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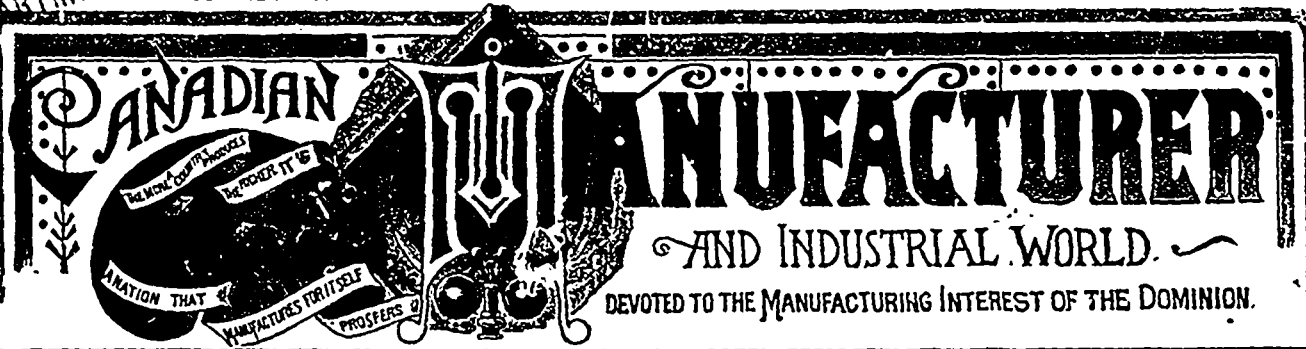
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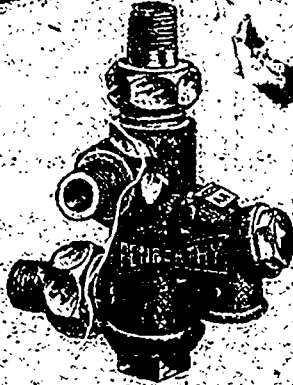
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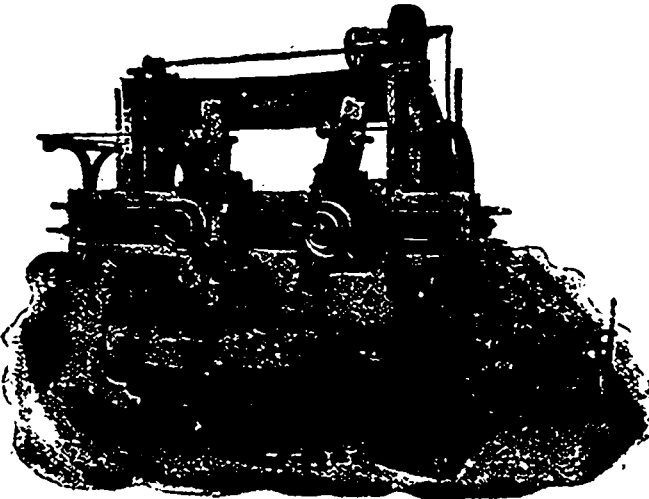
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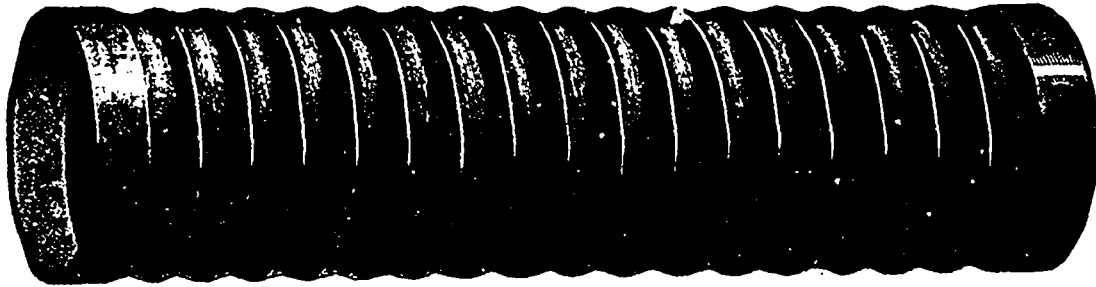


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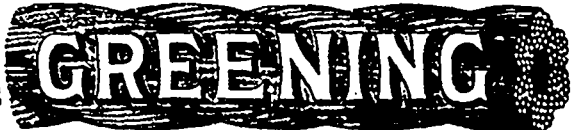
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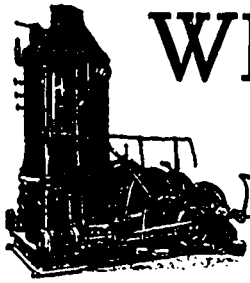
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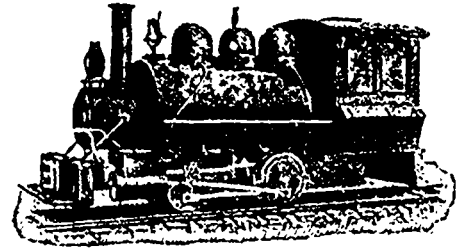
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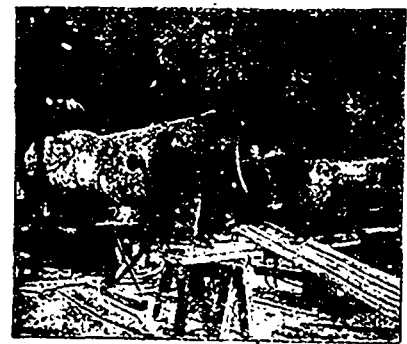
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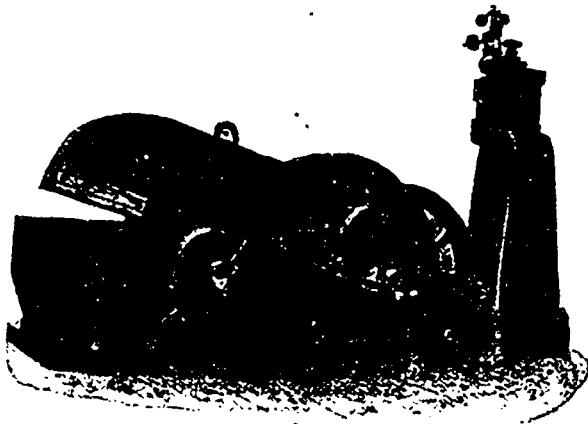
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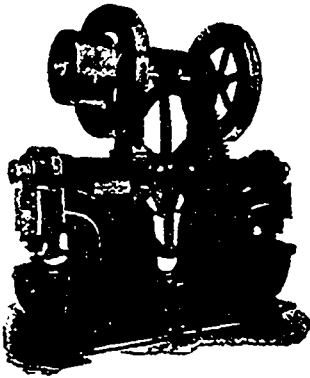
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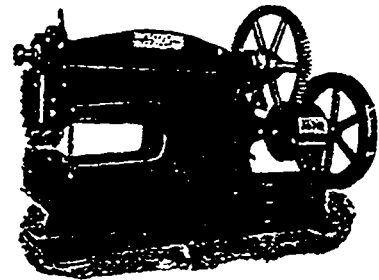
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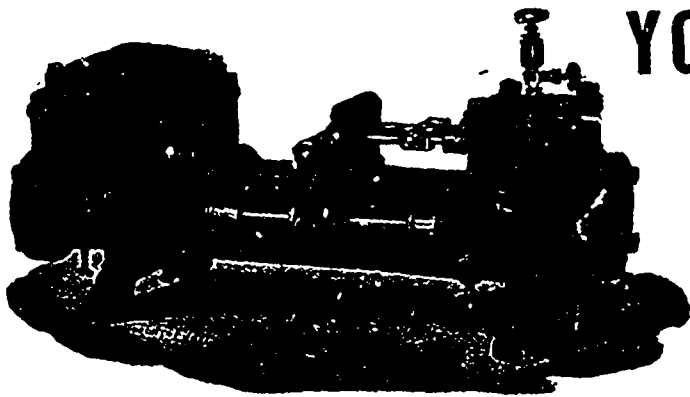
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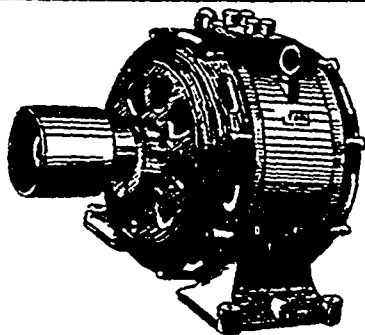
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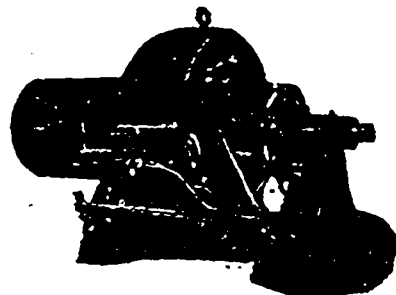
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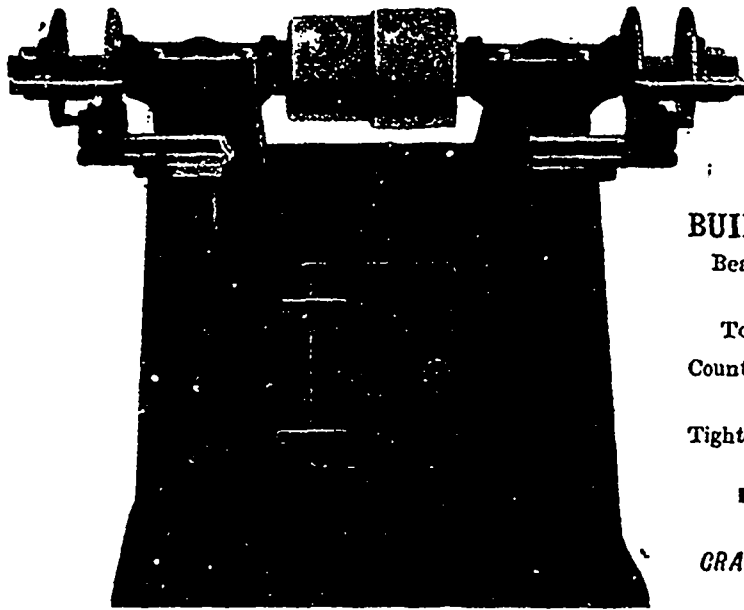
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PUBLISHED ON THE FIRST AND THIRD FRIDAYS OF EACH MONTH

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*J. J. CASSIDY,* Editor and Manager

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**PRODUCTION OF PIG IRON IN CANADA IN 1903.**

The American Iron and Steel Association has received direct from the manufacturers, the statistics of the production of all kinds of pig iron in Canada in the calendar year 1903. They show a decrease of 54,139 gross tons, or nearly 17 per cent. as compared with 1902, but an increase of 20,442 tons as compared with 1901.

The total production in 1903 amounted to 265,418 gross tons, against 319,557 tons in 1902, 244,976 tons in 1901, and 86,090 tons in 1900. In the first half of 1903 the production was 132,930 tons and in the second half it was 132,488 tons, a falling off of only 442 tons. Of the total production in 1903, 247,905 tons were made with coke and 17,513 tons with charcoal. Nearly one-half of the total production was basic pig iron, namely, 126,892 tons. Less than 1,000 tons of Bessemer iron were made. Spiegeleisen and ferromanganese have not been made since 1899.

The following table gives the total production of all kinds of pig iron (including spiegeleisen and ferromanganese) in Canada from 1894 to 1903. Prior to 1894 the statistics of pig iron production in Canada were not collected by the American association:

Years.	Gross tons.	Years.	Gross tons.
1894.....	44,791	1899.....	94,077
1895.....	37,829	1900.....	86,090
1896.....	60,030	1901.....	244,976
1897.....	53,796	1902.....	319,557
1898.....	68,755	1903.....	265,418

The unsold stocks of pig iron in Canada on December 31 amounted to 19,168 tons.

On December 31, 1903, Canada had 15 completed blast furnaces, of which nine were in blast and six were idle. Of this total eleven were equipped to use coke for fuel and four to use charcoal. In addition three coke furnaces and one charcoal furnace were being built or were partly erected on December 31, but work on at least two of the furnaces had been suspended some time ago.

The Dominion Iron and Steel Company, Limited, of Sydney, N.S., had all four of its furnaces running during 1903, although two only were in operation on December 31. No date has been set for the blowing in of the idle furnaces.

The Londonderry Iron and Mining Company, Limited, of Londonderry, N.S., did not operate either of its furnaces in 1903. During the year it rebuilt furnace A and expected to have it in blast about the middle of January. This stack is

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now 75x17 feet, and has an annual capacity of about 45,000 gross tons of foundry pig iron. The company is uncertain whether it will rebuild Furnace B, which has been long idle.

The Nova Scotia Steel and Coal Company operated Ferrona Furnace, at Ferrona, N.S., for 48 weeks in 1903 and was running it on December 31. The new furnace which the company is erecting at Sydney Mines, in Cape Breton county, will probably be completed in June, 1904. It will have a daily capacity of 200 tons.

The Canada Iron Furnace Company, Limited, was relining its furnace at Radnor Forges, Que., on December 31, but expected to have it ready for blast about the middle of January. The furnace ran for 41 weeks last year. The Midland Furnace of the company, at Midland, Ont., ran for 45 weeks last year and was active on December 31.

John McDougall & Co. had one of their two furnaces at Drummondville, Que., in blast on December 31. The idle furnace may resume work during the coming summer.

The Algoma Steel Company, Limited, of Sault Ste. Marie, Ont., had two furnaces completed and ready for blast on December 31. The date when they may be blown in is uncertain.

The Deseronto Iron Company, of Deseronto, Ont., operated its charcoal furnace for 46 weeks in 1903 and was running it on December 31.

The Hamilton Steel and Iron Company, Limited, of Hamilton, Ont., was operating its furnace on December 31. It ran for 43½ weeks last year.

**ELECTRICITY IN IRON PRODUCTION.**

At the convention of the Canadian Society of Civil Engineers, recently held at Montreal, interesting papers were read by Dr. Stanfield, Messrs. M. J. Butler and Henry Goldmark. Dr. Stanfield's paper related to the electro-thermic production of iron and steel.

Dr. Stanfield began by considering the commercial possibilities of producing iron and steel in the electric furnace. Attempts are still being continued to produce iron and steel by processes similar to those usually adopted, but in which the heat necessary for the chemical reactions to take place and for fusing the metal is furnished by means of electrical power instead of by the combustion of carbonaceous fuel as at



present. The very high temperature produced by electricity in a furnace containing strongly reducing gases has been already utilized in the production of certain alloys of iron, such as ferro-chrome, ferro-silicon, etc., in which cases the value of the alloy and the difficulty and expense of production by ordinary methods has led to the use of the electrical furnace in spite of its greater cost. The question of the production of iron and steel depends entirely upon the relative cost of fuel and electrical energy. Where cheap fuel is obtainable, electrical energy would not compare favorably owing to its higher cost, but where electricity can be produced under the most favorable conditions, there is just the possibility that in certain cases where crucibles are now used to fuse material, in order to protect it from the gases unavoidably present in an open hearth furnace, the electrical method will be adopted, and this particularly where definite temperatures have to be attained or kept for any length of time. After illustrating a number of electrical furnaces which have been used, by means of lime-light, Dr. Staufield gave a number of practical demonstrations.

The success of thermo-electric reduction of iron ores and the production of steel therefrom depends mainly upon two things, namely suitable ores and cheap electricity.

Both of these are obtainable in Ontario. We have in the Counties of Peterboro and Hastings large deposits of magnetic ores which are particularly suitable for reduction in the electric furnace. Some of these ores are rich in iron, and very free from phosphorus, while smelting by electricity will practically eliminate any sulphur they may contain.

The Ontario Municipal Power Commission estimates the total power available at Niagara Falls at upwards of 5,000,000 h.p., of which only about 12½ per cent. is as yet being developed.

Three Canadian power companies are developing power plants on the Canadian side of the Falls, and when completed will have capacity to generate 350,000 h.p. A comparatively small part of this has been engaged, and new uses will have to be found for most of it.

#### IN RESTRAINT OF TRADE.

The closing session of the convention of the Canadian Press Association, held in Toronto a few days ago, was devoted largely to the discussion of a resolution offered by Mr. Arch. McNee, of Windsor, Ont., and seconded by Mr. John A. Cooper, of Toronto, in which the Dominion Government was urged to revise the existing postal convention between the United States and Canada, so as to impose the same postal charges on United States periodicals as are now paid on publications from Great Britain. The latter pay eight cents per pound, while the United States periodicals pay only one cent per pound. Mr. McNee referred to the discrimination under which the English publisher suffered in competing for Canadian business with the publisher on the other side of the line. Canadian publishers were also entitled to some protection against the flood of American reading matter coming into Canada. Mr. Cooper frankly avowed his desire to see a heavy tax placed on American magazines and newspapers. One hundred times as much printed matter was sent into Canada from the United States, he said, as went to that country from Canada. The motion, we are informed, was carried by a large majority.

One of the reasons for the existence of the Canadian Press Association is, we are informed, the better facilitating of Canadian newspapers to disseminate useful information. Let it originate where it may—certainly not to restrict it. But it seems that a large majority of the newspaper publishers

present at the convention are in favor of doing just that thing.

The trouble on the minds of these publishers of Canadian journals seems to be of a two-fold character—first that under the British law publications from that country, coming into Canada, must pay eight cents per pound postage to the British Post Office authorities; and, second, United States periodicals pay only one cent per pound. And so Mr. McNee and Mr. Cooper want the Canadian postal authorities to denounce the arrangement existing with the United States, by which we exchange postal matter at the rate of one cent per pound for newspapers and magazines, and two cents per ounce for sealed letters weighing not more than one ounce, and revert to the previous condition when postage would be at the rate of eight cents per pound upon newspapers and magazines, and five cents upon sealed letters.

Mr. McNee speaks of the discrimination under which English publishers suffer in competing with United States publishers for Canadian business, but he should know that the remedy for the "discrimination," if such it may be called, is, not that Canada is not anxious to have British publications come into the country on as favorable terms as similar American publications, but that Great Britain will not allow it. It certainly does not lie with the Canadian authorities to reduce the British postage on mail matter originating in that country, and members of the press association should be aware of that fact.

It is remarkable, too, that Mr. Cooper, the president of the association, should favor a heavy tax on American magazines and newspapers, because the reading public of Canada require a hundred times as much American literary matter as American readers require of Canadian matter. Are Canadian readers to be restricted in obtaining information through American sources? Canadian publishers cannot, or do not supply the demand, and Great Britain restricts it to an almost prohibitory extent.

It is our opinion, however, that the Postmaster-General, Hon. Mr. Mulock, will give but scant attention to the proposition of the press association. As far as the postage on British publications is concerned, it is not a matter for his consideration at all; and he is not likely to stultify his record after having done so much and gone so far in favor of penny postage between all British countries; and the reduction of postage between Canada and the United States. The people of Canada are not willing to be forced to pay British rates on American literature. Only a few days ago, at a banquet tendered him in the City of Mexico, Hon. Mr. Mulock stated that as the Postmaster-General of Canada, it had always been his policy to decrease postage rates; and he has done it, as the people of Canada know, to their advantage.

#### CANADA'S INDUSTRIAL DEVELOPMENT.

According to the Dominion census report of 1901, now being published, Canadian manufacturing industries received an enormous impetus in the ten previous years. The report shows that in 1901 there were 14,650 manufacturing establishments in Canada employing not less than five workers each, as against 13,697 in 1891; and the value of their output increased from \$368,156,797 in 1891 to \$481,853,375 in the decade. There is scarcely a branch of the manufacturing industry but shows material advancement, showing that our manufacturers enjoyed a gratifying measure of the benefits flowing from the good times of recent years; nor does it appear that any well managed branch of industry had been obliterated by foreign competition.

The facts published in the report, furnish an index to the comprehensive character and extent of Canadian manufacturing industries, and demonstrate the extent to which our manufacturers contribute to the general wealth of the country.

Some instructive deductions are made from the figures to which attention may be drawn, and of these the most striking is the marked advance made by the dairy industry.

In the census of 1891 butter and cheese ranked eighth in the list of manufactures, but it has now leaped forward to the third place.

In 1901 the saw mills, flour and grist mills, men's and women's clothing establishments, foundry and machine works, planing mills, boot and shoe shops, led in the order given.

In 1901 log products still maintain the lead, with the splendid aggregate of \$50,000,000. The flour mills take the second place in production, with an output of \$31,835,879, while the butter and cheese products reach the total of \$29,462,402. The fourth place is taken by the meat-packing and slaughtering houses, whose production amounted to \$22,217,984.

Incidentally it may be noted that the manufacture of agricultural implements has grown from \$7,252,000 to \$9,597,000; of boots and shoes from \$12,706,010 to \$18,481,000; of bread, biscuits, and confectionery from \$8,374,306 to \$11,637,000; of car works from \$9,450,500 to \$11,500,800; of cottons from \$8,741,724 to \$12,033,052; of electrical apparatus and supplies from \$801,752 to \$3,032,000, and of electric light and power from \$845,000 to \$2,008,000.

The facts set forth in the report were taken three years ago—three of the most prosperous years in the history of Canada, and it is quite fair to assume that since then the march of progress in our manufacturing industries has kept step with the general advance of the country.

The following figures show the value of the output of some of the more important lines of manufactures in 1891 and 1901:

	1891.	1901.
Agricultural implements	\$7,252,005	\$9,597,389
Bags, cotton	265,000	1,114,213
Bicycles	90,000	550,606
Boilers and engines	2,433,878	4,626,214
Boots and shoes	12,706,215	18,481,216
Boxes and bags, paper	1,133,200	1,256,147
Boxes, cigar	15,000	233,000
Boxes, wooden	1,355,921	1,927,720
Brass castings	2,146,250	1,099,557
Bread, biscuits and confectionery	8,374,306	11,637,308
Brick, tile and pottery	3,701,721	3,299,917
Bridges, iron and steel	728,075	1,693,000
Brooms and brushes	763,985	952,653
Butter and cheese	10,697,879	29,462,402
Carpets	352,919	633,192
Carriages and wagons	5,942,559	6,650,912
Carriage and wagon materials	550,600	1,269,271
Cars	9,450,525	11,500,816
Cement, Portland	227,275	765,876
Cooperage	1,269,589	867,796
Cordage, rope and twine	1,707,734	2,212,663
Cottons	8,741,724	12,033,052
Cutlery and edge tools	987,504	1,295,930
Drugs	1,613,725	1,380,805
Electrical apparatus and supplies	801,752	3,032,252
Electric light and power	845,134	2,008,017
Flouring and grist mill products	30,721,348	31,835,879
Foundry and machine shop products	16,086,852	15,292,445
Fruit and vegetable canning	887,578	2,881,742
Furnishing goods, men's	2,647,200	4,623,652
Furniture and upholstered goods	6,025,811	6,949,384
Glass	683,500	995,401
Gloves and mittens	692,600	1,024,245

	1891.	1901.
Harness and saddlery	\$1,501,758	\$3,427,255
Hats, caps and furs	4,748,888	5,876,467
Hosiery and knit goods	1,747,785	3,857,519
Iron and steel products	4,856,730	6,012,457
Leather, tanned, curried and finished	9,711,781	12,068,600
Liquors, distilled	2,199,600	1,620,418
Liquors, malt	5,484,75	6,204,250
Log products	46,749,996	50,805,084
Lumber products	13,443,802	10,754,959
Metallic roofing		495,500
Mica, cut	40,000	337,628
Musical instruments	3,263,218	3,023,780
Musical instrument materials	29,500	358,997
Oil	2,128,112	3,519,193
Oil clothing	26,394	560,693
Optical goods	10,000	199,750
Paints and varnishes	1,800,600	2,786,593
Paper	2,570,722	4,380,776
Patent medicines	421,100	1,350,093
Plumbing and tin-smithing	5,716,250	6,553,957
Printing and bookbinding	1,966,653	2,748,356
Printing and publishing	7,671,310	10,319,241
Pumps and windmills	222,052	733,150
Railway supplies	165,000	556,600
Rubber and elastic goods	2,040,000	1,173,422
Ships and ship repairs	3,067,475	1,899,836
Slaughtering and meat packing	5,264,143	22,217,984
Smelting	3,016,200	7,082,384
Soap	1,909,390	2,143,945
Starch	483,850	1,006,400
Stationery goods	87,000	638,520
Sugar refining	11,627,100	12,595,000
Tobacco, chewing, smoking and snuff	2,347,650	6,469,961
Tobacco, cigars and cigarettes	3,230,114	5,332,151
Wall paper	351,000	874,049
Wire	1,884,100	1,693,995
Wood pulp, chemical and mechanical	1,053,842	4,246,781
Woolen goods	7,845,386	7,359,541

WORLD'S OUTPUT OF COAL.

According to official statistics, the total annual production of the coal of the world, exclusive of lignite, amounts to something over 700,000,000 tons. The following table shows the total production of coal, in tons, of the five principal coal producing countries for the years 1901 and 1902:

	1901.	1902.
United States*	261,874,000	269,195,000
United Kingdom*	219,047,000	227,095,900
Germany†	153,019,000	150,600,000
France†	31,634,000	29,574,000
Belgium†	22,213,000	22,769,000

\* Long tons of 2,240 pounds each. † Metric tons of 2,204 pounds each.

This table shows the total value of the coal produced by the above five countries during the years set forth. The values are those taken at the collieries:

	1901.	1902.
United States	\$363,450,000	\$371,927,000
United Kingdom	512,435,000	497,605,000
Germany	253,815,000	*262,667,000
France	99,370,000	92,745,000
Belgium	66,639,000	63,307,000

\* Includes value of lignite.

The average number of miners employed in the United States in 1902 was 513,307; in Great Britain, 805,100; in Germany, 448,000; in France, 159,957, and in Belgium, 134,092. In the United States the average production per miner was 520 tons; in Great Britain, 278 tons; in Germany, 242 tons; in France, 193 tons, and in Belgium, 166 tons. The following table shows the imports and exports, in tons, of the five countries during 1902:

	Imports.	Exports.
United States.....	2,544,000	6,127,000
United Kingdom.....	3,000	60,400,000
Germany.....	*14,752,000	18,981,000
France.....	13,641,000	1,016,000
Belgium.....	3,496,000	6,574,000

\* Includes lignite.

Of the 60,400,000 tons exported by the United Kingdom, 15,148,000 tons were shipped for the use of steamers in the foreign trade. France's exports also include coal for the use of steamers in the foreign trade. The United States and Germany do not include such coal in their exports. The subjoined table shows the consumption of coal, in tons, in the five countries under consideration :

	1901.	1902.
United States.....	256,407,000	265,612,000
United Kingdom.....	161,271,000	166,698,000
Germany.....	*142,250,000	*146,370,000
France.....	44,657,000	42,199,000
Belgium.....	18,951,000	19,691,000

\* Including lignite.

#### EDITORIAL NOTES.

Hon. W. S. Fielding, Minister of Finance, speaking at Montreal last week, gave a most explicit statement of the Government's tariff intentions. He said that time would not allow of the systematic investigation necessary for a general revision at the next session, but urgent needs of special branches of trade would be dealt with. I do not doubt, he said, that here and there some particular interest might have benefitted by changes in the tariff from time to time, but I have found in conversation with business men that the idea of tariff stability is regarded by them as of the greatest importance.

The Canada Gazette contains a notice that, beginning with February 1, newspapers and periodicals posted in Canada for Fiji, Jamaica, Malta, Seychell, Trinidad, British Guiana, Tobago, and Gibraltar may pass at the same rates and under the same regulations as if such matter were addressed to any post office in Canada.

The Dominion Government will do a decidedly good thing if it makes a liberal grant towards the holding of a Dominion exhibition in Winnipeg the coming summer or fall. It would be of incalculable value to all Canada.

Work is well under way on Canada's exhibit for the St. Louis Exhibition. Five carloads of exhibits from different parts of the Dominion have been packed ready for movement, and will be forwarded at an early day. A car of fruit has also been placed in cold-storage, awaiting shipment to the Exposition. The shipment includes the pick of Canada's agricultural, forest and mineral wealth.

The Railway World says that a western railway purchasing agent bought several million dollars' worth of rails and machinery that had come from Antwerp and Rotterdam in grain ships returning to the Pacific coast, and which were glad to take rails and heavy machinery at nominal freight rates as ballast. This they did on such favorable terms that railroad supplies made in Westphalia or the Saarbruck district that floated down to tide water on Rhine barges could be delivered at Puget Sound at a cost for transportation with which Pittsburg, Cleveland, and Chicago, with a transcontinental railroad haul, were wholly unable to compete.

The Dominion Department of Trade and Commerce has begun the publication of a weekly report containing the reports of the Canadian commercial agents and other commercial information. In 1896, besides the West Indian agents, who are only paid a nominal salary, there was only one Canadian agent as a salaried man whose whole time was supposed to be given up to Canadian interests, viz., Mr. Larke in Australia. These agents sent a report every three months for the quarterly report issued at that time by the department, and when a report was late it was held over for the next report. Since that time the following agents have been appointed: Mr. Jardine, South Africa; Mr. Ross, western Australia; Mr. A. Poindron, France; Messrs. Ball, Jackson and MacNamara, in England. To meet the growing demands of the country, the quarterly publication was changed to monthly, and the agents were instructed to report monthly to the department. The latest improvement is the weekly report. The first report is devoted to replies just received from the agents in the British West Indies, in answer to a special circular addressed to them by the department upon the possible extension of the Canadian butter and cheese trade in those islands.

Canada's foreign trade for the six months ending December 31 amounted to \$257,960,918, as against \$239,023,476 for the same period of 1902, being an increase of nearly \$19,000,000. This statement, of course, includes imports for consumption, exports of domestic and foreign products, and coin and bullion. The total exports, domestic and foreign, are about the same as for the year previous. Domestic exports show a decrease of about \$2,000,000, but there is an increase of about \$2,000,000 in exports of the mine. Fishery exports are less by some \$800,000, and products of the forests by a million and a half of dollars. Exports of manufactures are better by about \$500,000. There is a decrease of about \$1,000,000 in the exports of cattle and \$3,000,000 in wheat. As regards the two last mentioned items, it is believed to be due to the fact that the farmers are holding their wheat and cattle for a raise in prices, which in these prosperous times they can well afford to do. The following is a comparative statement of the imports for consumption and domestic export only :

	1902.	1903.
Dutiable goods.....	\$64,582,101	\$74,389,955
Free goods.....	38,619,518	47,142,053
<b>Totals.....</b>	<b>\$103,201,614</b>	<b>\$121,532,008</b>
Duty collected.....	\$17,814,116	\$20,472,143
Domestic exports six months:		
Products, mine.....	\$18,418,617	\$20,525,150
Products, fisheries.....	6,889,775	6,007,290
Products, forests.....	23,607,946	22,008,379
Animal and produce.....	45,178,795	42,496,368
Agriculture.....	21,516,806	21,842,592
Manufactures.....	9,634,070	10,088,805
Miscellaneous.....	55,457	15,870
<b>Totals.....</b>	<b>\$125,301,466</b>	<b>\$122,983,954</b>

The Commission appointed by the Dominion Government to go to Europe to inspect the various plants that use the thermo-electric process for the smelting of iron ores, consists of Dr. Haanel, Superintendent of Mines, and Mr. O. E. Brown, Assistant Works Engineer for the Canadian General Electric Co., Peterborough, Ont. A steel expert and a draughtsman will be added to the commission in Europe. There are five establishments in Europe where pig iron and steel are commercially produced, the firms being Keller, Paris; Harmets,

St. Etienne France; Heroult, La Praz, France; Captain Stassano, Turin, Italy, and Benedicks Gysings, Sweden. The electric process is especially suitable for the production of the different ferros, which are used in the manufacture of steel, such as ferro-chrome ferro-manganese, ferro-silicons, ferro-titanium, etc. Captain Stassano at Turin operates for the Italian Government. Sweden regularly turns out 2½ tons of tool steel by the electric process. Ordinary tool steels are worth from \$120 to \$240 a ton. Self-hardening steel from \$1,000 to \$1,200 a ton, and high speed tool steels \$1,500 a ton. This gives some idea of the enormous profits in connection with the manufacture of special tool steels, for which the electric process is especially adapted. The Heroult firm at La Praz have been producing steel by this process on a commercial scale since 1901. The Canadian Commission have been given permission to visit the several factories alluded to and their tour will probably occupy two months.

Under Section 4 of the amended Patent Act, passed at the last session of the Dominion Parliament, a patentee must commence manufacture within two years from the date of issue of his patent, otherwise it is null and void. There are some classes of patents, however, that would be difficult to manufacture in advance of the public demand. In such cases the commissioner of patents has power to place the applicants under the terms of Section 7 of the Act, the effect of which would be to delay manufacture until application is made for a license to sell the patent invention. Then, if the commissioner is satisfied there has been neglect or refusal to manufacture or sell the patent, he may grant the license applied for. The commissioner of patents has issued a circular designating the kinds of patents which come under Section 7. They are as follows: Patents for an art or process; patents for improvements on a patented invention, when both patents are not held by the same person; patents for certain appliances or apparatus in connection with railways, telegraph, telephone and lighting systems, and other works usually under the control of public or large private corporations, and which appliances or apparatus cannot be installed or constructed without the consent of such corporations; and patents for inventions which are manufactured or constructed only to order, and are not according to custom carried in stock. At present the patent office is in frequent receipt of petitions from patentees asking to come under the provisions of Section 7. These are so numerous, in fact, that the staff have to remain at work long after the regular hours in order to cope with the rush.

Given a theme it does not take a newspaper very long to make a romance. It is wonderful what webs they can weave with very slender threads. The little steamer for fisheries protection on Lake Erie which the Dominion Government is building at Toronto has been transformed into a formidable armed warship whose construction is directly in violation of the treaty of 1817. It isn't likely that Canada would deliberately violate that treaty, knowing well enough that if it did it would be playing a losing game. Everyone knows that these fishing raids into Canadian waters are nothing less than piracy. Every fisherman knows where the line is, for a straight course from the southeast shoal to Buffalo would be entirely in Canadian waters; and yet repeatedly this line is crossed. The Petrel which has been looking after Canada's interests in the fisheries of Lake Erie, is not a fast vessel, and when she starts from Point au Pelee on a straight course down the lakes she can be seen for half an hour, ample time for the

fish tugs to get out of the way. Some of the faster tugs, like the Silver Spray, holding the Petrel's cruising powers in contempt, have waited to come into gun range, well knowing that the Petrel carried no guns capable of doing great injury. It is to the interests of both Americans and Canadians that the fishing industry of the great lakes should be protected, and it probably will effectually be when the Dominion Government places on the lakes a cruiser swift enough to overtake the fastest of the fishing tugs.—Cleveland Marine Review.

The Cape Town Industrial Exhibition, says the British and South African Export Gazette, promises to be one of the most important events in South African history. It is proposed to stimulate the general commerce of the South African colonies and to obtain for them the recognition which the projectors of the exhibition deem they deserve. Now that the war is over, prosperity and commerce are again destined to go hand in hand to rebuild what the war has wasted. The country can congratulate itself upon this most excellent effort for establishing means to make known the importance of South African markets. The resources of the country are admitted to be exhaustless, and their development points to a steady and consistent expansion of trade such as has never before been experienced. Other nationalities, too, besides our own are participating in an appreciable degree in this general advancement, and merchants and manufacturers emulate each other in the bid for a share of the favors South Africa is in a position to bestow. The ordinary routines of trade have done much toward meeting existing demands, but the general progress is so great that exceptional facilities are by no means out of place in demonstrating superiority in the arts and industries that will be attracted to the Cape Town Industrial Exhibition it is proposed to hold in November and December, 1904, and January, 1905. In other countries the primary object of exhibitions has been to illustrate the progress made by the arts and industries in contemporary times. The object of the exhibition under notice is rather to bring to South Africa examples of arts, manufactures, and industries which will enable responsive colonists to judge of the character and utility of materials and manufactures that are best adapted to their especial needs and requirements. If the Cape Town Industrial Exhibition worthily achieves this useful purpose, as we have every reason to believe it will, its conception and existence will be more than justified, and beneficial results, in which colonist and exhibitor alike will participate, will follow in its wake.

A peculiar incident, illustrating the loss of public favor on the part of trades unions, is a suit filed by the Lentous Packing Co., Los Angeles, Cal., seeking to enjoin labor union organs from placing their name on the "Fair" list, alleging that the publication of their firm name in this line was injuring the business. Your petitioner, the document averred, has lost in business \$600 a day since the indorsement of the unions was made public. The petition declared that the designation "fair" is understood to mean that the firm so labeled is subservient to bulldozing labor organizations and that such a reputation was disastrous to business relations with desirable customers. It is only recently that firms would move heaven and earth to avoid having their names on the "Unfair" list. Apparently, in California at least, the union label is a poor sort of an advertisement for a manufacturing concern, and a boycott has not only lost its terrors, but is preferred to the friendship of organized labor.

**FREID GRAVITY DRY PROCESS SEPARATOR.**

DOUGLAS MCLEAN.

In calling attention to the Freid dry process gravity separator, I do so only after prolonged and thorough investigation of the principles which have been involved in the successful accomplishment of the end desired.

The separator has embodied in its construction certain scientific principles, which have been so applied as to produce a separator or concentrator which actually produces the highest results in saving ore values and which has reduced the cost of installation and of winnowing.

Among the many features which I wish to call attention to is the fact that the process does not require any screens, and that by means of atmospheric pressure properly applied it has become possible to size, separate and concentrate with this machine ore values with an absolute assurance as to results.

Mr. Freid, the inventor, is prepared to demonstrate that he saves 95 per cent. of the values contained in free milling ores, placer sands and other such refractory ores as can be treated by a slight roast, making them free milling.

The mine owner can attain the highest degree in the saving of the values which his ores may contain, for the reason that the rapidity with which the ore is handled from the time it is delivered into the hopper of the machine until concentration is completed is much less than the time consumed in other processes, capacity and mill unit considered.

The separators will also be found very valuable in sorting ores which are to be sacked and shipped direct to the smelters. In this particular field the installation of a separator has the same advantage over hand sorting as the type-setting machine has over type-setting by hand. This feature alone will tend to make the appliance of great value in the mining world.

In mines located as many are where water from the sump has to be utilized to generate steam power for hoisting, and other purposes in the shaft house, the separator can be installed and used for separating, sorting or concentrating at the discretion of the mine owner or operator.

Mr. Calvin T. Freid, the inventor of this appliance, was associated with Mr. Thomas A. Edison as master mechanic for a period of five years, and it was under Mr. Freid's personal direction that many of Mr. Edison's most intricate appliances were designed and constructed. While so engaged he conceived this idea of separation, having experience in the designing and construction of other similar dry process separators, which were operated by air pressure wherein cost of installation and operation had not been considered.

Mr. Freid is one of those men whom we seldom meet; he is most careful in the working out of every detail; accepts nothing as fact until it has been carefully demonstrated by actual test, and then only after the test has proved that an article of commercial value has been produced.

In the accompanying sketch (Fig. 1), which is an isometric-perspective view of the dry process separator, in which the principal of separation is gravity and de-

The entire area of the action chamber proper is left open, and the baffle plates arranged as shown, in this manner allowing atmospheric pressure to lay uniformly against the entire opening of the chamber, and the perpendicular gravity line.

The material which is to be separated is delivered in the hopper indicated by letter "A," (Fig. 2) and is fed through opening "B," at which point the stream is regulated by a gate and agitated by a roll, the gates being raised and the roll

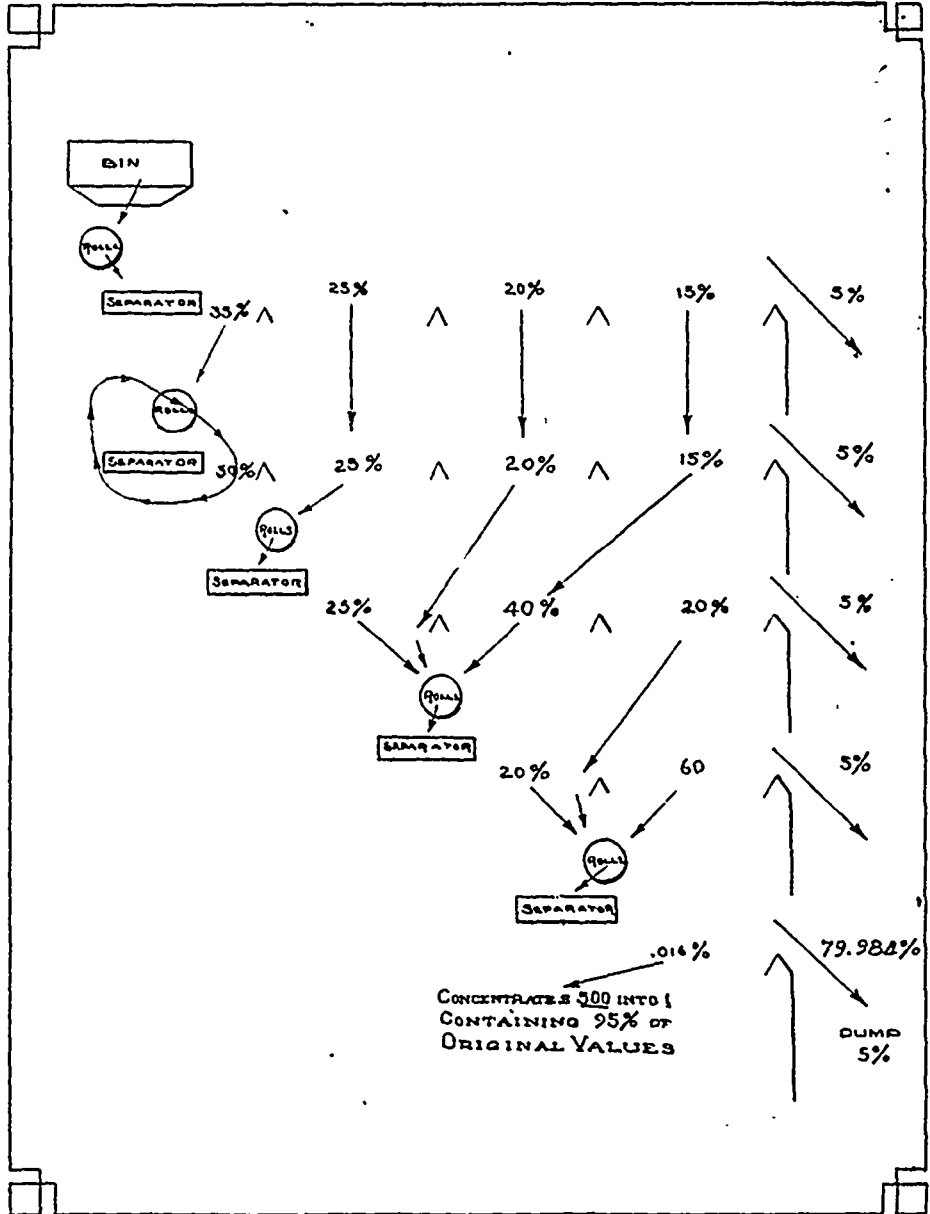


Fig. 1.

flexion, the deflecting action is caused by a non-cavitating balanced screw propeller, placed at the end of the action chamber, which creates a partial vacuum in the chamber, and allows the small or lighter to deflect from the large or heavy particles as the material which is to be separated falls on the line of gravity, which is on the perpendicular plane of the staggered baffle plates, as shown at the end of the action chamber opposite to the propeller.

caused to revolve at a speed suitable to a feed given quantity of material per hour. The material falls on the dead plate "C," slides off this plate and falls on cleaner plate at "D." The cleaner plate has an angle turned up at "E," where the material builds up on this turn-up edge and overflows, dropping on baffle "F," and accordingly builds up to its natural angle of repose, overflows and drops on baffle "G." While dropping off this baffle a hori-

zontal opening, "H," allows atmospheric pressure to rush into the action chamber "V."

The material following this arrangement of bafflers on the line of gravity to the bottom of the opening of the action chamber, over which atmospheric pressure indicated by large "arrow" and the letter "P," deflects the light from the heavier, or the small from the larger particles of material so treated, the heavy or larger finally finding its way to compartment "I" and the light or smaller particles depositing in "O," "N," "M," "L," "K," and "J," according to their respective weights and sizes. The product in these compartments is discharged automatically through the gates "S," and are delivered to suitable chutes or conveyors at "Y." The curved plate "T," which is hinged to the dead plate "C," is for the purpose of preventing any spill at the roller feed. The deflecting action is caused by the balanced non-cavating screw propeller "U," which creates a par-

whereby an absolute uniform action could be constantly created over the entire mass of material. In dry process separators, where mechanical air pressure in the form of blowers or centrifugal fans are used, the action at the point of separation or deflection of the material treated is pulsating. To prevent puffy action of the air delivered, screens are used to baffle the pressure, in which case it is impracticable to return the air delivered in a settling chamber, on account of the fines which are drawn with the air, choking the screens intended to baffle the pressure. Therefore the air used in the separation is blown into the mill, which makes it necessary, on account of the air carrying the dust, to construct the auxiliary machinery surrounding the separators so that the bearings and journals are absolutely dust-proof and oil-tight. In operating a dry process separator wherein a blast produces the deflecting action it is necessary to size the materials treated, which is done by screen banks, as it

previous research made by Mr. Freid regarding marine propulsion. As the propeller is readily controlled regarding speed or displacement of volume, the action at the baffle plates on the gravity line can be regulated so that a reduction of ore passing one-half inch ring and finer, up to 200 mesh, is separated by deflecting the lighter or smaller from the heavy or larger particles. In the first separator of the mill unit the action is regulated so as to hold the fine values in the separator, not allowing them to pass the propeller and tail off to the dump. The action of the second separation in a mill unit is regulated to treat the concentrates from the first machine, and so on, as shown in the diagram, thereby eliminating the use of screens entirely.

In various locations through the mineral regions, especially in the arid districts, dry placer deposits exist, carrying values of various ores. To these deposits the Freid dry process is most surely a boon for the reason that by this method these deposits can be worked to advantage. Whereas these placer sands and conglomerate deposits have heretofore remained unproductive wastes, concentration by this method means a reduction in bulk and weight of the product, thereby reducing the cost of cartage and the freight, the values being carried to the highest point attainable and accumulated so as to leave a product from gangue and other worthless matter, which can be sacked for shipment in the least possible space and in the most compact form.

The advantages derived from dry process concentration are many, and for years attempts at milling ore by dry processes have been carried on, but the basic principle underlying the method of dry separation and concentration seems to have only been partially understood.

Mr. Freid being one of the few inventors who actually do what they talk about, has prepared a demonstrating laboratory at Orange, N.J., wherein he has a full unit of the separator which is used to demonstrate the commercial value of his process

to the particular party having the specific proposition, knowing well that the separator must be developed to meet the conditions required to treat the distinct characteristics of the ore.

The accompanying diagram (Fig. 2) shows the different passes of ore through the mill; in this case shown in a mill unit of five separators high, which is for installation for a free milling quartz-reducing proposition, or such refractory ore as can be prepared by subjecting it to a slight roast, making them free milling.

The Ontario Wind Engine & Pump Co., Toronto, have just received enquiry from a government farm in one of the Islands of the West Indies for one of their well-known Canadian air motors. It is interesting to know that this firm's goods are in demand in so many portions of the globe. Their home trade is increasing so rapidly that their capacity is taxed to the utmost.

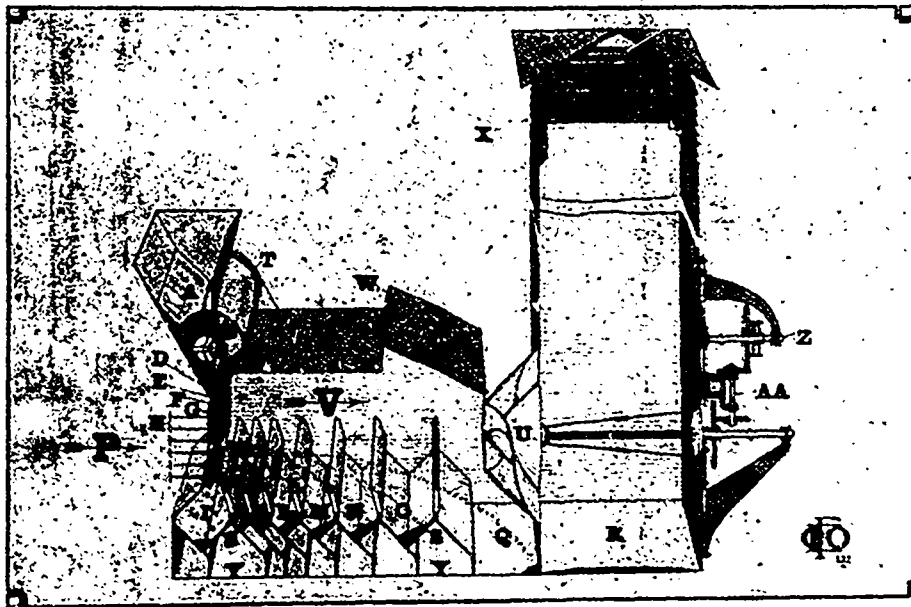


Fig. 2.

tial vacuum in the action chamber "V," and the valve "S" controls the pressure at "P."

The louvered arrangement "X" at the top of the settling chamber "R" is to allow atmospheric volume to exceed the openings "H" at the bafflers. This causes the light particles to settle in the chamber "R."

The driving mechanism is arranged to allow minute changes of speed of the propeller, and is driven by direct coupled motor, by means of flexible flange couplings at "Z," or belt from motor or line shaft to loose and tight pulley, as shown. By adjusting counter drive "A. A." the speed of the propeller "U" can be changed from 120 revolutions per minute to 1,600 revolutions per minute. By this arrangement the action in the chamber "V" is controlled, making it possible to separate or concentrate material from 0.5 to 22 degrees specific gravity.

It was necessary to conceive means

would be impracticable in the recovery of fine values to use mechanical air pressure for sizing, as the fine value is generally blown out with the tailings if the material is not sized and the mechanical action regulated to treat each size separately.

This makes installation and operation very expensive compared with a process wherein the basic principal is gravity and deflection, the deflecting action being created due to partial vacuum allowing atmospheric pressure (which is uniform at all points of intake) to deflect the small or light from the large or heavy particles.

In order to create this action it was necessary to apply the noncavating balanced screw propeller, the flights or blades of which had to be so developed as to balance on the diametrical line of intake of the shrouding, so that on each side of the centre of motion the same amount of air is displaced and steadily exhausts the air from the action chamber.

The propeller was a development of

**STURROCK PATENT FURNACE  
BRIDGE WALL.**

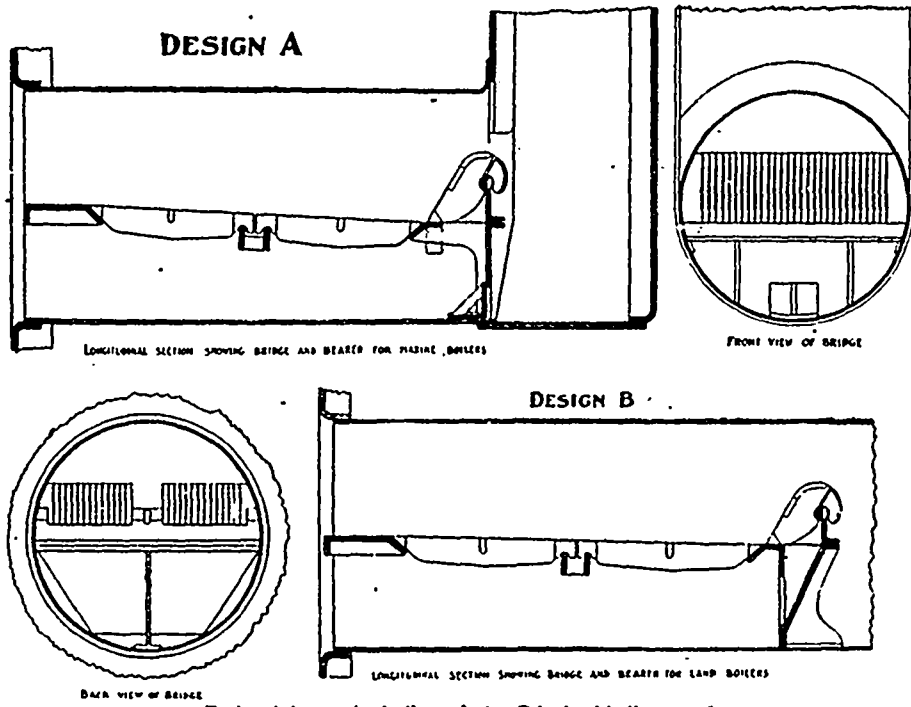
Mr. Alexander Hynd, M.E., of Steel, Nacey & Hynd, Cleveland, Ohio, is introducing on the great lakes the Sturrock patent smoke consuming bridge wall for boilers, which is illustrated herewith. Mr. Hynd has secured from the Scotch owners of the patents the agency for the lakes and adjacent territory. This furnace is in use on numerous British

are: Facility of removing and replacing bridge walls for inspection and when laying up; can be removed without destroying any part of the bridge, and all replaced without requiring any renewals; facility in cleaning fires, as no clinker ever adheres to the bridge wall; better combustion and greater economy of fuel and reduction of the emission of black smoke; and that it will not twist or warp and will last for years.

Of the line drawings design A shows

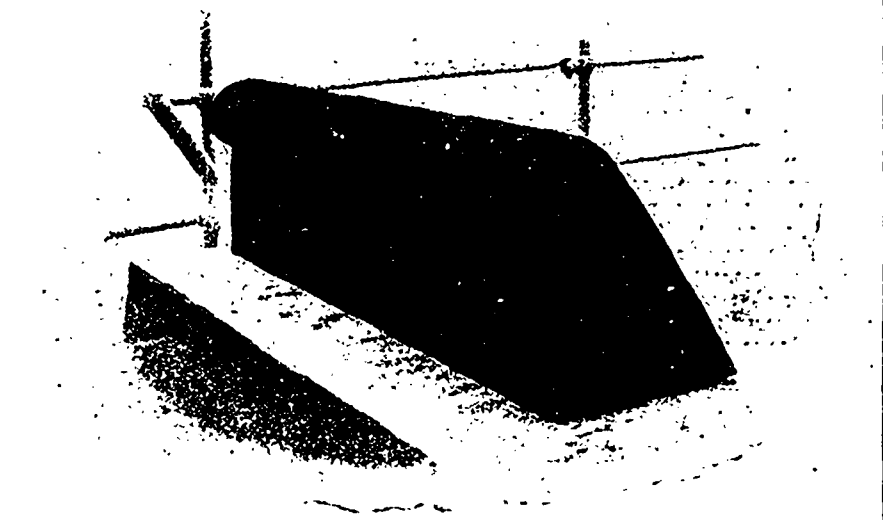
months in an English steamer. It is claimed that with ordinary attention the bridge will last for many years. In a letter still further describing the device Mr. Hynd says:

The object of the Sturrock patent bridge wall is to provide at moderate cost a bridge wall which shall be indestructible, can be easily removed and replaced without sacrifice of the material comprising it, and which shall assist in the perfect combustion of the fuel in the furnace and also act as a smoke consumer. The bridge wall is composed of cast iron bars with suitable air openings between. The dead plate having openings through it, admits air freely from the ash pit to the back of the bars and through the spaces between to the fire. The bars are kept cool and will not burn or twist; no clinker ever adheres to them, and the usual pile of dead fire against the bridge wall is done away with. When in use the bars of the bridge wall are securely locked in place, but are provided with means for readily removing them when necessary. The whole bridge wall can thus be taken down to admit of examination of all parts of the furnace, and be as easily replaced without destroying any part of it, thus effecting a great saving in comparison with bridge walls of brick and fire clay, and doing away with all corrosion of the furnaces, which always takes place under the brick work. With this bridge wall shorter grate bars may be used, thus effecting a saving of from 15 to 20 per cent. in the cost of grate bars. Air openings are also provided through the bars at the crest of the bridge, by which heated air is admitted to mingle with the gases from the furnace, as they pass into the combustion chamber thus effecting their complete combustion before passing out of the stack, and preventing smoke.



Design A for marine boilers; design B for land boilers, need not be secured to the furnace.

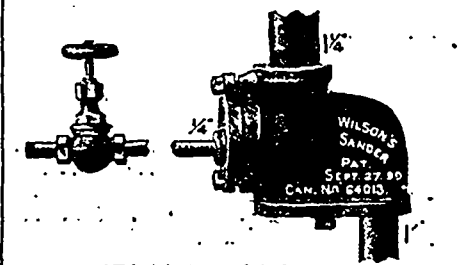
the bridge as fitted in numerous passenger and freight steamers. Of course it is adapted also to land boilers (design B) and in these it need not be secured to the furnace in any way. The illustration is a back view of a Sturrock bridge taken after it had been in use for eighteen



View of Sturrock bridge taken after it had been in use on an English steamer for eighteen months.

**A NEW TRACK SANDER.**

The accompanying illustration is that of a new automatic track sander, the invention of Mr. J. B. Wilson, Temple Building, Toronto, now in use on a number of locomotives on railroads both in Canada and the United States. This



Wilson's Automatic Sander.

sander has been recently specified in contracts for the construction of a number of locomotives ordered by the Intercolonial and Prince Edward Island roads by the Dominion Government. The appliance has been given most thorough tests and has received the highest commendation from leading railway experts.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

**BEAVER POST HOLE DIGGER.**

The Beaver Post Hole Digger is made of the best material, in the most workmanlike manner, and has been improved in various details. The blades are made of forged steel, carefully shaped and hardened.



They will not break when coming in contact with rocks or stones, and will cut roots as large as a man's wrist. The jaws are made of heavy forgings, scientifically proportioned, on which are shrunk pipe handles. A short, stout bolt connects the jaws and forms the fulcrum on which the machine works, and there is no wood to check, rot or break. It will dig any size of hole, in the driest of sand or the heaviest clay. How to work the Beaver Post Hole Digger. Dig from the surface; use the Digger to cut the sod. Take a low grip on the handles, lift the

tool up two or three feet from the ground, and drop straight into the earth with a little force. Work the soil loose by slightly moving the handles from side to side, pull them apart, compress the load, and lift out. Let the machine drop with mouth on the surface of the ground every time you lift it out of the hole. Chop down the sides of the hole so as to make it any size you want. When digging clay or gravelly land, throw into the earth leaving the handles a little open at the top. You will find that it cuts better, and the blades can glance off the stones either to one side or the other. The Digger is especially serviceable in working in ground where roots of trees and underbrush abound. You can cut a root two and one-half inches in diameter with the Beaver Digger, easier than with an axe. Stones the size of your head can be taken out of a hole. Work them loose, grip in the mouth of the Digger, and lift out; do not use a crowbar. Learn to use the digger. It will not break, if it does make the fire fly. A good man ought to dig a post hole, three and a half feet deep, in from one to three minutes; and in the hardest of hard pan in from five to ten minutes. We are aware that digging post holes in clay and hard pan is hard work. So it is with a shovel, spade and crowbar—but follow these moves and you will soon learn to use the Digger with ease.

With the Digger you can sink a hole close beside a wall, post, or in a fence corner, thus replacing a damaged post without tearing down the fence, effecting a great saving of time. This is particularly helpful in lowering or lining up posts that have been heaved by frost. One hole will put in a new post,

and at the same time enable you to remove the old one.

Made by the Canada Foundry Co., Toronto.

**FORCE FEED LUBRICATOR.**

One of the latest inventions in this class of lubricators is shown in the annexed cut.

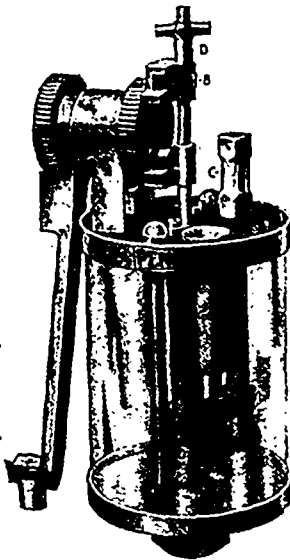
Its principal features are first the two ratchets, one of which is used to drive the plunger, while the other acts on the plunger itself.

Secondly the location of the valves which are in the centre of the oil reservoir.

The advantage of two ratchets is that they are interchangeable, and as the wear only comes on the outer ratchet to which lever is attached, when worn to such an extent that the "dog" will not hold, it can be replaced by the ratchet acting on the plunger, and the life of the lubricator thereby doubled. As the ratchet is the first thing to wear out, this device will be appreciated by engineers.

The advantage of having the valves and feed from centre of oil reservoir is that they cannot be affected by changes of temperature, and it will therefore feed oils very difficult to feed through hydrostatic cups.

Closing jaws of lubricator with the nut B increases feed, opening decreases feed. When the proper amount of oil is being fed, screw down the nut D to hold rigidly in place. Extra oil can be had by screwing down the nut B and operating the plunger by hand. The cup can be cleaned from a hole in the bottom designed for that purpose. This cup is manufactured by the Penberthy Injector Co., Detroit, Mich., manufacturers of the well-known "Penberthy" Automatic Injector.



Lubricator.

**THE NEW LONDONDERRY PLANT.**

The Londonderry Iron & Mining Co., Montreal, was recently incorporated with a capital of \$1,000,000. The officers are:—President, T. J. Drummond, vice-presidents, Edgar McDougall, James T. McColl, F. C. Henshaw. Montreal; C. W. Brega, Chicago; J. J. Drummond, Midland, Ont., and Charles Fergie, Westville, N.S.; F. G. O'Grady, secretary-treasurer, and George Beatty, superintendent of works. The property consists of 20,000 acres. The minerals are low in sulphur, showing no traces of titanium. The

lands are thickly wooded with valuable spruce and hardwood. The blast furnace has been rebuilt and remodelled on modern lines. The dimensions are: Height 75 feet; back, 17 feet; hearth, 11 feet; shell, 25 feet diameter built of 12, 3-8, 5-16 iron, with heavy weight iron mantle resting on ten new cast iron columns. The hearth crucible and battery walls up to the back are protected by a heavy cast iron jacket. The bell and hopper are both new, of heavy design, and suitable for the new furnace lines. The bell is controlled by the usual steam cylinder appliances. Diameter of bell 7 feet 9 inches; hopper capacity 45,653 cubic feet. The elevators are of the usual verticle two-skip type controlled by double cylinder type of hoisting engine. There are three copper stoves of 25 feet diameter, 51 feet high; 6 Galloway boilers, 7 feet diameter, 28 feet long; steam pressure 85 pounds. These boilers have been provided with an additional steel chimney, 5 feet diameter, 100 feet high. The feed pump is of Cameron type, the water being supplied from the blowing engines hot well. All the boilers are fitted for either gas or coal fuel, as occasion may demand.

There are two verticle blowing engines built by D. Adamson & Co., Manchester, England. Dimensions, steam cylinders, 56 diameter; wind cylinder, 72 diameter; stroke 60 inches. With a view to more rapid driving they have been fitted with heavier main shaft bearings and columns have been stiffened. Steam pumps will consist of Worthington Duplex pumps, combined capacity 1,250,000 gallons in a day. A large new dust catcher has been built, provided with a bell at the bottom for discharging the dust. To this is attached a new and original device for further cleansing gas, intended for the stoves. The changing scale consists of two Gurney six beam Farnall scales. The coke ovens, 97 in number, will have capacity of 150 tons a day. The Robinson washers have a capacity of 400 tons in 10 hours. The laboratory is of the most modern kind. The capacity of the furnace will be 150 tons of pig iron a day. The company will make a high class of foundry iron.

**IMPORTATIONS OF PLUMBAGO.**

The McCullough-Dalzell Crucible Co., Pittsburg, Pa., have sent us the following memo of importations of Plumbago into the United States from Ceylon, India, in the year 1903, including lump, chip, dust and undescribed. The imports have reference to quantities imported in barrels and not values:

Importers.	Total Barrels.
Robert Crooks & Co. ....	16,110
Paterson, Boardman & Co. ....	9,062
McCullough-Dalzell Crucible Co..	5,606
H. J. Baker & Bro. ....	5,285
H. W. Penbody & Co. ....	3,681
Pettinos Brothers. ....	3,078
T. P. Kelly & Co. ....	736
Perry, Ryer & Co. (custom brokers)	188
W. H. Dumont & Co. ....	187
W. H. Davies & Co. ....	80

44,013



## 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 telephone, 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, belting, 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, alkalis, 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.

The Stratford Mill Building Co., Stratford, Ont., have just installed a new 125 h.p. boiler, 66x16 inches, of their own manufacture. The company are making a number of other improvements.

The G. A. Crosby Co., Sarnia, Ont., are now building a complete line of machine tools.

The Low Water Electric Alarm Co., of which Dr. Alfred Graham, Detroit, is president, is preparing to erect a plant in Canada for the manufacture of this device.

The Mosiac Tile & Cement Brick Machine Co., Detroit, Mich., are interested in a Canadian company which will be formed to operate under their patents.

The Ontario Asphalt Block Co., Walkerville, Ont., have the contract for paving the extension of Victoria Street, Toronto.

The London Machine Tool Co. have enjoyed a very prosperous year, the business showing a decided increase over 1902.

The new plant of the Globe-Wernicke Co., at Stratford, Ont., has been in full operation for some time. The company have established salerooms in all the leading Canadian cities.

The new plant of the London Engine Supplies Co., London, Ont., has lately been put into operation.

Mr. Edward Ramage, manager of the Clyde Steel Works Toronto, who is superintending the extensive repairs now being done in the steamer Chicora, now in the Government Dry Dock at Kingston, Ont., informs us that the work is well advanced, and will be completed early in March, weather permitting. About 130 of the plates of the hull of the steamer have been removed and new ones substituted. The Chicora, which belongs to the Niagara Navigation Co., and plies regularly every summer between Toronto and Niagara-on-the-Lake, and Queenston, Ont., and Lewiston, N.Y., is one of the fastest and most popular steamers on Lake Ontario.

The Canada Wool Stock Co., Toronto, have been incorporated with a capital of \$20,000, to manufacture woolen and cotton waste, shoddy, etc. The provisional directors include Jas. M. Ewing and B. Osler, Toronto, and H. C. Gwyn, Dundas, Ont.

The Clark Blanket Co., Bullock Corners, Ont., have been incorporated with a capital of \$40,000, to manufacture blankets, woollens, etc., and to acquire the business of A. & J. Clark. The provisional directors include Jas. A. Clark, F. P. Thornton and John A. Clark, West Flamboro, Ont.

The Empire Power Co., Owen Sound, Ont., have been incorporated with a capital of \$500,000, to develop water powers for the production of electric, pneumatic and hydraulic power, etc. The provisional directors include J. M. Kilbourn, F. H. Kilbourn and H. B. Smith, Owen Sound.

The Dewey & O'Heir Ice & Fuel Co., Hamilton, Ont., have been incorporated with a capital of \$10,000, to manufacture builders' supplies, etc. The provisional directors include D. R. Dewey, H. O'Heir and A. O'Heir, Hamilton.

Messrs. Ritchie & Ramsay, Limited, New Toronto, Ont., have been incorporated with a capital of \$200,000, to manufacture pulp and paper and to acquire the business of Ritchie & Ramsay. The provisional directors include F. A. Ritchie, C. N. Ramsay and C. W. Meakins, Toronto.

The Fowlds' Co., Limited, Hastings, Ont., have been incorporated with a capital of \$40,000, to acquire the business of H. W. Fowlds & Co., and to manufacture lumber, etc. The provisional directors include J. D. Berry, C. R. Fowlds and E. S. Fowlds, Hastings.

The Gendron Mfg. Co. of Ontario, Toronto, have changed their name to the Gendron Mfg. Co., Limited.

The International Peat Co., Toronto, have been incorporated with a capital of \$250,000, to manufacture peat, aluminum, cement, etc. The provisional directors include F. White, J. J. Main, Toronto, and G. A. Griffin, Guelph, Ont.

The Leishman & Maundrell Co., Woodstock, Ont., have increased their capital from \$13,000 to \$100,000.

The Canada Corundum Co., Toronto, have just closed a contract with the Cortland Corundum Wheel Co., of Cortland, N.Y., for 450 tons of Craig Mine crystal corundum to be delivered during the year 1904. Mr. W. C. Fay, manager of the Cortland Corundum Wheel Co., who was

in Toronto a few days ago, states that the demand for wheels made from this Canadian product has grown to such an extent that they have had to increase the capitalization of their company in order to put up a new plant for the purposes of their business, their present works at Cortland being altogether inadequate to supply the demand for wheels made from this Canadian product.

Constructions, Limited, Toronto, have been incorporated with a capital of \$500,000, to construct buildings, etc. The provisional directors include J. W. Baylis, H. Taylor and Jas. Hall, Toronto Junction.

The Petewawa Power Co., Toronto, have been incorporated with a capital of \$250,000, to generate electricity, electric power, etc. The provisional directors include D. Duncan, M. P. V. Voort and Wm. Dawson, Toronto.

The Gilmour Door Co., Trantou, Ont., will increase their capital from \$100,000 to \$250,000.

The Leamington Oil Co., a United States incorporation have been licensed to do business in Ontario with a capital of \$100,000, N. A. Bartlet, Windsor, Ont., is their attorney.

The Pigeon River Lumber Co., a United States incorporation have been licensed to increase their capital in Ontario, from \$150,000, to \$350,000.

The Davis Leather Co., Newmarket, Ont., have been incorporated with a capital of \$150,000, to manufacture leather, etc. The provisional directors include E. J. Davis, A. Davis and M. Davis, King, Ont.

The Canadian Steam Boiler Equipment Co., Toronto, have been incorporated with a capital of \$75,000, to manufacture steam boilers, furnaces and boiler equipments, etc. The provisional directors include J. D. Macdonell, C. W. Laker, Toronto, and John Ellis, York, Ont.

The Victoria Cement & Power Co., Lindsay, have been incorporated with a capital of \$500,000, to manufacture Portland cement, brick, tile, sewer pipe, etc. The provisional directors include John Carew, J. P. Cummings and R. J. McLaughlin, Lindsay.

The J. M. Ross Sons & Co., Brampton, Ont., have been incorporated with a capital of \$299,000, to manufacture portable and traction engines, threshing machines, etc. The provisional directors include J. M. Ross, A. H. Ross and F. J. Ross, Brampton.

Jas. McTeigue, Port Arthur, Ont., is inviting tenders for laying 1,400 feet of submerged waterworks intake pipe and laying two submerged sewer outlets about 1,200 feet.

A by-law has been passed at Newmarket, Ont., granting a loan of \$10,000 to The Davis Leather Co., for the erection of a tannery.

Messrs. Warren Bros., Toronto, will erect a pulp mill at North Bay, Ont., at a cost of about \$100,000.

Work on the Metropolitan water power and power house at Britannia, near Ottawa, Ont., will be resumed at an

early date. Contracts have been let, and the work will be carried out under the supervision of John Kenney, consulting engineer, Montreal.

Application has been made to the Ontario Legislature for authority to extend the Nepigon Railway from Lake Nepigon northerly to a point of intersection with the projected Grand Trunk Pacific Line. The promoters also ask power to operate a ferry across Lake Nepigon, to carry on a general navigation business, and to construct and operate steamboats, elevators and water-powers.

Stephen Lusted, city clerk, Windsor, Ont., is inviting tenders for 24,000 square yards of asphalt paving blocks three inches thick and 450 barrels of Portland cement.

J. J. Mahaffy, Streetsville, Ont., is inviting tenders for laying 10,000 feet of cement walks.

The Canadian General Electric Co., Toronto, have received an order from the Toronto Electric Light Co. for two Curtis steam turbine generator units, of a capacity of 2,500 h.p. each. These are now being manufactured at the Peterboro' works of the company, and mark the beginning of the manufacture in Canada of the Curtis steam turbines, the Canadian General Electric Co. owning the patents for Canada. The new plant will be installed at the Electric Light Co.'s works, a new building for it having been erected during the past season.

The boiler at the Harrison Estate Roller Mills exploded February 10. Loss about \$5,000.

Messrs. Keith & Fitzsimmons Co.'s factory, Toronto, was damaged by fire Feb. 9. Loss about \$2,000.

The Dominion Bank Building, Toronto, was damaged by fire Feb. 9. Loss about \$2,500.

Messrs. Sheldon & Sheldon, Galt, Ont., the well known manufacturers of heating and ventilating apparatus have just installed a fan and heater with direct connected engine for the large stove and heading dry kiln at the plant of the Canada Sugar Refining Co., Montreal.

The Ontario Smelting Co. are successfully operating the only lead smelter now at work in Ontario. They are located at the old Wolff mine, near Bannockburn, Ont.

The Jesse Ketchum school, Toronto, was destroyed by fire February 8. Loss about \$20,000.

The American Cereal Co.'s mill at Peterboro, Ont., was damaged by fire February 12. Loss about \$15,000.

The City Treasurer has handed out a statement of the Toronto Railway Co.'s receipts for January, the receipts also during the five Januaries preceding, for comparison:

	Receipts.
January, 1904.....	\$177,496 65
January, 1903.....	161,201 06
January, 1902.....	137,770 05
January, 1901.....	122,132 50
January, 1900.....	114,719 00
January, 1899.....	96,029 90

Plans have been approved by the Minister of Public Works for the new national museum to be erected at Ottawa. The building will be 380 feet long, four stories and basement.

A company of promoters are seeking incorporation to construct a railway from Brantford, Ont., to Hamilton, Ont. Messrs. Wallace & Little are the solicitors for the promoters.

Architect E. J. Lennox, Toronto, has prepared plans for a proposed hotel building 500 feet long, to be erected on Toronto Island.

The Hamilton & Toronto Electric Railway Co. have purchased twelve acres of land at Toronto Junction, Ont., upon which they will erect repair shops.

The Niagara Falls Power & Electrical Co. have purchased a tract of land in Toronto Junction, Ont., upon which will be erected a power house for distributing the current from the Falls.

Wm. Hartley and Richard Chowen, the former boss dresser and the latter master mechanic of the Auburn Woolen Mills, Peterboro, Ont., have invented a warping reel attachment, upon which patents have been secured from the United States. The machine has recently been tested in one of the large woolen worsted mills in Lowell, Mass., and has been endorsed by the Lowell manufacturers. The inventors have formed a company to engage in the manufacture of the attachment, and are severing their connection with the Auburn Woolen Co. and will commence the manufacture of their invention in Lowell.

Messrs. Sterling Bros., London, Ont., are rebuilding their boot and shoe factory which was recently destroyed by fire.

It is proposed to form a union of the hydraulic lot interests at the Chaudiere with a view to jointly developing the latent powers of Ottawa's big waterfall, which includes the Ottawa Electric Co., the Bronson Co., the Ottawa Electric Railway, the Ottawa Investment Co., Mr. J. R. Booth, Mr. E. B. Eddy, and the Ottawa & Hull Power Companies. These concerns practically control the water powers on the two sides of the Ottawa River.

Messrs. Barclay, Glass & Co., Dundas, Ont., have been incorporated with a capital of \$20,000, to manufacture pianos, musical instruments, etc. The provisional directors include Alex. Glass, Wm. J. Barclay and F. W. Cropper, Hamilton, Ont.

The Ideal Women's Wear, Limited, Toronto, have been incorporated with a capital of \$40,000, to acquire the business of McKay Mfg. Co., and to manufacture womens' and childrens' wear, etc. The provisional directors include John Tanner, F. F. Allison and A. C. McMaster, Toronto.

The Toronto Window Cleaning Co., Limited, Toronto, have been incorporated with a capital of \$400,000, to acquire the business of the Toronto Window Cleaning Co., and to manufacture furniture, hardwood floors, etc. The provisional directors include J. B. Kay, W. T. Bradshaw and J. D. Montgomery, Toronto.

The Magee-Walton Co., Limited, Hamilton, Ont., have been incorporated with a capital of \$100,000, to manufacture ice and to acquire the business of The Magee-Walton Ice & Coal Co. The provisional directors include W. G. Walton, Wm. Magee and Jas. Sturdy, Hamilton.

Robert Stewart, Limited, Guelph, Ont., have been incorporated with a capital of \$100,000, to manufacture lumber, etc. The provisional directors include Robert Stewart, E. S. Singer and R. D. Stewart, Guelph.

Messrs. Jones Bros. & Co., Limited, Toronto, have been incorporated with a capital of \$60,000, to acquire the business of Jones Bros. & Co., and to manufacture barbers' supplies, druggists' sundries, etc. The provisional directors include S. Jones, R. J. W. Barker and G. B. Woods, Toronto.

The T. Eaton Co., Toronto, will greatly enlarge and improve the present extensive stores. Mr. E. J. Lenuox, architect, has been instructed to prepare plans for the improvements contemplated. The intention is to begin with the Yonge Street front, where two stories will be constructed under the street level, and the foundations will be made sufficiently strong to bear ten stories above ground should it be deemed necessary to go that high. The front will be stone and brick, and so constructed as to secure the maximum of light. As soon as the Yonge Street work is completed the Queen Street part will be rebuilt next, and then the James Street and the Albert Street to follow.

Messrs. Devlin & Dorain, Ottawa, have been awarded the contract for constructing a store-room for the Government Printing Bureau.

According to the calculations of the publishers of the Might City Directory, Toronto's population during the last year increased by 12,537. The 1904 directory contains 101,646 individual names, exclusive of firms, corporations, etc., an increase of 4,559 over last year's directory. Multiplying this number by 2 1/2, a low rate, the city's population is given at 279,526, as against 266,989 a year ago. This year is the first in which the number of names exceeds 100,000, and is a contrast with the 9,000 which appeared in the first directory published in 1833.

The Mayo Mining & Development Co., Windsor, Ont., have been incorporated with a capital of \$250,000, to carry on a mining, milling and reduction business. The provisional directors include R. Harcourt, Toronto; Geo. Campbell and O. E. Fleming, Windsor.

The Peterborough Fuel & Cartage Co., Peterborough, Ont., have been incorporated with a capital of \$40,000, to carry on a general cartage and fuel business. The provisional directors include J. H. McClellan, A. Parker and F. D. Kerr, Peterborough.

Coal receipts for the year per vessel were as follows, viz., anthracite coal, 132,363 tons; bituminous coal, 39,414 tons; in all 171,787 tons, being 45,588 tons in excess of 1902, and 12,044 tons less than in 1901. The total quantity of coal imported into Toronto per rail and

vessel for the year, as per Government returns, is as follows, viz., anthracite coal, 483,188 tons; bituminous coal, 614,563 tons; in all 1,097,651 tons, being an increase of 320,473 tons over last year.

The Berlin, Waterloo, Wellesley & Lake Huron Railway Co. contemplate the construction of a railway from Wellesley, via Stratford and St. Mary's, to Clinton, Ont., and thence to Bayfield, Ont.

The Guelph Junction Railway will build a line from Guelph to Goderich, Ont., with a branch to Listowel, and another branch to St. Mary's and Clinton, via Stratford, Ont.

The Toronto & Niagara Power Co. have awarded to Mr. Dickenson, Hamilton, Ont., the contract for fencing the right of way for the power line from Toronto to Niagara Falls, Ont. The survey was completed some time ago and the contractor will begin the work of fencing as soon as spring opens.

A syndicate of capitalists, with Mr. J. J. Warren, Toronto, at the head, are considering the establishment of large pulp mills at North Bay, Ont., which will cost about \$200,000.

The report of the Crown Lands Department on the timber cut during the season 1902-3 shows an increase over the previous year in the output of sawlogs and boom timber, but a decrease of 40 per cent. in square timber. The figures for the last three years are as follows: 1900-1, sawlogs and boom timber, 636,444,848 feet, B.M., square 1,755,881 cubic feet; 1901-2, sawlogs and boom timber, 659,365,623 feet, square, 1,468,756 feet; 1902-3, sawlogs and boom timber, 785,968,481 feet, square 806,777. The estimated output for the present is sawlogs and dimension timber, 750,000,000 feet, B.M., square, 1,300,000 cubic feet.

A Canadian manufacturers' show room will be established at Kingston, Jamaica, for the purpose of pushing the sale of Canadian manufactured articles on that island.

The Wright Hat Co., London, Ont., have leased a building in Hamilton, Ont., where they will manufacture straw and felt hats.

The Ottawa, Northern & Western Railway Co. propose to extend their main line from the present terminus to James Bay and to build a branch from Lake Temiskaming.

The Hamilton, London & Lake Erie Railway Co. are applying for incorporation to build an electric railway from Hamilton to London, St. Thomas, Strathroy and other places in Western Ontario. The charter members include L. Harris, Brantford; H. C. Osborne and S. Watson, Toronto.

The Walkerton & Lucknow Railway Co. are applying for incorporation to construct and operate a line of railway from Walkerton to Lucknow, via Teeswater, Ont.

The Bracondale Public Library and J. E. Edwards & Co's. leather factory at Bracondale, Ont., were partially destroyed by fire February 13.

Henry Simpson, a Toronto architect,

has prepared plans for a large building, containing music hall, offices, lodge rooms, etc., to be erected at Owen Sound, Ont.

The Ottawa & New York Railway is to be converted into an electric line sometime during the present year.

The Berlin Felt Boot Co's. factories at Berlin, Ont., were destroyed by fire February 16. Loss about \$100,000.

The E. Fair building at Collingwood, Ont., was destroyed by fire February 2. Loss about \$33,000.

Mr. W. K. McNaught, president of The American Watch Case Co. (and chairman of the tariff committee of the Canadian Manufacturers' Association), paid a visit to the United States last month for the purpose of ordering additional machinery for their factory. The business of this company has grown very rapidly, and they are at present employing about one-third more hands than they did a year ago, with a corresponding increase in their product. Not only is their product equal in quality and finish to any imported goods, but the Canadian jewelry trade will find, we are told, that they can save the entire duty of 30 per cent. which is levied upon imported goods by purchasing those manufactured by The American Watch Case Co. We trust that Mr. McNaught will not be considered a wolf in sheep's clothing because he gave the preference to United States machinery instead of to that "made in Canada" or Great Britain.

The Laprairie Brick Co., Limited, Montreal, have been incorporated with a capital of \$300,000, to acquire the business of The Laprairie Brick Co., and to manufacture bricks, tiles, etc. The provisional directors include P. Lyall, J. W. Tester, and T. A. Trenholme, Montreal.

The Commercial Hotel, Buckingham Hotel, and several blocks of stores at Buckingham, Que., were destroyed by fire February 5. Loss about \$100,000.

La Compagnie de Tannerie de Quebec, Quebec City, have been incorporated with a capital of \$100,000, to manufacture leather, etc. The provisional directors include J. F. Gourdeau, F. Gourdeau and E. Racine, Quebec City.

The D. B. Martin Co., Montreal, have been incorporated with a capital of \$100,000, to manufacture oil, stearine, tallow, etc. The provisional directors include H. F. Cook, Westmount, Que.; E. F. Surveyer and D. Armour, Montreal.

The Electric & Train Lighting Syndicate, Montreal, have been incorporated with a capital of \$150,000, to manufacture electric and mechanical devices. The provisional directors include R. A. Ross, W. G. Throsby and W. J. King, Montreal.

Le Credit Universel, Limited, Montreal, have been incorporated with a capital of \$10,000, to manufacture jewelry, musical instruments, etc. The provisional directors include A. Houle, J. E. Audet and J. A. Caron, Maisonneuve, Que.

Messrs. McIntyre, Son & Co., Limited, Montreal, have been incorporated with a

capital of \$1,250,000, to acquire the business of McIntyre, Son & Co., and to manufacture textile fabrics, etc. The provisional directors include Wm. C. McIntyre, J. K. Whyte and F. J. Shaw, Montreal.

The Peerless Gas Light Co., Montreal, have been incorporated with a capital of \$49,000, to manufacture incandescent gas light mantles, gasoline, acetylene, etc. The provisional directors include W. J. Poupore, J. G. Poupore and S. G. Bergevin, Montreal.

The authorities of the town of St. Johns, Que., have given a contract to T. A. Morrison & Co., Montreal, for a steel champion stone crusher, having a capacity of 125 tons a day.

The Canadian Pacific Railway Co. have placed an order for five dining cars, 15 standard sleepers and 25 tourist sleepers to be constructed in their shops in Montreal.

The Montreal Water & Power Co., Montreal, will install a system of filtration.

The Montreal Harbor Commissioners will add a 50-ton floating crane to the equipment of the port, at a cost of \$60,000.

The Fabre Building, Montreal, was destroyed by fire February 2. Loss about \$40,000.

The Journal of Commerce Building, Montreal, was destroyed by fire February 5. Loss about \$50,000.

The Cedar Rapids Mfg. & Power Co. are applying for a charter, with power to develop and operate waterpowers on the River St. Lawrence, in the County of Soulanges, Que.

The water power of the St. Francis Falls, opposite Kingsey, Que., will be utilized and put in operation the coming summer. Messrs. E. W. Tobin, of Brompton, Que., and F. N. McCrea, of Sherbrooke, Que., have acquired the land on both sides of the river, in the vicinity of the falls. They will probably have a roadway constructed, and an electric plant installed. It is also said to be their intention to put up a pulp mill near Richmond, Que.

The French River Boora Co., Limited, will apply for legislative authority reducing the capital from \$50,000, to \$25,000, and extending the corporate existence of the company for a further period of 21 years from January 1, 1905.

The Brompton Pulp & Paper Co., Brompton, Que., are building a new dam on the river at Brompton and they will erect a paper mill in the spring.

Messrs. E. Riley & Co., St. John, N.B., have changed their name to the Dominion Milling Co.

The Enterprise Foundry Co., Sackville, N.B., have increased their capital from \$40,000 to \$100,000.

The Hillsboro' Woodworking & Mfg. Co., Hillsboro', N.B., have been incorporated with a capital of \$5,000, to manufacture furniture, etc. The provisional directors include J. L. Peck, W. B. Sleeves and H. L. Steeves, Hillsboro'

The J. W. Scovil Co., St. Stephen,

N.B., have been incorporated with a capital of \$20,000, to manufacture clothing, etc. The provisional directors include J. W. Scovil, F. E. Grimmer, St. Stephen, and Jas. M. Scovil, St. John, N.B.

Mr. F. R. Butcher, Annapolis, N.S., will erect a brick block 90x70 feet.

A. S. McDonald, Baddeck, N.S., is inviting tenders for building an addition to the academy and for the remodelling of the old school building.

The Canada Glass Co. are considering the establishment of glass works at Sydney, N.S.

Messrs. Wm. Currie & Co., Campbellton, N.B., have been incorporated with a capital of \$70,000, to manufacture shingles, furniture, agricultural implements, etc. The provisional directors include Wm. Currie, Campbellton; J. M. Maclean, Sussex, N.B.; and D. Maclean, Apple River, N.S.

Work on the new steel plants of the Dominion Iron & Steel Co. at Sydney, N.S., is progressing rapidly and it is expected some of the mills will be turning out finished product in about a month. With the increased consumption of steel products in Canada and the liberal bounties granted by the federal government on the home product those engaged in the development of the industry look for a great future for it.

Announcement has been made at Sydney, C.B., by the Strait of Canso Bridge Co., that a Kansas City firm of engineers have been commissioned to prepare plans for the proposed bridge across the Strait of Canso. The Cantilever span will be 1,800 feet and will rest on two abutments of steel, 40 feet in diameter. The length of the bridge will be 3,300 feet. Thirty-five thousand tons of steel will be required and the estimated cost is \$5,000,000.

The Dominion Iron & Steel Co., are erecting a large coal washing plant in connection with their works at Sydney, N.S. The plant will cost about \$150,000 and will have a capacity of washing over two thousand tons a day. It is expected to have the work completed about May.

A syndicate of Canadian and American capitalists, have been formed to develop and operate extensive submarine coal areas at South Head, Port Morien, N.S. These areas comprise 27 miles, and are estimated to contain 240,000,000 tons of coal.

The town council of Sydney, N.S., are taking steps to establish municipal ownership of a gas plant to cost about \$75,000.

The George F. Bryan Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture brooms, brushes, etc. The provisional directors include G. F. Bryan, H. G. Spurgeon, and A. Tremblay, Winnipeg.

The Coltart & Cameron Co., Limited, Winnipeg, Man., have been incorporated with a capital of \$100,000, to acquire the business of Coltart & Cameron and to manufacture hardware, etc. The provisional directors include John Coltart, Wm. S. Cameron, and James Johnston, Winnipeg.

Messrs. Kerr, Bawlf, McNamee, Limited, Winnipeg, Man., have been incorporated with a capital of \$20,000, to manufacture caskets, undertakers' supplies, etc. The provisional directors include Jos. Kerr, J. B. McNamee and M. Kerr, Winnipeg.

The S. S. Mayer Medicine Co., Winnipeg, Man., have been incorporated with a capital of \$20,000, to manufacture horse and cattle medicines, etc. The provisional directors include S. S. Mayer, Cartwright, Man., H. W. Hettle, Crystal City, Man., F. W. Young, Boissevain, Man.

A new brick office building four stories high will be erected in Winnipeg, Man. Mr. H. L. Wilson, of that city, is interested.

The Snow Bank Bridge of the Canadian Pacific Railway near Winnipeg, Man., has been swept away by a snow slide. A new bridge will be erected.

Winnipeg's city directory for 1904, issued by Henderson & Co. estimates Winnipeg's population at 77,304, an increase of 13,744 for the year.

The Secretary-Treasurer of Lethbridge, N.W.T., is inviting tenders for the masonry foundation, pumping machinery, boilers, well and galleries, and pump house for the new water works system.

A by-law was passed at Calgary, N.W.T. to provide \$70,000 for the erection of public schools.

The British Columbia Mica Co., Kamloops, B.C., have been incorporated with a capital of \$1,000,000, to carry on a mica mining business, etc. F. J. Fulton, Kamloops, B.C., is the attorney.

The International Gold Mining Co., Whatcom, Washington, have been licensed to do business in British Columbia, with a capital of \$15,000. J. Martin, Vancouver, B.C., is the attorney.

The Poplar Power & Light Co. have been incorporated at Victoria, B.C., with a capital of \$15,000, to construct and operate electric works, power houses, etc.

The Pacific Mineral Extraction Co., Vancouver, B.C., have been incorporated with a capital of \$100,000, to acquire the business of The Universal Gold, Silver & Platinum Extraction Syndicate, and to manufacture machinery, etc.

Mr. W. R. Townsend, of New York city, informs us that he will probably go into a coal mining enterprise in the vicinity of Moncton, N.B.

Even the appalling fire which recently swept a large part of Baltimore out of existence will benefit some. The salvage companies, who salvage goods damaged by fire and sell them for the benefit of the fire insurance companies, will profit by this loss. The goods damaged must be carefully dried before they become saleable, much depending upon the success of this drying. The Underwriters Salvage Co. of New York City recently placed an order with the B. F. Sturtevant Co. of Boston, Mass., for the complete equipment of a kiln for drying such goods by the Sturtevant fan system. The kiln is divided into small rooms of various widths served by overhead tracks from which are suspended frames for supporting two tiers of baskets

for the reception of the water soaked material. These rooms are of fire-proof construction and the size is governed by the material to be dried. Hot air is diffused through the rooms while the amount of air and its temperature is easily controlled. The drying is positive, economical and always independent of the weather. The kiln is not only equipped with the Sturtevant apparatus for drying, consisting of a Sturtevant steam fan connected to a Sturtevant fire-proof heater and galvanized iron distributing pipes, but the entire material and workmanship for making the rooms fire-proof was furnished by the B. F. Sturtevant Co.

The O'Brien Brewing & Malting Co., Klondike City, Y.T., have been incorporated with a capital of \$200,000, to carry on the business of brewers and maltsters, etc. The provisional directors include T. W. O'Brien, Klondike City, and J. R. Howard and D. H. McKinnon, Dawson City, Y.T.

The Pittsburg Shafting Co., Detroit, Mich., inform us that they have just contracted through Messrs. McKeough & Trotter, of Chatham, Ont., to equip the plant of Messrs. Wm. Gray & Sons Co. of that city with shafting, etc., including Hyatt Roller Bearings. They had formerly equipped the plants of the Cockshutt Plow Co., of Brantford, Ont., the Toronto Brass Works of Toronto; and the McClary Mfg. Co. of London, Ont. with these power saving roller bearings.

The maximum boiler horse power in central power stations is only attained during a few hours of the day. During the greater part of the day the capacity required is much less than this maximum. On this account it has been found economical and practical to design the boilers and chimneys of ample capacity for this load and to force them above and up to the maximum by means of mechanical draft. This is applied with equal success to old and new plants. In the new power station of the Denver Tramway Power Co., Denver, Col., mechanical draft is used as an auxiliary to the natural draft provided by a chimney 240 feet high. Artificial draft is furnished by three Sturtevant electrically driven Steel Plate Fans. The boiler capacity of the plant is approximately 6,000 h.p.

#### AN OPPORTUNITY.

Messrs. A. C. Leslie & Co., Montreal, inform us that they are in correspondence with a leading English manufacturer of a patent ice-making and refrigerating machine, made in different sizes, who wish to become in correspondence with some reliable Canadian engineering concern who would purchase the Canadian patent, or to manufacture the machines under royalty. The English company make an extensive line of such machines, which can be operated by electricity, gas, oil or steam, at prices running from \$250 upward. Any interested in this matter should write to Messrs. A. C. Leslie & Co. as above, for further information.

## OPPORTUNITIES.

The following enquiries have been received at the offices of the High Commissioner for Canada in London, and at the Canadian Section of the Imperial Institute, London, England.

**NOTE.**—Those who may wish to correspond with any of these enquirers can obtain the names and addresses by applying to the CANADIAN MANUFACTURER, Toronto. No charge for giving information. When writing refer to the numerals opposite the enquiries, and enclose 2c. postage stamp for reply.

1183. The makers of a sheep-dip and other disinfectants are seeking to do business in Canada, and have made enquiry to this end.

1184. Some additional agencies are sought by a person who is shortly proceeding to Canada, and who has a knowledge of the textile trade.

1185. A firm of implement makers are seeking supplies of spade, shovel and fork handles from Canada.

1186. A gentleman with a thorough knowledge of the hardware, paint and glass trades is prepared to undertake the representation in England of a Canadian house of good standing.

1187. Enquiry is made by a Dublin firm for names of Canadian exporters of oaken and soft wood shives.

1188. A firm manufacturing metal shelf brackets, door handles, hinges, hat and coat hooks, etc., are seeking a market for these goods in Canada.

1189. Enquiry is made for the address of a Canadian manufacturer of a certain cement or glue largely used by musical instrument makers.

1190. A Glasgow firm of grain and flour merchants is desirous of taking up the representation of a Canadian house.

1191. Enquiry is made for Canadian exporters of oak mouldings for picture frames.

1192. A timber firm engaged in the Australian trade has asked to be furnished with a list of the various lumber mills in Canada, and of lumber exporters.

1193. The manufacturers of gelatine oil, suitable for lubricating and harness purposes and also veterinary use, are desirous of introducing the oil into Canada, and invites correspondence from firms interested.

1194. A Manchester, England, house asks to be placed into communication with Canadian producers of fruit pulps.

1195. A firm manufacturing paints, oils, colors, varnishes and greases, wish to do business in Canada and are prepared to appoint suitable Canadian resident agent.

1196. An import and export house more especially interested in chemicals, oils, drysalteries, wish to hear from Canadian firms, seeking either buying or selling agents in the United Kingdom.

1197. A gentleman possessing a connection in South America would like to get into touch with Canadian manufacturers of cotton goods of all kinds who may wish to endeavor to develop trade. He is about to return to South America. Good references.

1198. A firm of flour merchants in Liverpool, England, are desirous of establishing a connection with some first-class Canadian mills able to give large and regular supplies.

1199. The agency for a reliable Canadian firm of provision exporters is desired by a London agent with experience of the trade.

1200. A London, England, firm having a branch in South Africa, are desirous of opening up business with Canadian houses for the export of goods to South Africa.

1201. Enquiry is made for names of Canadian furniture manufacturers in a position to export office furniture, roll-top desks, chairs, etc., for English and Scotch markets.

1202. A London, England, agent with a knowledge of the hardware, novelty and woodenware trades, is seeking a few good Canadian agencies for the United Kingdom.

1203. A German firm are desirous of entering into correspondence with a good Canadian house with a view to importing Canadian products, more especially apples, applechop and evaporated apples.

## GOLD DISCOVERY IN BRITISH COLUMBIA.

United States Consular Agent Ohren, at Rossland, B.C., writes to his Government as follows:

Another big strike of free-milling gold quartz has been made on Poplar Creek, which empties into the Lardeau River, the outlet of Trout Lake in the Trout Lake district of British Columbia.

There is quite a little romance connected with the discovery of this rich deposit. It seems a prospector had been grub-staked by some of his friends to go into the hills and prospect for them, but in the course of a game of cards lost his money and provisions. Nothing daunted, he set out on foot to go to the place he had originally intended. Arriving at Poplar Creek he was overtaken by "that tired feeling" and determined to stake a claim on the near-by hills to say he had done something. To his own surprise he staked a valuable claim, as he found numerous small ledges carrying free gold in them. The prospector's surprise at these small discoveries was nothing to what it was when other prospectors passing that way broke a piece of rock off a ledge at the foot of the hill and found that the gold nearly held the particles together as in a chain. This last strike was made on what is now called the Lucky Jack. Since that date a tunnel has been driven on the Lucky Jack vein for about 300 feet, and the ore is immensely rich in the end of the tunnel. Some of the ore on the Lucky Jack is computed to run at thousands of dollars to the ton. The writer has seen samples as large as a coconut broken up, but held together by the network of gold throughout the sample.

A town has sprung up, and there are now seven hotels and many other places of business. Lots which sold originally for \$100 are now held at \$300, \$900, and even \$1,100; others, of course, away from the centers, are not held as high.

There will be a good opportunity for machinery men. The British Columbia Consolidated and the Great Northern mines have both applied for water rights on Poplar Creek, and mills are to be erected at an early date. Vanners, concentrating tables, piping, belts, pulleys, dynamos, wiring, cables, tramways, compressors, boilers, drills, ore cars, picks, shovels, sawmill machinery, hotel supplies, canned goods, smoked and preserved provisions, lard, bacon, hams, groceries, and dry goods will be required there in the spring.

## INDUSTRIAL PUBLICATIONS.

A valuable handbook on the location and examination of magnetic ore deposits by magnetometric measurements has just been published by the Department of the Interior. Dr. Eugene Haanel, superintendent of mines, the author of this work, has given full descriptions and developments of the theories of all the modern instruments now employed in magnetometric field work, also detailed instructions for the application of the different methods in determining the location, extent and depth of magnetic ore deposits. The many fine illustrations in the text and the beautiful colored plates in the back of the book will be of great service to the reader in gaining a grasp of the subject. It will be found to be the most complete handbook on this important subject yet published. The value of magnetic instruments for locating magnetic ore deposits has been proved and found indispensable in Sweden, where magnetometric methods have been used for more than twenty years. Since a great part of the iron ores in Canada is magnetite, and the methods are also applicable in determining the location and extent of the valuable nickeliferous pyrrhotite, the publication is especially opportune in facilitating the examination of these now very important ore deposits. For districts covered by swamps or where the deposits are otherwise buried, the methods are of special value, and, when used by competent men, a large percentage of the money spent in needless prospecting will be saved. Dr. Haanel's work will, therefore, prove of special advantage to the mining profession, in aiding them economically to develop the magnetic ore deposits of Canada, and indispensable to mining schools which desire to take up this subject as part of their curriculum.

The F. E. Reed Co., Worcester, Mass., manufacturers of a standard line of engine lathes, hand lathes, foot lathes, etc., have sent us a circular giving the names of more than 200 educational institutions in the United States, Canada and other countries using lathes made by them.

Carey's coverings is the burden of the latest publication from the Philip Carey Mfg. Co., Lockland, Ohio. The firm manufactures carbonate of magnesia, asbestos sectional steam pipe and boiler covering, magnesia flexible cement roofing, asbestos materials and roofing paints.

The January number of the Bulletin of the National Metal Trades Association appears in a new and attractive cover.

On its last page is printed the "roll of honor" of the association, containing the names of members boycotted by unions. In accordance with a resolution passed at the Buffalo convention of the association, every member is notified of a boycott on any firm belonging to the association and members in making purchases give the preference to such firms over all competitors until the boycott is declared off.

Milton O. Cross & Co., Detroit, manufacturers of gas and gasoline engines and electrical supplies, are sending out a catalogue calling attention to these lines.

The Jas. C. Woodley Co., Chicago, issue a monthly stock list of steel roofing and sheet metal workers' supplies, which they will be glad to mail on application.

The Bemis Indianapolis Bag Co., Indianapolis, Ind., have sent us a very beautiful linen-mounted hanger wall calendar for the current year. It embodies representations of some thirty-four different American song birds, each page showing different birds, all colored true to nature. It is unique and instructive.

The initial issue of The Electric Club Journal has reached this office. This most interesting journal is published monthly by The Electric Club, Pittsburg, Pa., which has recently been organized to provide a means for the effective cooperation among Westinghouse men in their engineering improvement and social recreation. The journal will print a judicious selection of what is best in the current work of the club, supplemented by other appropriate engineering material. The frontispiece of the journal is a most excellent photogravure of Mr. George Westinghouse. The subscription price is \$1 per year.

The S. R. Smythe Co., Pittsburg, Pa., have sent us a treatise descriptive of important essential and interesting facts pertaining to suction producer gas for power, competitive with illuminating gas, natural gas, gasoline, steam, or other power elements, concerning principally the development, operation and installation of gas engines. This producer gas is generated automatically by and for gas engines under a process for which the S. R. Smythe Co. are now applying for patents; and they say that they are confident that they can successfully compete with illuminating gas and other power agents, and can demonstrate that by the adoption of their system the gas engine can be still further promoted for innumerable purposes not now in vogue; at locations where high-priced fuel and isolated points, distant from fuel supplies, makes the installation prohibitive.

"Memo of Facts re Municipal Power Development" is the title of a brochure published by Mr. P. W. Ellis, Toronto, on behalf of the Commissioners recently appointed by the Ontario Government in compliance with an Act of the Legislature entitled "An Act to provide for the construction of Municipal Power Works and the transmission, distribution and supply of electrical and other power and energy." The Act confers large powers upon Ontario municipalities in regard to the development, transmission and sale of power, including heat and light. The

memo contains facts and suggestions which, of course, should command the attention of actual or proposing power users in Ontario.

February 22 is a Saint's Day in the United States calendar of notables, being the day upon which the great and immortal George Washington was born in 1732. George, as our readers will remember, was the young chap who could not prevaricate so small a matter as using his hatchet in chopping old Mr. Washington's cherry tree, and when accused of it, denied the act, for he could not tell a lie, and forthwith laid the blame on Tom Jefferson. The Joseph Dixon Crucible Co., in commemoration of the birthday of the immortal George, are sending out a useful desk blotter containing an excellent picture of the old gentleman done with the celebrated Dixon American graphite pencil.

The O. J. Mulford Advertising Co., Steven's Building, Detroit, have issued a very attractive booklet relative to the lines of advertising which they cover. Mr. M. C. Rollo, who has a wide experience in this line of work, is in charge of the industrial trade paper department of the company.

The Ontario Asphalt Block Co., Walker ville, Ont., of which Mr. R. Bangham is general manager, have prepared a booklet relating to their asphalt blocks which are now quite generally used for paving purposes in Ontario.

The American Cotton Manufacturers' Publishing Co., Charlotte, N.C., recently chartered, have perfected organization by electing a board of directors, who subsequently elected the following officers: George B. Hiss, president; R. M. Miller, Jr., vice-president; C. B. Bryant, secretary and treasurer. Mr. Wm. Whittam has accepted the position of editor of The American Cotton Manufacturer, which is one of the publications which will be published by the company.

"The Manufacturers' List Buyers' Guide of Canada," just published, is undoubtedly the greatest effort yet made in Canada to gather and classify the names and addresses of Canadian manufacturers, as well as the character of goods made. A word must be said regarding the unusually complete manner in which the book is indexed; the index is thorough, and enables one to find the desired article in the least time. This is a very desirable thing in a work of this kind, and the system of cross indexing here employed is most complete. The book contains 570 pages of 7½ by 9½ inches and 11,000 addresses of Canadian manufacturers, and it should prove of very great value in any office.

The second edition of catalogue No. 115, the general condensed catalogue of the B. F. Sturtevant Co., Boston, Mass., is now ready for distribution. This catalogue describes and illustrates a number of new apparatus manufactured by this enterprising company, among which are: A new type of hand-blower; several new types and sizes of forges; new sizes of vertical single and double engines; a new type of enclosed vertical compound engines; new type of semi-enclosed bipolar and 4-pole motors; new sizes of

generating sets with vertical compound engines; factory equipments, such as bench-legs, pattern storage shelf brackets, electric hoists, cast iron sinks, trench cover-plates, etc.; industrial railway equipments, such as cars, truck ladles, turn-tables, T-rails, etc. It also contains a description of the various Sturtevant systems, such as heating and ventilating, special ventilating, drying, conveying and mechanical draft systems.

#### PERSONAL.

Mr. George O. Buchanan, Kash, B.C., has been appointed inspector of lead bounties in that province.

Messrs. Paul B. Morgan and Victor E. Edwards, of the Morgan Construction Co., Worcester, Mass., are now in Europe on business connected with contracts recently received for a continuous hoop mill for *Gewerkschaft Deutscher Kaiser*, Bruckhausen am Rhein, Germany, and continuous merchant bar mill for *Rheinische Stahlwerke*, Meiderich, Ruhrort, Germany.

Mr. P. H. Wilhelm, formerly representing the New York Car Coupler Co., the Washburn Car Coupler Co., the Buckeye Malleable Iron & Coupler Co., the Railroad Supply Co., of Chicago, with headquarters at Atlanta, Ga., has accepted a position as railroad representative of the American Steam Gauge & Valve Mfg. Co., Boston, Mass., with branch offices at New York, Chicago, Philadelphia and Atlanta, Ga. Mr. Wilhelm has spent the greater portion of his life in the actual railroad service and it will be remembered that in 1893 he was, on the recommendation of the majority of the railroads, appointed division superintendent of transportation at the World's Fair in Chicago. After the close of that exposition, he took up the active business of railroad supplies which he has followed up to the present time. Mr. Wilhelm has been very prominently mentioned for the position of superintendent of transportation at the St. Louis Exposition but prefers to remain in the active railroad supply business. The American Steam Gauge & Valve Mfg. Co. now have one of the largest plants in the country devoted to the manufacture of steam and other gauges, safety valves, steam engine indicators, whistles and steam supplies in general, and being the oldest house in this country in their particular line, Mr. Wilhelm will certainly be able to keep up his reputation of representing one of the best houses in the country.

The O. W. Shipman Co., Detroit, Mich. the well-known dealers in coal and coke, have been in business for over a quarter of a century, and are in position to give Canadian manufacturers the very best service possible, either by the eastern gateway at Buffalo, or the western gateway at Detroit. From the fact of their carrying a large stock of coal on track at Detroit, they are enabled to reconsign to their Canadian patrons on extremely short notice. They can make shipments either by rail or lake. Owing to a wide experience in the business they are enabled to meet the requirements of the

trade perfectly. The company maintain a Canadian traveller, Mr. J. Brownlee, Galt, Ont., who is thoroughly posted on the requirements of the Canadian markets and well known to Canadian manufacturers and other fuel users. Messrs. F. B. Stevens is president of the company, John B. Corliss, vice-president, and Geo. D. Waudless, general manager.

John Bozt, who was formerly connected with the Dominion Iron & Steel Co., of Sydney, N.S., is now assistant superintendent of the blast furnace department of the Maryland Steel Co., of Sparrow Point, Md.

Mr. A. G. Anderson, late manager for Messrs. Angus & Co., London, England, and Mr. W. S. Y. Anderson, recently arrived from England, visited Mayor Palmer of Fredericton, N.B., in connection with establishing a furniture factory there.

The National Association of Marine Engineers, in convention at Kingston, Ont., January 29, decided to publish an official journal monthly. The officers elected were: Grand president, Thos. J. S. Milne, Kingston; vice-president, N. Ducap, Montreal; grand secretary-treasurer, N. J. Morrison, St. John, N.B.; grand conductor, Charles Robertson, Owen Sound; grand doorkeeper, A. L. March-

and, Montreal; grand auditors, James Gillie, Kingston, and E. M. Garrity, Toronto. The next meeting of the grand council will be held at Collingwood on the fourth Tuesday in January, 1905.

#### MINING ENGINEERS' CONVENTION.

The annual meeting of the Canadian Mining Institute will be held at the King Edward Hotel, Toronto, on March 2, 3 and 4. The following is a preliminary announcement of the syllabus of papers so far arranged: Presidential address, by Eugene Coste, E.M., Toronto; Hydraulic Mining in the Yukon: Its Present and Future, by Lucien J. Robe, C. and M.E., Dawson, Y.T.; The Evolution of Mining Practice in the Yukon, by A. J. Beaudette, M.E., Dawson, Y.T.; Exhibition of lantern slides illustrating mining practice in the Yukon and Cariboo gold fields, by B. T. A. Bell, Ottawa; On the Construction of Mine Bulkheads, by W. Thompson, Rossland, B.C.; On Gold Dredging, by John E. Hardman, S.B.E.M., Montreal; On Certain Conditions of Coal Mining in the Crow's Nest Pass, B.C., by Jas. McEvoy, M.E., Fernie, B.C.; On the Bornite Ores of British Columbia and the Yukon, by W. M. Brewer, M.E., Victoria, B.C.;

On the Nickel Deposits of Norway, by Major R. G. Leckie, M.E., Sudbury; On the Electric Smelting of Iron Ores, by Dr. Eugene Haanel, Ottawa; The Geological Survey of Canada as an Educational Institution, by Prof. T. L. Walker, Toronto; On the Opening Up and Development of Mines, by D. G. Kerr, C. & M.E., Cordova; The Undeveloped Mineral Resources of Ontario, by W. G. Miller, Provincial Mineralogist; On the Manufacture of Sulphuric Acid, by C. A. Messieur, Sydney, C.B.; On the Mines of Ontario (illustrated by lantern), by W. T. H. Carter, M.E., Toronto; On the Genesis of the Animikie Iron Range, by F. Hille, Port Arthur; The Year's Progress of Mining in Ontario, by T. W. Gibson, Director of Mines; On Magnetic Separation, by F. G. Snyder, Chicago; On a Water Supply for Hawaiian Sugar Plantations, by I. N. S. Williams, Puunene, H.I.; Subject not yet announced, by Frederic Kefler, M.E., Anaconda, B.C.; The Early History of Mining in the Sudbury District, by J. W. Evans, C.E., Deseronto; Subject not announced, by A. C. Garde, M.E., Soudon, B.C.; On the Carboniferous Strata of New Brunswick, by Dr. H. M. Ami, Ottawa; Subject not yet announced, by E. B. Kirby, E.M., Rossland, B.C.

The programme includes an excursion to Niagara Falls, and a banquet.

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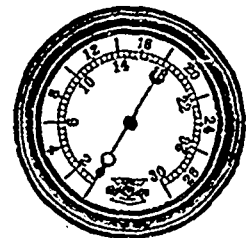


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The twentieth annual convention of the Master Painters and Decorators Association of the United States and Canada, held in Toronto, was brought to a close last week. Officers for the ensuing year were elected as follows: President, John Dewart, Pittsburg, Pa.; vice-president, Oliver S. Ross, Chicago, Ill.; secretary-

treasurer, William E. Wall, Somerville, Mass.; executive committee, Wood Pratt, Wheeling, W. Va.; R. H. Longstrom, Chicago, Ill.; William G. Baxter, Hartford, Conn.; H. Frank Read, Providence, R. I.; C. H. Fowler, Philadelphia, Pa.; George J. Lang, Cleveland, Ohio; Thomas Gwilliam, Baltimore, Md.; S. H.

Hughes, Toronto, Ont.; A. D. Wharton, Picton, Ont.; A. H. McChan, Washington, D. C.; W. A. Houston, Lawrence, Mass.; J. W. Morley, Winnipeg, Man., and Samuel J. Brown, Milwaukee, Wis. Milwaukee was selected as the next place of meeting, Boston making a strong bid for the convention.



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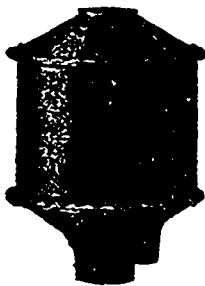
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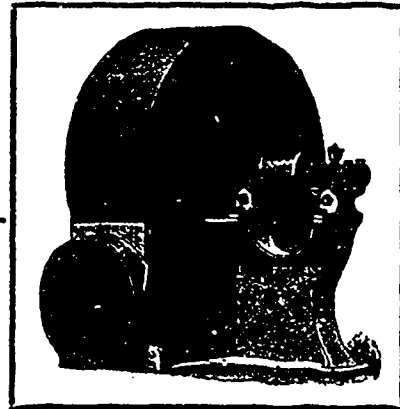
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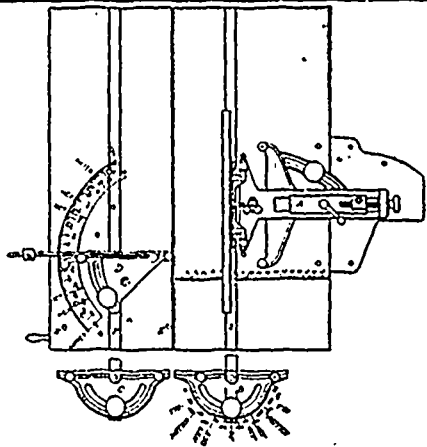
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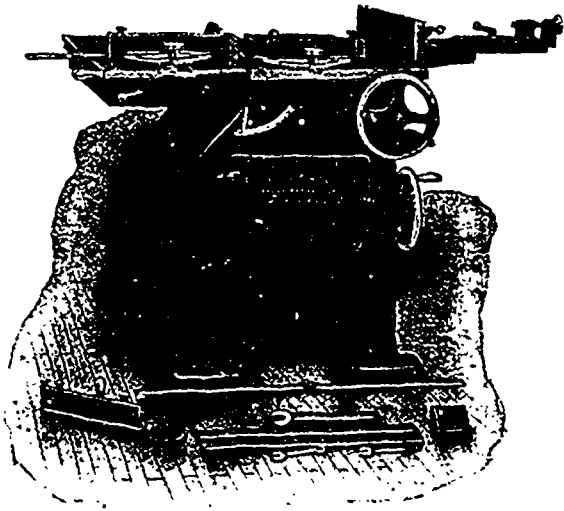
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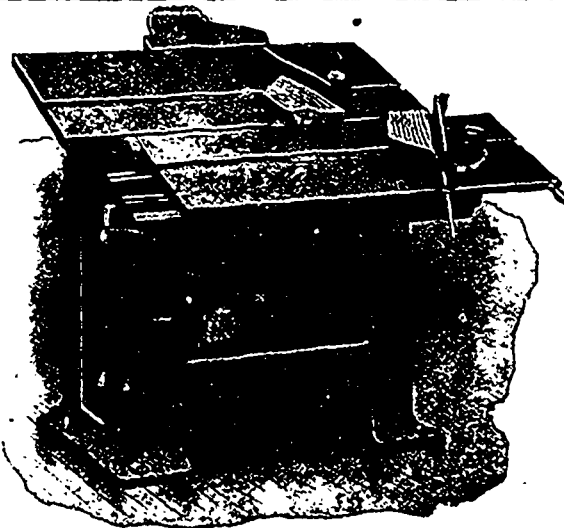
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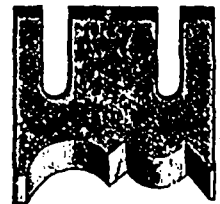
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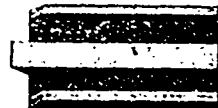
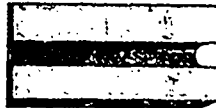
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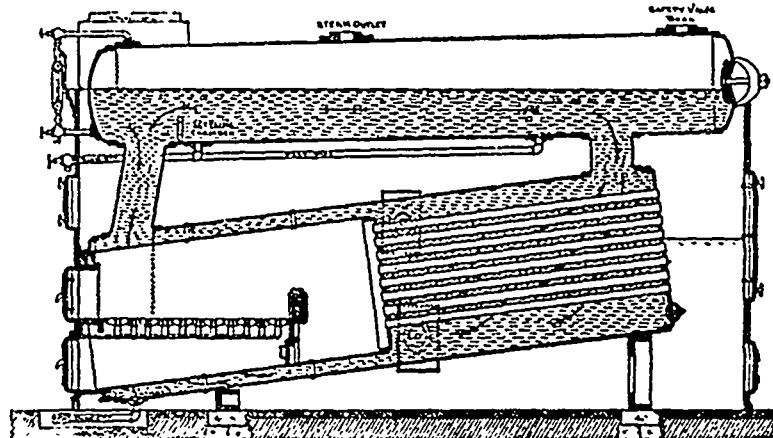
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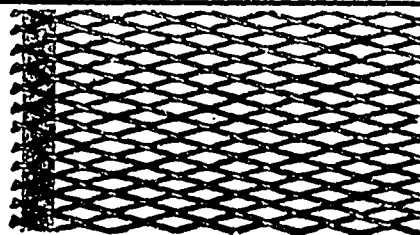
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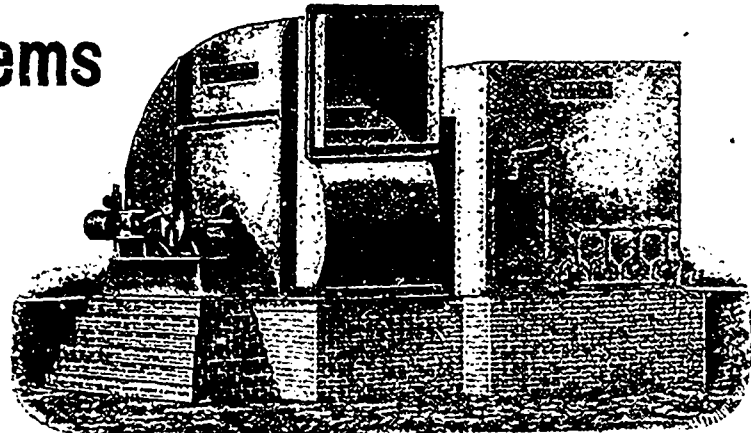
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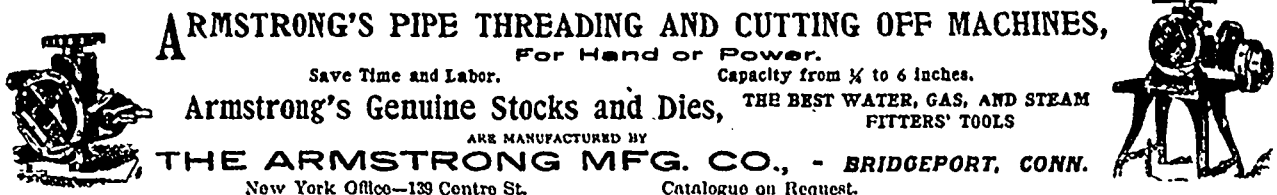
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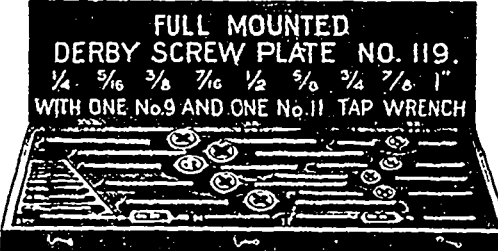
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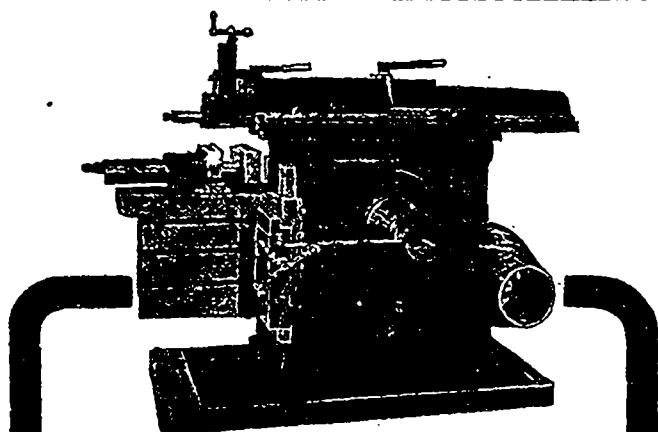
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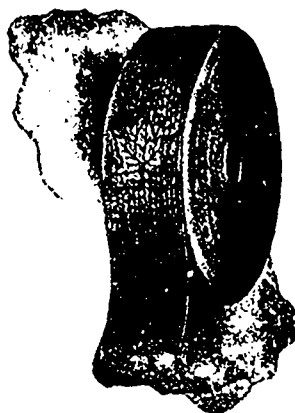
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 Rosendale Belting Co., Toronto.  
 Williams, A. R., Machinery Co., Toronto.
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 Dominion Belting Co., Hamilton, Ont.  
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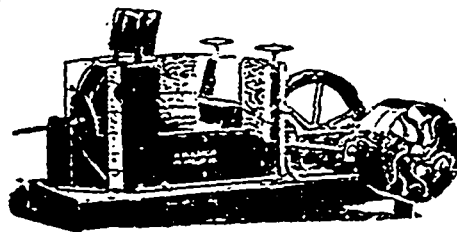
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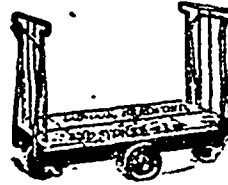
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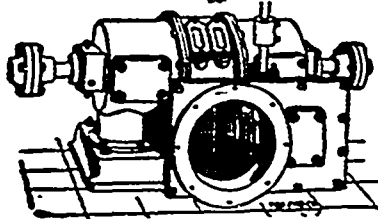
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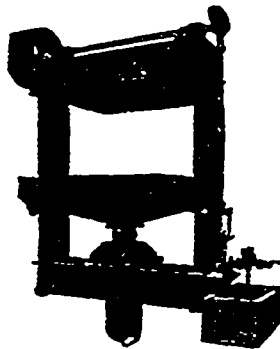
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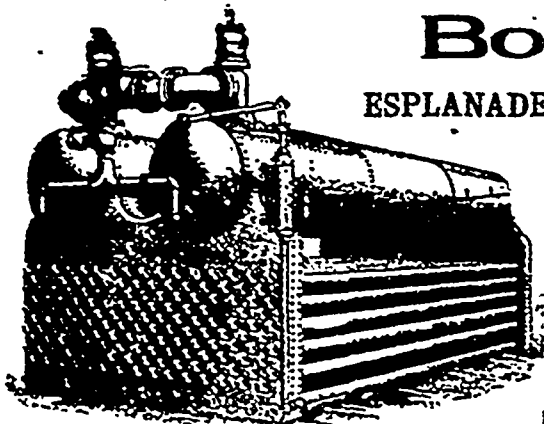
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Canadian Portland Cement Co., Deseronto, Ont.  
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Owen Sound Portland Cement Co., Owen Sound, Ont.
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- Chain Making Machinery (Welded Coil Chain)**  
Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio.
- Channels**  
Bourne-Fuller Co., Cleveland, Ohio.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
- Charcoal Pig Iron**  
Canada Iron Furnace Co., Montreal.
- Chemicals and Dye Stuffs**  
Bellhouse, Dillon & Co., Montreal.  
Benson, W. T. & Co., Montreal.  
Brunner, Mond & Co., Northwich, England.  
Casella Color Co., New York City.  
Gelgy Aniline & Extract Co., New York City.  
Klipstein, A. & Co., New York City.  
McArthur, Cornelio & Co., Montreal.  
Winn & Holland, Montreal.
- Chemists**  
Archbold, Dr. Geo., Prescott, Ont.  
Heye, Thos. & Son, Toronto.  
Wentz, R. F. Engineering Co., Toronto.
- Clay Working Machinery.**  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.
- Coal and Coke**  
Brownloe, J., Galt, Ont.  
Hoffman, Jules G., Detroit, Mich.  
Milnes, James H. & Co., Toronto.  
Pittsburgh Coal Co., Pittsburgh, Pa.  
Shipman, O. W. Co., Detroit, Mich.
- Coal Cutting Machines**  
Jeffrey Mfg. Co., Columbus, Ohio.
- Coal Triples.**  
Jeffrey Mfg. Co., Columbus, Ohio.
- Coil Chains.**  
Greening, B. Wire Co., Hamilton, Ont.
- Coke Oven Brick**  
Dunbar Fire Brick Co., Pittsburgh, Pa.
- Collection Agency**  
Ontario Collection Association, Toronto.
- Continuous Rolling Mills**  
Morgan Construction Co., Worcester, Mass.
- Contractors' Machinery**  
Carlin's, Thomas Sons Co., Allegheny Pa.  
Shaw, Willis, Chicago, Ill.
- Conveying Machinery**  
Dodg Mfg. Co., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Perrin, William R. & Company, Limited, Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Stevens, Alfred J., Toronto.

# CLASSIFIED INDEX.

(CONTINUED).

### Copper Materials

Greening, B., Wire Company, Hamilton, Ont.  
Syracuse Smelting Works, Montreal.  
Wire & Cable Co., Montreal.

### Corundum.

Canada Corundum Co., Toronto.

### Corundum Wheels.

Canadian Corundum Wheel Co., Hamilton, Ont.  
Hart Corundum Wheel Co., Hamilton, Ont.  
Rice Lewis & Son, Toronto.

### Covers.

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

### Crayons

Lowell Crayon Co., Lowell, Mass.

### Crucibles

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

### Crucible Caps and Nozzles

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

### Crucible Covers and Stoppers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

### Dies

Globe Machine & Stamping Co., Cleveland, Ohio.  
Hamilton Stamp & Stencil Works, Hamilton, Ont.

### Dies (Socket, Sewer Pipe and Tile)

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

### Directories

Kelly's Directories, Limited, Toronto.

### Draw Benches (Wire)

Morgan Construction Co., Worcester, Mass.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

### Drills

Bertram, John, & Sons Co., Dundas, Ont.  
Canadian Hand Drill Co., Sherbrooke, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
London Machine Tool Co., London, Ont.  
Pittsburgh Shafting Co., Detroit, Mich.

### Drop Forgings

Globe Machine & Stamping Co., Cleveland, Ohio.

### Drop Forging Dies

Globe Machine & Stamping Co., Cleveland, Ohio.

### Dry Kilns.

Sheldon & Sheldon, Galt, Ont.  
Stevens, Alfred J., Toronto.  
Sturtevant, H. F. Co., Boston, Mass.

### Dust and Shavings Separators

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

### Electric Mine Locomotives

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

### Electrical Supplies

Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jones & Moore Electric Co., Toronto.  
Packard Electric Co., St. Catharines, Ont.  
Phillips, Eugene F., Electrical Works, Montreal.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Worth & Martin, Toronto.

### Elevators

Canadian Otis Elevator Co., Toronto.  
Darling Bros., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.

### Emery and Emery Wheels.

Canadian Corundum Wheel Co., Hamilton, Ont.  
Forman, John, Montreal.  
Hart Corundum Wheel Co., Hamilton, Ont.

### Employers' Liability Insurance

Evart, J. H., Toronto.

### Engineers (Cement).

Wentz, R. F. Engineering Co., Toronto.

### Engineers (Chemical.)

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

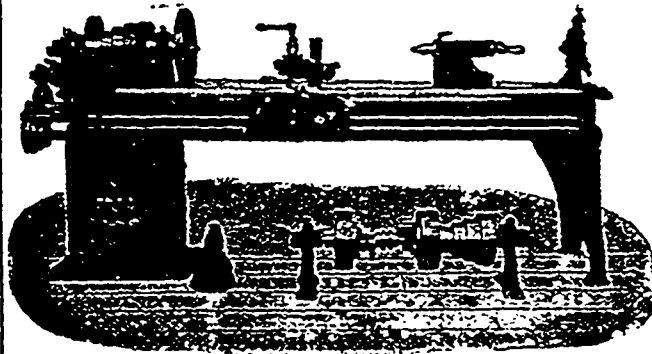
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Steam Geared or Electrically Driven.

Deep Well Pumping Systems for Cities, Railroads, Mines, Factories, etc.

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## WM. BARBER & BROS.

Georgetown, Ont.

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WRITE FOR PRICES

## CLASSIFIED INDEX.

(CONTINUED).

### Engineers (Civil)

DeLano-Osborn Engineering Co., Toronto.  
Kelsch, R. S., Montreal.  
Parke, R. J., Toronto.  
Vogel, C. H., Ottawa.

### Engineers (Consulting)

DeLano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kelsch, R. S., Montreal.  
Morgan Construction Co., Worcester, Mass.  
Parke, R. J., Toronto.  
Perrin, William R. & Company, Limited, Toronto.  
Simpson, T. T., Deschênes, Que.  
Vogel, C. H., Ottawa.  
Wentz, R. F., Engineering Co., Toronto.

### Engineers (Contracting)

Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.

### Engineers (Electrical)

Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
DeLano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Electric Engineering & Supply Co., Montreal.  
Jones & Moore Electric Co., Toronto.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Worth & Martin, Toronto.

### Engineers (Mechanical)

Carrier, Laine & Co., Levis, Quebec.  
Darling Bros., Montreal.  
DeLano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kelsch, R. S., Montreal.  
Kerr Engine Co., Walkerville, Ont.  
Morgan Construction Co., Worcester, Mass.  
Hobb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.  
Wentz, R. F., Engineering Co., Toronto.

### Engineers (Mill and Hydraulic)

Vogel, C. H., Ottawa.

### Engineers (Mining)

Hers, Thos. & Son, Toronto.  
Mills, S. D., Toronto.

### Engineers and Contractors.

Jeffrey Mfg. Co., Columbus, Ohio.

### Engines and Boilers

Babcock & Wilcox, Limited, Montreal.  
Canadian Heine Safety Boiler Co., Toronto.  
Cowan & Co., Galt, Ont.  
Goldie & McCulloch Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Hyde Bros. & Co., Pittsburg, Pa.  
Leonard, E. & Sons, London, Ont.  
Petrie, H. W., Toronto.  
Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.  
Hobb Engineering Co., Amherst, N.S.  
Williams, A. R., Machinery Co., Toronto.

### Engravers

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

### Exhaust Heads

Burt Mfg. Co., Akron, Ohio.  
Darling Bros., Montreal.

### Exporters

Canadian Export Co., Toronto.

### Factory Sites

Central Ontario Power Co., Peterboro, Ont.

### Files

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

### Financial

Bradstreet's, New York City.  
Dun, R. G. & Co., Toronto.  
Neff & Postlethwaite, Toronto.  
Ontario Collection Association, Toronto.

### Filters

Burt Mfg. Co., Akron, Ohio.  
Darling Bros., Montreal.  
Perrin, William R. & Company, Limited, Toronto

### Fire Brick

Dunbar Fire Brick Co., Pittsburg, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Pennsylvania Fire Brick Co., Lock Haven, Pa.  
Scioto Fire Brick Co., Sciotoville, Ohio.  
Wynn, W. H. & Co., West Decatur, Pa.

### Founders

Canada Foundry Co., Toronto.  
Cowan & Co., Galt, Ont.  
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.

Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Karch, H. W., Rospeler, Ont.

### Foundry Facing

Hamilton Facing Mill Co., Hamilton, Ont.

### Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

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

Morgan Construction Co., Worcester, Mass.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls  
Ohio.

### Gas and Gasoline Engines

Goldie & McCulloch Co., Galt, Ont.  
Morrison, T. A. & Co., Montreal.

### Gas Producers.

Morgan Construction Co., Worcester, Mass.

### Generators

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.

### Government Notices

Factory Inspectors.  
Minister of Agriculture.

### Grease Cups

Penberthy Injector Co., Windsor, Ont.

### Grinding Machinery

Canadian Corundum Wheel Co., Hamilton, Ont.  
Hart Corundum Wheel Co., Hamilton, Ont.

### Grinding Pans

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

### Hand Travelling Cranes

Morgan Construction Co., Worcester, Mass.

### Hardware

Rutterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Cooper, James, Montreal.  
Empire Machine & Metal Stamping Co., Toronto.  
Gartshore, John J., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
Rice Lewis & Son, Toronto.  
Ryall Machine Screw Co., Montreal.

### Heating and Ventilating

Darling Bros., Montreal.  
Leonard, E. & Sons, London, Ont.  
Sheldon & Sheldon, Galt, Ont.  
Stevens, Alfred J., Toronto.  
Sturtevant, B. F., Co., Boston, Mass.

### Hydraulic Accumulators

Morgan Construction Co., Worcester, Mass.

### Hydraulic Cranes

Morgan Construction Co., Worcester, Mass.

### Hydraulic Machinery

Darling Bros., Montreal.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Morgan Construction Co., Worcester, Mass.  
Perrin, William R. & Company, Limited, Toronto.  
Wilson, J. C. & Co., Glenora, Ont.

### Iron and Steel Specialties

Abbott, William, Montreal.  
Armstrong Mfg. Co., Bridgeport, Conn.  
Bourne-Fuller Co., Cleveland, Ohio.  
Brown & Co., Paris, Ont.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Dodge Mfg. Co., Toronto.  
Karch, H. W., Rospeler, Ont.  
Meadors, Geo. B. Wire, Iron & Brass Works Co.,  
Toronto.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Petrie, H. W., Toronto.  
Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Ryall Machine Screw Co., Montreal.

### Lamps—Electric

Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Forman, John, Montreal.  
Packard Electric Co., St. Catharines, Ont.

### Lathes

Bertram, John & Sons Co., Dundas, Ont.  
London Machine Tool Co., London, Ont.  
Williams, A. R., & Co., Toronto.

### Leather Belting

Canadian Oak Belting Co., Brockville, Ont.  
Flerning, W. A. & Co., Montreal.  
McLaren, D. K., Montreal.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Lubricant

Hart & Co., Chicago, Ill.

### Lubricators

Penberthy Injector Co., Windsor, Ont.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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## Machinists.

Worth & Martin, Toronto.

## Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.  
 Butterfield & Co., Rock Island, Que.  
 Cleveland Twist Drill Co., Cleveland, Ohio.  
 Cooper, James, Montreal.  
 Dodge Mfg. Co., Toronto.  
 Goldie & McCulloch Co., Galt, Ont.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Morrow, John, Machine Screw Co., Ingersoll, Ont.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Ryall Machine Screw Co., Montreal.  
 Worth & Martin, Toronto.

## Machine Tools

Abbott, William, Montreal.  
 Bertram, John, & Sons Co., Dundas, Ont.  
 Cleveland Twist Drill Co., Cleveland, Ohio.  
 Darling Bros., Montreal.

## Malleable Iron Castings

McKinnon Dash & Metal Works Co., St. Catharines, Ont.  
 Smith's Falls Malleable Castings Co., Smith's Falls, Ont.

## Metal Gates

Page Wire Fence Co., Walkerville, Ont.

## Metal Shears

Morgan Construction Co., Worcester, Mass.

## Metal Stamping

Empire Machine & Metal Stamping Co., Toronto.

## Metallurgists.

Mills, S. D., Toronto.  
 Wentz, H. F. Engineering Co., Toronto.

## Mill Machinery and Supplies

Armstrong Mfg. Co., Bridgeport, Conn.  
 Cleveland Twist Drill Co., Cleveland, Ohio.  
 Cooper, James, Montreal.  
 Cowan & Co., Galt, Ont.  
 Darling Bros., Montreal.  
 Dodge Mfg. Co., Toronto.  
 Fleming, W. A., & Co., Montreal.  
 Gartshore, John J., Toronto.  
 Goldie & McCulloch Co., Galt, Ont.  
 Hamilton Brass Mfg. Co., Hamilton, Ont.  
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
 Hay, Peter Knife Co., Galt, Ont.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Karch, H. W., Hespeler, Ont.  
 Leonard, E. & Sons, London, Ont.  
 London Machine Tool Co., London, Ont.  
 Morrow, John, Machine Screw Co., Ingersoll, Ont.  
 Penberthy Injector Co., Windsor, Ont.  
 Patrie, H. W., Toronto.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Rico Lewis & Son, Toronto.  
 Robb Engineering Co., Amherst, N.S.  
 Ryall Machine Screw Co., Montreal.  
 Spence, R. & Co., Hamilton, Ont.  
 Wilson, J. C. & Co., Glenora, Ont.

## Mining Machinery

Canadian Rand Drill Co., Sherbrooke, Que.  
 Cleveland Twist Drill Co., Cleveland, Ohio.  
 Cooper, James, Montreal.  
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Perrin, William H. & Company, Limited, Toronto.  
 Shaw, Willis, Chicago, Ill.  
 Williams, A. R. Machinery Co., Toronto.

## Motors and Dynamos

Canadian General Electric Co., Toronto.  
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
 Electrical Construction Co., London, Ont.  
 Fornan, John, Montreal.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Jones & Moore Electric Co., Toronto.  
 Toronto & Hamilton Electric Co., Hamilton, Ont.  
 United Electric Co., Toronto.

## Novelty Manufacturers.

Worth & Martin, Toronto.

## Nozzles.

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
**Office Furniture and Supplies**  
 Canadian Office & School Furniture Co., Preston, Ont.

## Oils and Lubricants

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

## Oil Cups

Penberthy Injector Co., Windsor, Ont.

## Oil Filters

Burt Mfg. Co., Akron, Ohio.  
 Darling Bros., Montreal.

## Oil Tanks

Petroleum Iron Works Co., Washington, Pa.

## Paints and Colors

Bellhouse, Dillon & Co., Montreal.  
 Fleming, W. A., & Co., Montreal.

Gelgy Aniline & Extract Co., New York City.  
 Klipstein, A., & Co., New York City.  
 McArthur, Cornelio & Co., Montreal.

## Paper Manufacturers

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

## Patents

Budden, Hanbury A., Montreal.  
 Case, Egerton H., Toronto.  
 Fotherstonhaugh & Co., Toronto.  
 Patent Exchange & Investment Co., Toronto, Ont.

## Pattern Shop Equipments

American Machinery Co., Grand Rapids, Mich.

## Perforated Metals

Greening, B. Wiro Co., Hamilton, Ont.

## Phosphorizers.

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

## Pig Iron

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

## Pipe Threading Machines

Armstrong Mfg. Co., Bridgeport, Conn.  
 Rico Lewis & Son, Toronto.

## Pipes and Tubes

Abbott, William, Montreal.  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Foundry Co., Toronto.  
 Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.  
 Montreal Pipe Foundry Co., Montreal.  
 Rico 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.  
 Rico Lewis & Son, Toronto.

## Plumbago

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

## Pneumatic Tools

Chicago Pneumatic Tool Co., Chicago, Ill.

## Painter Rolls (For Rods and Wire.)

Morgan Construction Co., Worcester, Mass.  
 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—Electric and Water

Central Ontario Power Co., Peterboro, Ont.

## Power Plants—Equipments

Canadian General Electric Co., Toronto.  
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
 Cleveland Twist Drill Co., Cleveland, Ohio.  
 Darling Bros., Montreal.  
 DeLano-Osborn Engineering Co., Toronto.  
 Dodge Mfg. Co., Toronto.  
 Electrical Construction Co., London, Ont.  
 Goldie & McCulloch, Galt, Ont.  
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Jones & Moore Electric Co., Toronto.  
 Leonard, E. & Sons, London, Ont.  
 Perrin, William H. & Company, Limited, Toronto.  
 Phillips, Eugene F. Electrical Works, Montreal.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Robb Engineering Co., Amherst, N.S.  
 Stevens, Alfred J., Toronto.  
 Sturtevant, B. F., Co., Boston, Mass.  
 Toronto & Hamilton Electric Co., Hamilton, Ont.  
 United Electric Co., Toronto.  
 Wilson, J. C. & Co., Glenora, Ont.

**Presses (Tire, Sewer Pipe, Nozzles and Sieves.)**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Pulleys

Darling Bros., Montreal.  
 Dodge Mfg. Co., Toronto.  
 Goldie & McCulloch Co., Galt, Ont.  
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Wilson, J. C. & Co., Glenora, Ont.

## Pumps and Pumping Systems

Downie Pump Co., Downierille, Pa.

## Punches and Shears

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

## Purifiers

Cowan & Co., Galt, Ont.  
 Goldie & McCulloch Co., Galt, Ont.



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Vancouver, B.C.	Winnipeg, Man.

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VANCOUVER,	HALIFAX.

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### Purifying System (Water.)

Darling Bros., Montreal.

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Chicago & North-Western Ry., Toronto & St. Paul, Minn.  
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### Railway Supplies

Algoma Steel Co., Sault Ste. Marie, Ont.  
Cooper, James, Montreal.  
Gartshore, John J., Toronto.  
Greening, B. Wire Co., Hamilton, Ont.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Phillips, Eugene F., Electrical Works, Montreal.

### Rivets

Bourne-Fuller Co., Cleveland, Ohio.

### Roll Lathes

Morgan Construction Co., Worcester, Mass.

### Rolling Mills

Morgan Construction Co., Worcester, Mass.

### Rolling Mill Engineers

Morgan Construction Co., Worcester, Mass.

### Roofing

Metallie Roofing Co., Toronto.

### Rubber Goods

Gutta Percha & Rubber Mfg. Co., Toronto.

### Rubber Washing Tube

Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio.

### Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

### Saw Mills

Petrie, H.-W., Toronto.

### Shafting

Bourne-Fuller Co., Cleveland, Ohio.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
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Carlin's, Thomas Sons Co., Allegheny, Pa.  
Hay, Peter Knif Co., Galt, Ont.

### Sheets (Iron and Steel.)

Abbott, William, Montreal.  
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### Sheet Metal Goods

Empire Machine & Metal Stamping Co., Toronto.  
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Metallie Roofing Co., Toronto.

### Sheet Metal Stamping

Empire Machine & Metal Stamping Co., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Metallie Roofing Co., Toronto.

### Smoke Stacks.

Petroleum Iron Works Co., Washington, Pa.

### Solder

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Globe Machine & Stamping Co., Cleveland, Ohio.

### Special Machinery

Globe Machine & Stamping Co., Cleveland, Ohio.

### Stamps & Stencils

Globe Machine & Stamping Co., Cleveland, Ohio.  
Hamilton Stamp & Stencil Works, Hamilton, Ont.

### Steam Gauges

American Steam Pump Co., Battle Creek, Mich.  
Crosby Steam Gauge & Valve Co., Boston, Mass.  
Penberthy Injector Co., Windsor, Ont.  
Williams, A. R., Machinery Co., Toronto.

### Steam Pumps

American Steam Pump Co., Battle Creek, Mich.  
Darling Bros., Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
Leonard, E. & Sons, London, Ont.  
Pittsburgh Shafting Co., Detroit, Mich.  
Williams, A. R., Machinery Co., Toronto.

### Steam Separators

Darling Bros., Montreal.

### Steam Specialties

Darling Bros., Montreal.  
Penberthy Injector Co., Windsor, Ont.

### Steam Valves

American Steam Pump Co., Battle Creek, Mich.  
Crosby Steam Gauge & Valve Co., Boston, Mass.  
Darling Bros., Montreal.  
Kerr Engine Co., Walkerville, Ont.  
Williams, A. R., Machinery Co., Toronto.

### Steel Planis

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### Steel Rails

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Cooper, James, Montreal.  
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### Steel Shafting

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Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
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Pittsburgh Shafting Co., Detroit, Mich.  
Wilson, J. C. & Co., Glenora, Ont.

### Stocks and Dies

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Butterfield & Co., Rock Island, Que.  
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Worth & Martin, Toronto.

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McCullough-Dalzell Crucible Co., Pittsburg, Pa.

### Structural Steel.

Abbott, William, Montreal.

### Suspension Furnaces

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### Tanks (Iron and Steel.)

Hamilton, Wm. Mfg. Co., Peterborough, Ont.

### Tees

Bourne-Fuller Co., Cleveland, Ohio.

### Textile Manufacturers

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Cantile, James, A., Montreal.  
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Hamilton Cotton Co., Hamilton, Ont.  
Morice, D. Sons & Co., Montreal.  
Riche & Co., Bradford, England.  
Smith Mfg. Co., Toronto.  
Storey, W. H. & Sons, Acton, Ont.

### Tin

Syracuse Smelting Works, Montreal.

### Tool Steel

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Bourne-Fuller Co., Cleveland, Ohio.

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Silingsby, H. C., Montreal.

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Sheldon & Sheldon, Galt, Ont.  
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### Washers or Hollenders (Cleaning Rubber.)

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### Water Tanks

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### Weaving Machinery

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Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio.

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Greening, B. Wire Co., Hamilton, Ont.  
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Meadows, Geo. B. Wire, Iron & Brass Works Co., Toronto.

Page Wire Fence Co., Walkerville, Ont.

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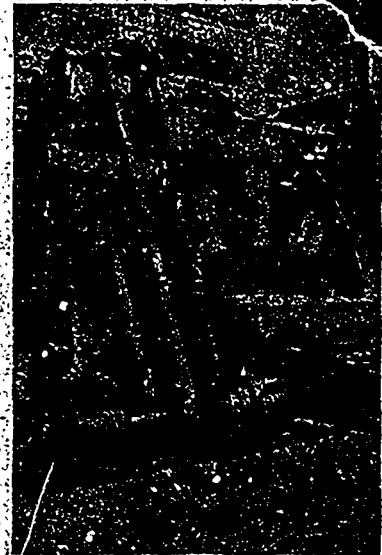
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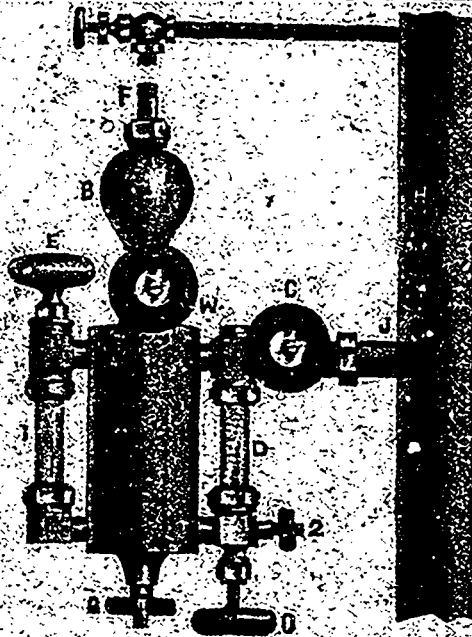
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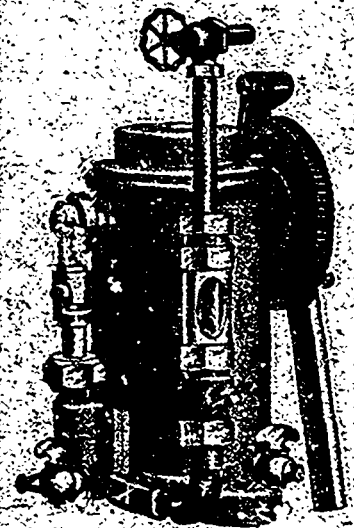
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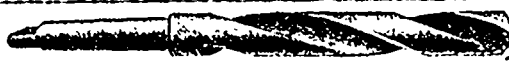
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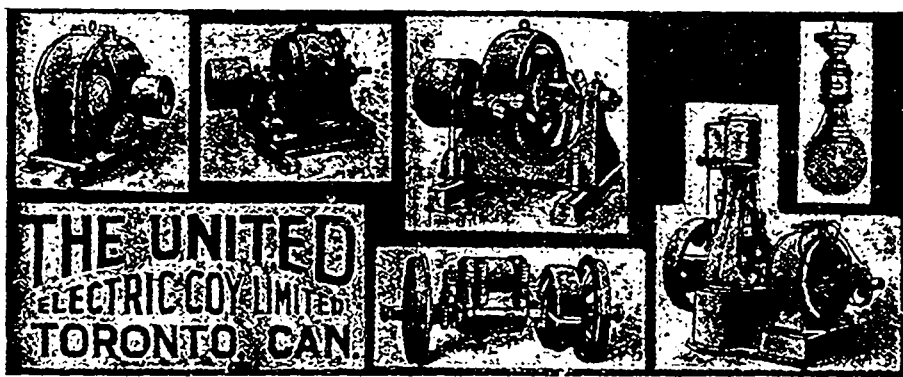
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