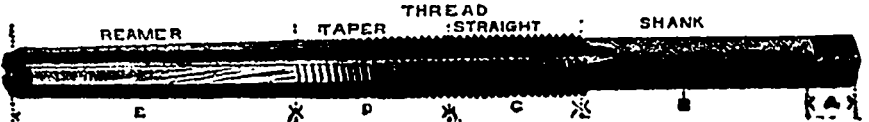
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Advertisement for Derby Screw Plate No. 119, featuring a list of sizes (1/4, 3/16, 1/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1) and one No. 9 and one No. 11 tap wrench.

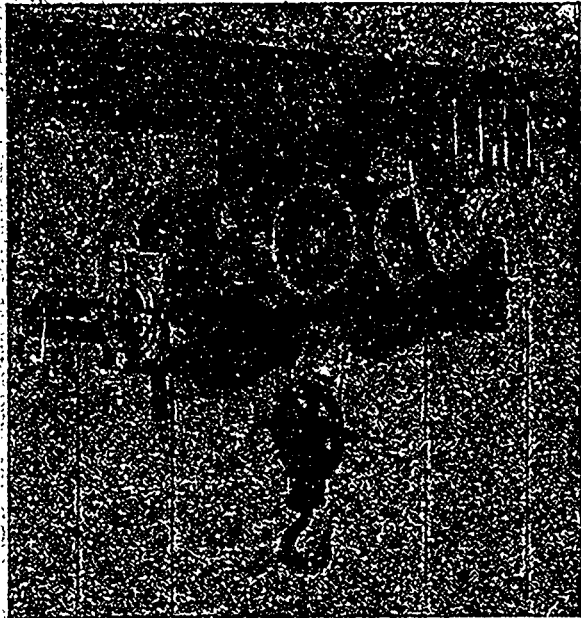
Advertisement for Butterfield & Co. Stay Bolt Taps, featuring images of a reamer and a tap, and text: 'WE MANUFACTURE STAY BOLT TAPS, all diameters and lengths up to 94 inches. SPINDLE STAY BOLT TAPS and TAPS for Screw Machines, and TAPS for all uses. Regular and Full Mounted Reece and Derby Plates, Bicycle and Machinists' Plates, etc., etc.'

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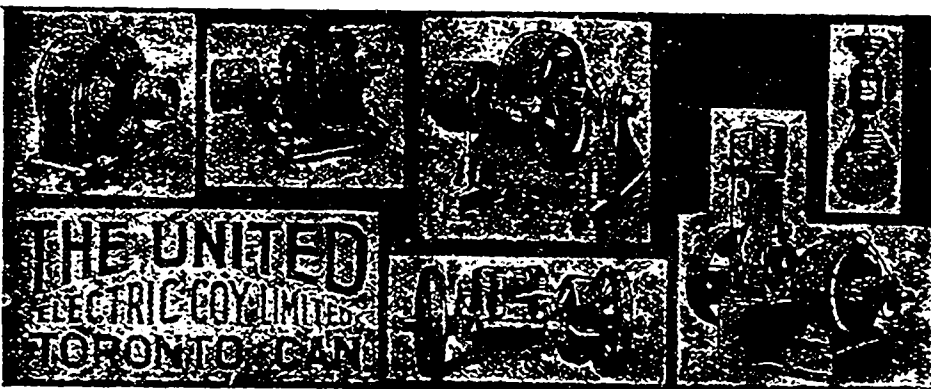
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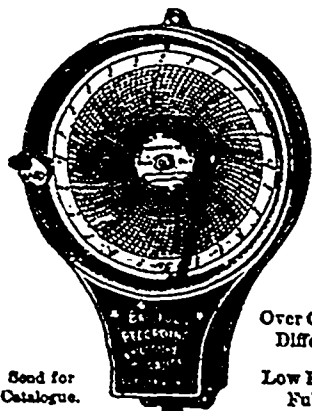


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