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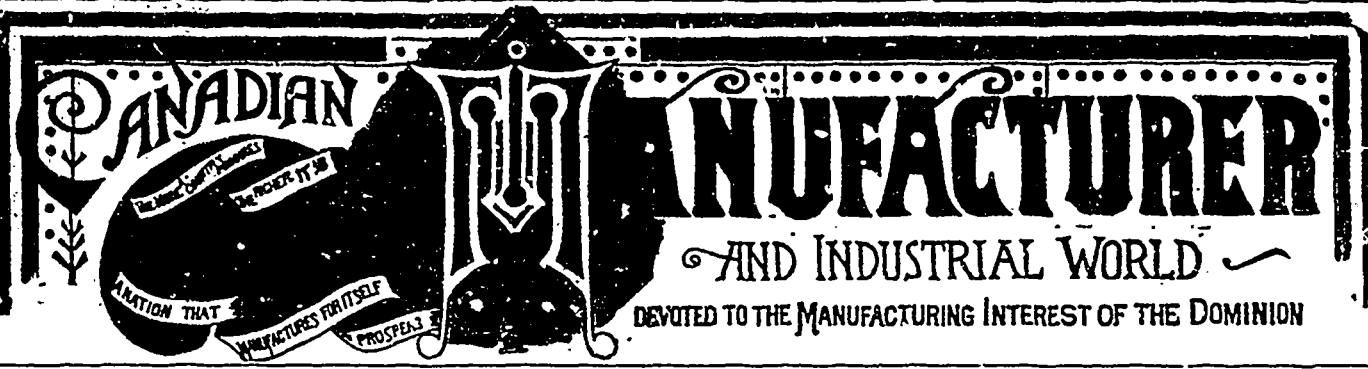
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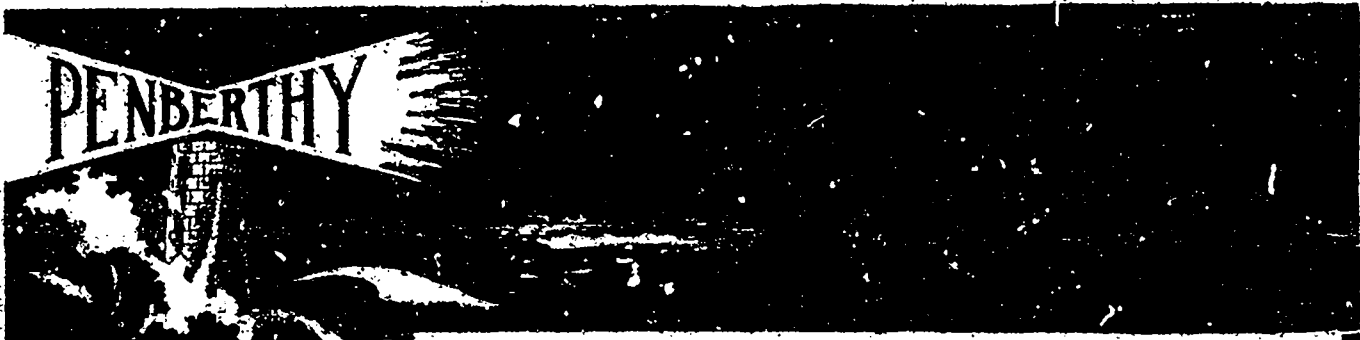
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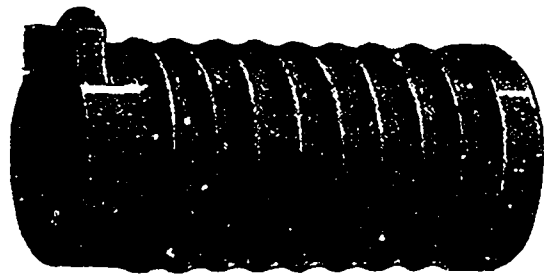
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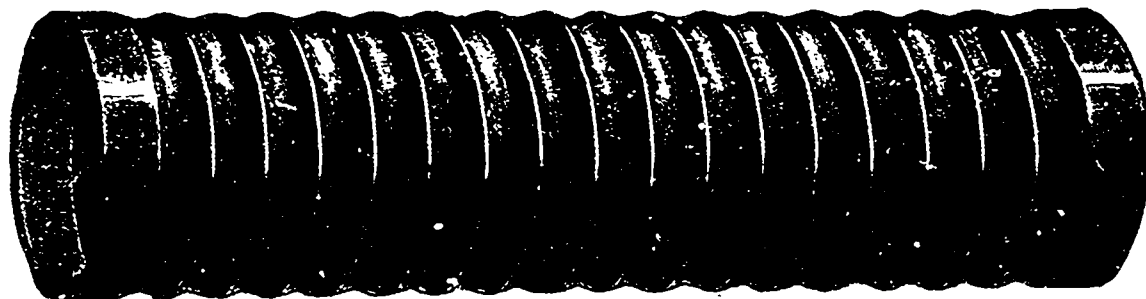


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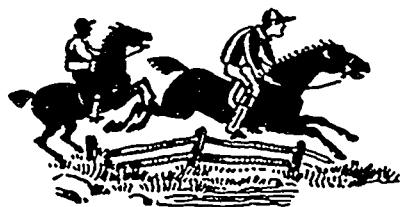
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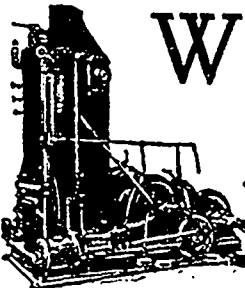
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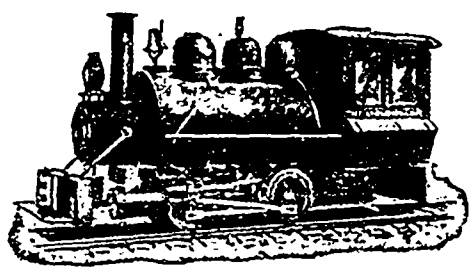
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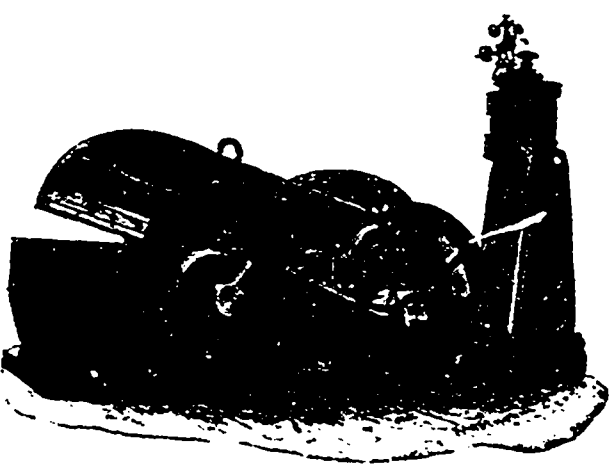
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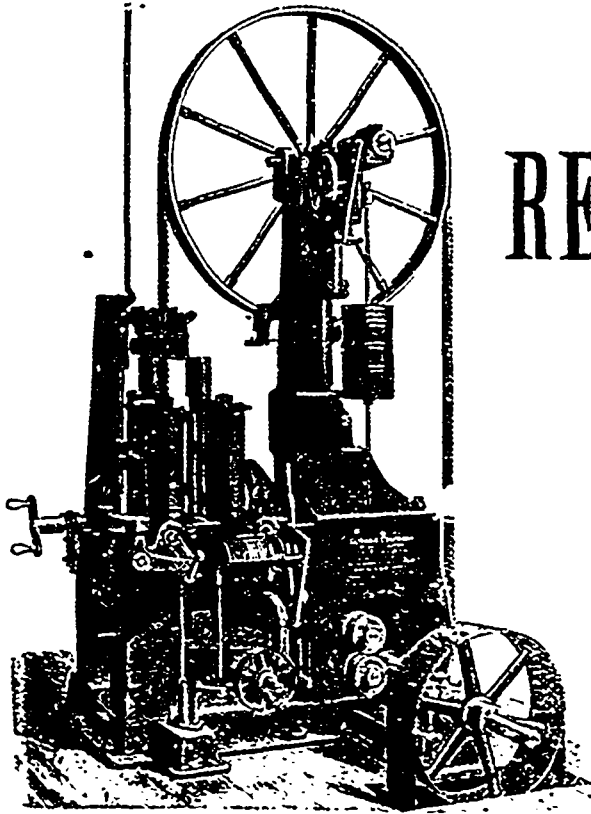
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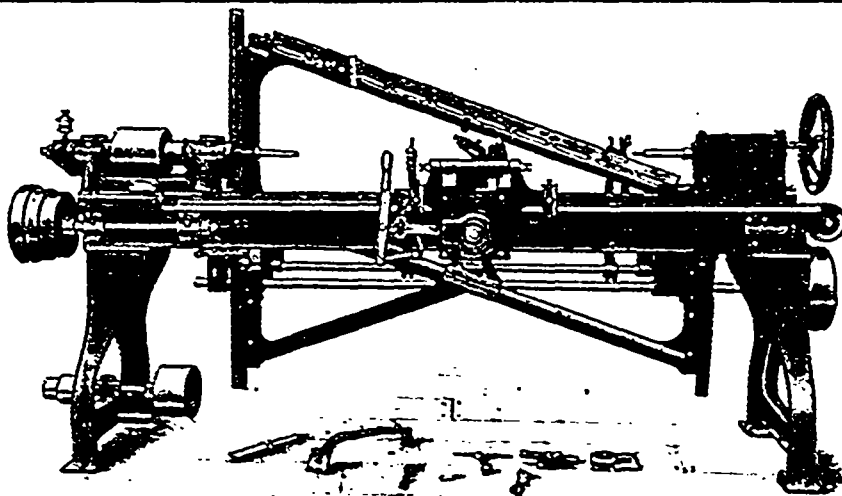
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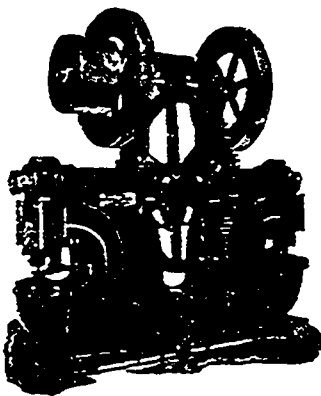
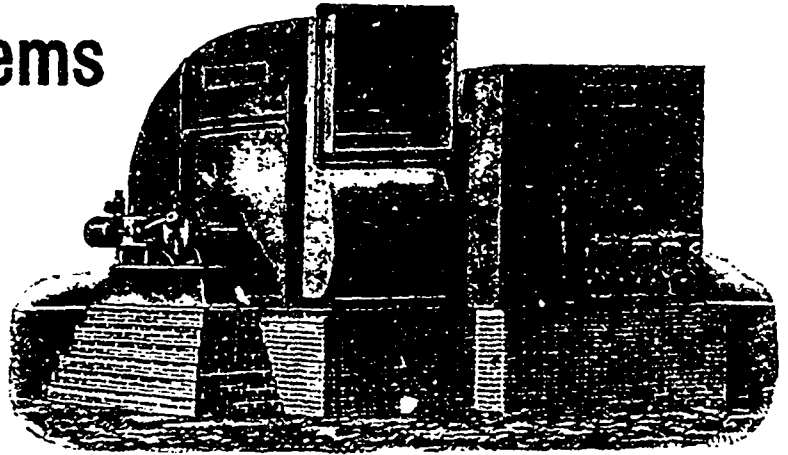
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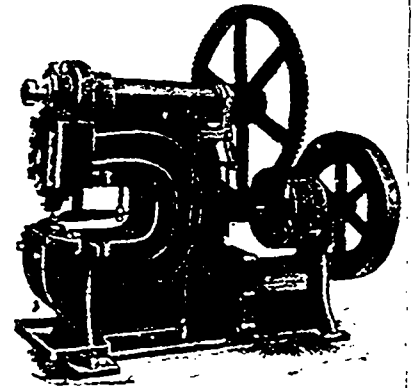
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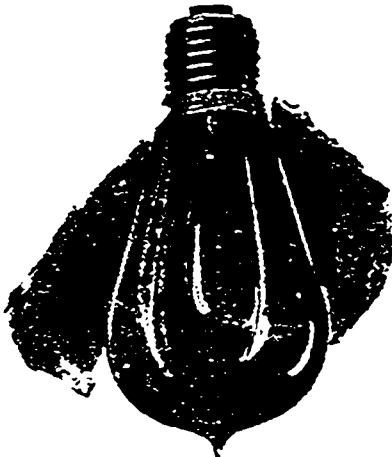
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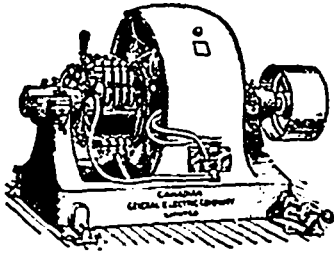
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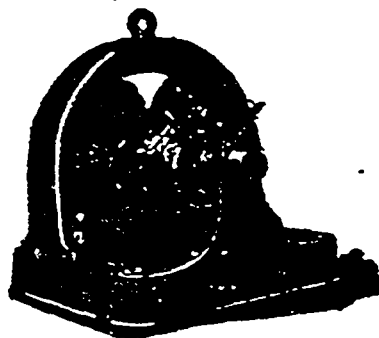
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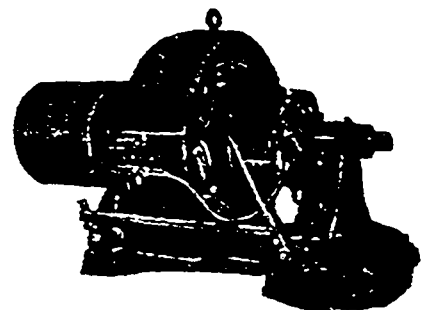
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J. J. CASSIDY, Editor and Manager

Classified Index .....Page 42  
Index to Advertisers .....Page 49

COMMERCE AND INDUSTRIES OF TRINIDAD.

Trinidad is almost exclusively an agricultural colony, with its agricultural advantages confined to a limited number of tropical products; it therefore depends almost entirely upon other countries for many articles which, for climatic and economic reasons, it can not produce. For manufactured goods it relies almost entirely on external supplies. For these reasons it imports large quantities of cereals including flour, cattle foods, dairy products, meat and fish (preserved), cattle and sheep, fuel and oil, building materials, furniture, textiles, hardware and machinery, boots and shoes, soap, malt liquor, whisky, brandies, and wines.

The United States supplies nearly the whole of the biscuits, flour, meal, and pease consumed there. Biscuit making is a new industry which has already reduced imports, but the import of flour from the United States has increased accordingly.

Canada has during recent years, increased by nearly 100 per cent. the quantity of oats supplied. For oats and hay there will always be a constant demand, since oats can not be grown there. As grass can be obtained nearly all the year round, local hay has not been prepared as a reserve food.

Very little fresh butter is made in Trinidad; it retails at 48 cents per pound, and it is not likely that the colony will in the near future produce sufficient butter for its own requirements. Table butter comes chiefly from Denmark, Canada, and France in tins; the keg butter trade is chiefly with France; and while the quality of that imported in tins is very satisfactory, much of the butter imported in kegs is of very inferior quality.

The United States practically monopolizes the supplies of oleomargarine and lard. Cheese comes principally from the United States, but in recent years Canada has increased its trade in cheese by about 50 per cent. The English cheese trade remains almost stationary. The colony produces very little fresh milk, and it is sold at such a high rate that the large majority of the population use condensed milk. The imports of condensed milk

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during the year 1903 were as follows: From England, \$85,000, Germany, \$6,000, Holland, \$5,500; and the United States, \$4,800.

Owing to the difficulty of keeping fresh meat in the climate, there will always be a large demand for preserved meat. The United States supplies seven-eighths of the total amount imported, and the balance is principally from England, Canada, and South America. Locally very little meat is preserved. The demand for preserved fish (cod especially) is increasing rapidly. Canada is making long strides in this direction. During the last two years she has improved her share in this trade 30 per cent., having supplied more than 8,000,000 pounds, against 940,000 pounds supplied by the United States.

Coal has been found in Trinidad, but in small quantities and of an inferior quality. Recently larger deposits have been found on Government lands, and it is not improbable that the output may soon be sufficient for the colony's ordinary requirements. The recent large increase in the imports of coal is probably due to the increased facilities for handling and to the greater demand by calling steamers. During the past year war vessels shipped a large quantity of coal there and the business is growing keener for this desirable trade. Of the 30,000 tons imported last year, more than two-thirds was supplied by the United States and the balance by England. Some of this coal is compressed into small blocks (patent fuel), which makes it convenient to handle. In this shape it retails at \$9 per ton and is imported chiefly from the United Kingdom.

Kerosene is imported wholly from the United States. For many years the oil deposits of the island have attracted attention, but until recently explorations have been confined to the surface. Now three or four borings of considerable depth have been made and an attempt is being made to place the project on a commercial basis. Oil of first-rate quality has been found, and it is said to contain a much larger portion of naphtha than the oils found exposed on the surface. A Canadian syndicate are now working this property.



The colony is undergoing rapid development and building materials are much in demand. Heretofore most of the buildings were made of wood, or partly of wood and cement, and they were usually of the fragile kind not suitable in a colony visited by hurricanes. But within the last two years nearly all the large buildings have been built of stone, iron, and brick, and the local contributions to the constructions are very limited. The suitable timber trees are in the depths of the virgin forests and are not easily accessible. Slates are used only in the more solid class of buildings, galvanized iron being considered suitable for ordinary roofing. Large imports of lumber, cement, bricks, slates, and galvanized iron are therefore made yearly. The United States supplies four-fifths of the timber and England three-fourths of the cement used in the colony. Local timber is excellent for furniture, but the local mechanics have a tendency to confine its use to fancy goods, for which there is a very limited demand; therefore, all the ordinary furniture is imported. Considering the difference in freight, the United States and Canada should control this trade for cheap, light tropical furniture. Hardware is mostly imported from Great Britain.

The bulk of leather and leather goods is imported. Cheap and smart looking boots and shoes are in demand; quality and wear are points that receive less consideration. Increased imports from the United States and correspondingly decreased imports from England are recorded in recent statistics. Canadian firms have just begun to introduce leather goods. Soap is manufactured locally, but to a limited extent only. Blue mottled soap is the kind most in demand.

The imports into Trinidad from the United Kingdom, the United States, and Canada, according to official returns, were as follows during the fiscal years ended March 31, 1901, 1902, and 1903:

Country.	1901.	1902.	1903.
United Kingdom...	\$4,233,091	\$4,118,443	\$4,719,436
United States	2,905,944	3,235,905	3,370,497
Canada	317,976	474,998	638,217

The principal exports of Trinidad are sugar (and its by-products), cocoa, asphalt, cocoanuts, and coconut oil.

The following statement, from official sources, shows the exports to the United States, the United Kingdom, and Canada during the fiscal years ended March 31, 1901, 1902, and 1903:

Country.	1900-01.	1901-02.	1902-03.
United States . . . .	\$3,803,707	\$3,922,771	\$3,946,972
United Kingdom .	4,718,664	3,389,630	3,205,731
Canada . . . . .	141,224	226,070	151,416

Large quantities of molasses are produced in connection with the manufacture of sugar. Some is used as cattle food and some converted into rum; but there is usually a surplus, which is sometimes unsaleable at a profit. A suitable outlet for this surplus stock is very much required.

The harbor of Port of Spain affords excellent facilities for transshipments, the waters of the bay being quite calm all the year round. Nearly the entire trade of the Orinoco region passes through this port, and the goods from the United States and Europe are transhipped here

into river steamers, which navigate the Orinoco as far as the Colombian frontier. Trinidad's proximity to Venezuela affords it exceptional opportunities for trade which the other islands of the West Indies, on account of their geographical position, do not enjoy.

#### INDUSTRIAL PRODUCTS FROM PEAT.

United States Consul-General F. H. Mason, at Berlin, Germany, reports to his Government regarding the exhibition of the Association for the Promotion of Moor Culture in the German Empire which was held in Berlin in February last. The exhibition was divided into several groups, one of which included all that pertained to the industrial uses of peat as fuel, fiber for various purposes, etc. Regarding this latter feature Mr. Mason says:

To the average visitor by far the most interesting portions of the exposition were those devoted to the various industrial products, such as peat straw and wool, fuel briquettes and coke, paper and pasteboard, tiles and bricks for paving and building purposes, and even fodder for animals. For, as we shall see, a German scientist has succeeded, by treating the cleansed vegetable fibers of peat moss with the waste molasses of beet-sugar manufacture, in producing a compound that serves acceptably as food for domestic animals.

Peat straw is simply the woolly fiber cleansed, dried and baled for various uses. It is generally of a light-brown color, spongy in texture, light, clean, and with an extraordinary power of absorption for gases or liquids. It has long been used in preference to straw, leaves, or any other material as litter in stables for horses or cattle. It will absorb ten times its weight of ammoniacal liquids—more than three times as much as wheat or rye straw—and, when saturated, is piled and allowed to rot, by which it forms a humus of the highest value as a fertilizer. Another form of the same material known as "torfmull" is used as a disinfecting absorbant for purifying the air of closets and stables, and when filled is mixed with earth and sand and used as manure. It is also the best material known for protecting trees and plants from frost in winter. Walls filled or padded with peat mull are rendered warm and dry, and beds made of it are clean, dry, and sanitary, so that it is extensively used in asylums and hospitals. It is made at many places in Germany and Sweden, one of the largest and most enterprising factories being at Stargard, in Pomerania.

"Heloxyle" is the name given to peat fiber compressed and hardened by a special process into sheets, tiles, plates, and blocks for various building purposes. It is used for lining walls, ceilings, window and door frames, to underlay wooden flooring, and even as flooring itself. It has about the consistency and atomic weight of sound cork, and, being an almost perfect nonconductor of heat, moisture, sound, and vibration, it is of great value in locations where warmth, dryness, and protection from noise or jar are especially desired in dwellings and other constructions. It is impregnated with some material which renders it practically incombustible, so that even the German building police approve and recommend its use. It is one of the cheapest of all building materials in Germany, is light to transport, clean and easy to handle, can be painted, nailed, or glued together, and from a sanitary standpoint is a nearly ideal building material. A floor of heloxyle, covered with a rug or carpet, is a luxury of warmth, stillness, and comfort in a modern dwelling.

Pasteboard made of 40 per cent. peat fiber and 60 per cent. wood shavings is a standard product both in Ger-

many and Sweden. being stronger, lighter, and cheaper than pasteboard made in the ordinary way.

It remains to speak of peat fuel, which in the forms of briquettes and peat coke were exhibited by several manufacturers who employ different processes, and, finally, of peat excavation for all purposes, since it is upon the economy and efficiency of excavating and drying that the industrial success of the whole operation will inevitably depend.

Raw peat as it comes from the bog in all but exceptionally high and dry locations, contains usually 85 per cent. of water. Experience has shown that the remaining 15 per cent. of peat substance, if dried and burned as fuel, contains only heat units sufficient to evaporate 28 per cent., or one-third, of the 85 per cent. water which the crude material originally contained. This is the fatally weak point in all artificial peat-drying processes. They consume more heat units than they can produce. The essential point is to eliminate by drainage and air drying every possible atom of water. This is done by two methods, dependent somewhat upon the use for which the prepared peat is designed.

In all cases, however, good management includes as a first step the drainage of the bog by ditches, cut at intervals to a depth of about 18 inches below the bottom of the peat bed which it is designed to work. Into these at least 50 per cent. of the water settles and either flows off by gravity or is pumped out by the wind-driven pumps. The drained peat is then excavated, either in blocks, cut with an angle spade specially designed for the process, which are hauled away in hand cars and laid out on the ground to drain and dry by wind and sun, or by machines which by means of steel scoops or diggers running on an endless chain dig out the peat, carry it up to a sufficient height, and dump it into hand cars, which transport it to the machines, by which it is further treated and prepared.

A complete plant of this kind, which was exhibited in constant operation by Mr. C. Schlickeysen, of Rixdorf-Berlin, formed a prominent feature of the recent exposition. The excavating machine, which was driven by an electric motor, was mounted on a portable track of light rails, designed to be moved over the moor as the peat is exhausted by excavation. The machine digs out, elevates, and drops into the dump cars a ton of raw peat every five minutes. It is transported to the machine, conveniently located at the edge of the bog, which tears, pulverizes, kneads, and presses the plastic mass out into long masses or "strains," which are cut into sections a foot long and dried in the open air to hard, tough blocks, which resist rain and bear transportation to any distance. The secret of this part of the process seems to be that the crushing and grinding action of the machine releases the fluid organic elements of the raw peat, which, mixing with the solid fibrous portion, forms a matrix or binder which when dry holds the whole mass firmly together. In drying, the strains shrink to about one-half their size when in a plastic state. If mixed while in a soft condition with 20 to 30 per cent. of anthracite or bituminous coal dust they form when dry an excellent fuel of high calorific value. Otherwise they may be carbonized by heat into peat, coal or coke.

Both the latter are pure and free from sulphur or phosphorus, and are therefore valuable fuel for the finer processes of metallurgy, but they are inevitably too expensive to compete on a large scale with ordinary coal and coke. Any form of peat fuel, in fact, represents the recovery of a small percentage of crude vegetable matter from a large proportion of water and the preparation of this residue by processes which are inevitably so laborious and expensive that unless the most improved and economical methods are employed at every stage the cost exceeds the fuel value of the product.

Notwithstanding all difficulties, however, progress in the preparation and use of peat fuel is steady and constant, and Sweden, according to recent reports, has succeeded in utilizing it for locomotives. On the Government railway from Elnhut to Malmo specially constructed freight locomotives have been fired during the past year either wholly with peat fuel or a mixture of the same with English coal, and the engineer's reports claim for the experiment both a mechanical and economic success.

There are millions of acres and vast areas of bog or peat lands in Canada capable of responding to such efforts as are being made in Germany and elsewhere in Europe for the production of fuel and other useful articles such as alluded to by Mr. Mason.

### THE CEMENT INDUSTRY.

A particularly observable feature of the building operations now going on in Toronto is the increasing use of cement and concrete; in building many of the residences the entire foundations being constructed of this class of materials; and it is also noticeable that in every city, town, village and hamlet miles of sidewalks are being made of cement, while the usefulness of highways are increased by concrete construction. In fact, in this regard this era might very appropriately be called "The Age of Cement." Canada has awakened to the value and importance of cement as a building material, being somewhat in the rear of the United States in that respect. Except in quite a number of large grain elevators, cement is not being used in the construction of large and high office buildings, warehouses, hotels, etc., to the extent observable in the United States, where, in connection with reinforcements of steel, that system of construction is being observed with most satisfactory results. It is but a few years ago that the use of cement, or concrete, in the building of foundations, vaults, bridges and other structural work was considered a great advance in building methods, yet within that time so wonderful has been the progress made that we have witnessed phenomenal achievements in the application of concrete, causing almost a revolution in many leading departments of structural work, embracing high office buildings, dwellings, public works, municipal improvements, industrial plants, railroads, submarine, mining, ornamental and recreation ground construction.

There are recently constructed buildings on the grounds of Exhibition Park, Toronto, built of hollow concrete blocks, that are not only beautiful from an architectural point of view, but answer admirably well the purposes for which they were built. There is a fifteen story office building in Cincinnati, Ohio, built entirely of reinforced concrete, and without the use of any structural steel whatever, the system observed including concrete reinforced by imbedded steel rods which cannot rust or corrode, the building becoming stronger and stronger with age, and absolutely fireproof.

In this connection it is especially noteworthy to recall the astonishing manner in which supposedly fireproof buildings melted like butter in the recent Baltimore fire. So intense was the heat that the terra cotta tile fell away

from the floors and the structural steel beams and pillars, leaving the latter in a veritable furnace that reduced them to melted scrap and caused the complete destruction of the structures that architects and the public had believed to be fireproof. Had these buildings been constructed of solid concrete even so fierce a fire as the Baltimore conflagration would have had no more effect upon them than a possible blackening from the smoke. In fact, those parts of buildings built of concrete were not affected by the fire at all.

A striking example of how reinforced concrete stood the heat in the great fire in Baltimore is afforded by the annex building of the United States Fidelity & Guarantee Co., in that city, regarding which the Manufacturers' Record says :

Here remain the floors and roof of a five-story building, one wall and the front almost entirely gone, and the other walls but half standing, the floors resting on concrete columns independently of the walls. Although the transformer station of the United States Electric & Power Co. passed through the thick of the fire without serious injury, the floors and roof here being of concrete, and the International Trust Co's. building shows a concrete floor intact, on which the walls of the building adjoining fell a distance of 35 feet.

Until last week no load test had been applied to the floors of the annex building, although their substantial condition was evidenced by the failure of the wreckers to bring any force to bear on it sufficient to move the columns or floors. Last Thursday the load test was made under the supervision of Captain John Stephen Sewell, of the United States Engineer Corps, a recognized expert on reinforced concrete. The test was made on the second floor, where 300 pounds per square foot were laid on one span, in the form of bricks piled three feet high and covering a space 20x11 feet. The floors were designed for a superimposed load of 150 pounds per square foot. Under the test made the deflection of the beam was one-sixteenth of an inch. Additional load was then applied, making the total about 400 pounds to the square foot, with practically no change in results. A test load of 200 pounds per square foot was applied to the cantilever, with no resultant deflection. With such a notably favorable result from these tests, verifying the apparent success with which reinforced concrete withstood the heat, the advocates of this material are certain that its use will be enormously increased for floors and walls wherever fire-resisting construction is contemplated.

The uses to which cement, or concrete, can be put are innumerable. It includes all branches of construction, embracing all kinds of buildings, grain elevators, chimneys and stacks, water towers, bridges, culverts, columns, fire and retaining walls, wharves, docks, piers, dykes, breakwaters, mine shafts, tunnels, subways, foundations, railroad ties, etc. In the water it has no equal, as the material resists moisture completely and grows harder and more resistant under its effects. The advantages of concrete are so manifold and important that it is evidently but a matter of a short time when it will be adopted universally. The materials are abundant and cheap, quickly procured and easily assembled, can be handled by ordinary labor, and can be moulded to any form: Structures thus made are exempt from corrosion and destruction by the elements, absolutely fireproof, unaffected

by changes of temperature, and require no paint to preserve them or maintain their beauty of appearance.

He would be a bold prognosticator who would attempt to define a limit for the future uses of concrete. We are walking on it, riding on it, eating our daily bread from grain stored in concrete elevators, taking our drinking water from concrete reservoirs and cisterns, living and doing business in houses constructed of concrete, sanitating our cities with sewers of concrete, and last, but not least, enterprising undertakers are offering us the opportunity of taking our final rest in concrete burial cases deposited in concrete tombs, surmounted by concrete monuments, sacred to our evanescent memories.

#### EDITORIAL NOTES.

The Dominion Exhibition at Winnipeg was successfully inaugurated at the grounds of the Winnipeg Industrial Exhibition July 26. Canadian manufacturers are making excellent displays there.

The thirty-third annual meeting of the Canadian Manufacturers' Association will be held in Montreal beginning September 20 and continuing through 21 and 22, under the able direction of Mr. George E. Drummond, the president, who is also the president and manager of the Canada Iron Furnace Co., and who is interested in many of the more important iron and steel industries of Canada, including the Lake Superior Corporation, the Association is in prosperous condition.

Dr. J. O. Orr, manager and secretary of the Toronto Exhibition, writes to newspapers as follows: "It has been brought to my attention that some party or parties are soliciting advertisements for a so-called Industrial Exhibition programme. There will be only one official programme, and the Exhibition Association have decided to publish it this year themselves, and will not allow any other programme to be sold or distributed upon the grounds. No person has any authority from the Exhibition Association to solicit advertisements, and those who are doing so are acting on their own account without any authority whatever from the association."

Last week in the House of Commons, in discussing the cost of operating the Intercolonial Railway, Dr. Kendall complained that the Intercolonial had to pay more for coal at Sydney, Cumberland and other points in Nova Scotia where it was produced, than the Canadian Pacific Railway and Grand Trunk had to pay at Montreal, 800 miles away. Mr. Logan defended the high price of coal in Nova Scotia; said that the reason coal was cheap in Montreal was because it is a competitive point for American coal.

The new administration building on the grounds of the Canadian National Exhibition in Toronto, will prove a great convenience to exhibitors. In one large room have been grouped the representatives of all the buildings and

all the departments. Whether one is showing a traction engine, a thoroughbred horse, or a dainty piece of embroidery, entries can be made and display arranged for by application at this central office. Exhibitors in several different sections, who, through lack of accommodation, have been compelled to go from one point to another to arrange for their reservations, will particularly appreciate this movement of the management to minimize their difficulties.

A large number of workmen employed in factories and industrial establishments in Montreal have organized under the name of "The Made in Canada Club." The object is set forth in the following resolution: "That the objects of the association shall be to further in every legitimate manner possible the revision of the tariff in Canada until it is sufficiently high to protect all Canadian industries, whether farming, mining or manufacturing, in such a manner as will insure, first, our own home market, and, secondly, safeguard us against the competition of cheap foreign products and surplus products of the United States in all articles or goods we can produce in this country." The pledge of membership is as follows: "I hereby agree to become a member of 'The Made in Canada Club,' and promise to support by my vote and influence, irrespective of party politics, the principal of tariff protection for all industrial pursuits in Canada, and at all times, when making purchases, to give a preference to articles made in Canada, and to aid, as far as in my power lies, in keeping Canadian manufacturing institutions as fully employed as possible with Canadian labor."

The Minister of Finance gives notice of resolutions for the imposition of an excise duty of \$1.90 a gallon or less on alcohol manufactured from sugar, syrup, molasses or other saccharine matter, and a duty of 2½ cents a pound on malt flour or malt imported into Canada and ground. The duty on alcohol distilled from molasses will be the same as that on alcohol distilled from grain. Malt flour is used by the brewers in substitution for malt.

The report of Mr. Joseph Chamberlain's tariff commission on the iron and steel trades arrives at the conclusion that the decline of the British iron and steel industry is due to the fact that the manufacturers of the United States and Germany have secured control of the home markets by means of high tariffs and an organized system regulating their export trade, that they are in a position to dump their surplus products on the British and other markets irrespective of cost, and that the dumping could not be carried on except for the British system of free imports. The commission expresses the opinion that the situation can only be remedied by a system of tariffs arranged as follows: 1. A general tariff consisting of a low scale of duties for foreign countries admitting British wares on fair terms. 2. A preferential tariff, lower than the general tariff, for the colonies, giving adequate preference to British manufactures and framed to secure freer trade within the British empire. 3. A maximum tariff consisting of comparatively higher

duties, but subject to reduction by negotiation to the level of the general tariff. The report, which is signed by fifty-eight commissioners, is very bulky and gives the evidence of British manufacturers, the evidence given before the United States Industrial Commission on Iron and Steel Industries, the organization and working of German Kartells, and a vast amount of statistics, etc.

The Montreal Directory for 1904-5 states that the population of the city proper is 294,000, and with the outskirts 373,000. The figures indicate a steady increase in population.

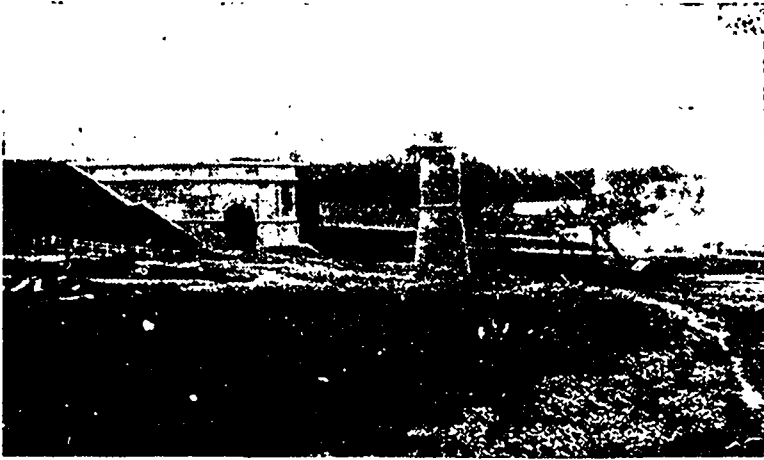
The Montreal City Council have voted to grant \$10,000 to aid in the establishment of a permanent exhibition in that city. The city, if the exhibition is established, will be the owner of the grounds and buildings, and control the finances. A much larger government grant will be asked for by the promoters, who are known as the Montreal Industrial Exhibition Association.

Many countries are directing attention to the advantages of alcohol as a source of power. They have the raw materials from which it can be produced, and it appears to be inevitable that the future will witness a development of engines of the explosive class in which alcohol shall take the place of petroleum, petrol, or gasoline. It would be of interest, therefore, to obtain from commercial representatives abroad some account of the laws regulating the production and sale of alcohol for industrial purposes in different countries.

A large and influential delegation of gentlemen living along the line of the proposed Ottawa and Georgian Bay Canal waited upon the Prime Minister and other members of the Government a few days ago to urge the Government to assist and support the construction of that enterprise. Sir Wilfrid informed them that in his opinion the construction of the waterway would be of great advantage to the country, but that the terms upon which the promoters of the enterprise wanted Government aid were too onerous and unacceptable; and if the canal was to be built, it would be by the Dominion Government.

Our exports to British Africa last year amounted to \$1,931,541. For the calendar year 1902 the imports via the Cape of Good Hope were \$166,000,000. Via Natal for the same year the imports were \$76,000,000. The United States sent in via the Cape of Good Hope in 1902 goods to the amount of \$16,000,000. By way of Natal the value of the goods from the United States was \$6,000,000. The class of goods we export to South Africa are bicycles, flour, chairs, agricultural implements, cotton, lumber, doors, sashes, and blinds, household furniture, dairy products, musical instruments, carriages and harness, hay, condensed milk and provisions. With the aid of the preference and the direct line of steamers established by the Ottawa Government between the Dominion and South Africa, Canada ought to enjoy considerably the best of it in commercial competition with the United States.





Hydraulic Lift Lock—Side View.

is estimated that the sum of \$5,000,000 would open up the two outlets, the northern outlet between Midland on Georgian Bay and Lake Simcoe, and the southern outlet between Rice Lake and Lake Ontario, if constructed by the cheaper route, via Port Hope. This waterway would then open up about 1,000 miles of inland shore line, many of the lakes and rivers lying transversely to the line of canal, and it is estimated that 6,000,000 acres of land will lie tributary within ten miles of its wharves.

The Trent Valley route will be 250 miles shorter between the Soo and Montreal than the Welland Canal route, or 500 miles in the return journey, and it is also 1,500 miles shorter in the return trip than the Erie Canal between the Soo and Liverpool, so that the Trent Valley Canal advocates claim that it is the shortest route between the Canadian North-West wheat lands and Europe.

It is a remarkable situation for Canadians to waken up to at this late day, to be told that the Trent Valley Canal follows out the same method adopted in the \$100,000,000 modern German canal system, connecting the coal and steel districts with the North Sea, viz: Length and breadth of lock rather than depth, as it was recognized that by this means bulk could be accommodated more cheaply as also a cheaper means of transportation could be effected. In fact the draft of the German barges is less than those of the Trent Valley Canal will be. The German barges will have a draft of 7½ feet only, but will have a capacity of 1,000 tons. The dimensions of the Trent Valley locks are 134 feet long by 33 feet wide and will have a depth of 8 feet, 4 inches on the sills. The original intention was only to give a depth of 6 feet, but the depth as now arranged for will accommodate barges of 800 tons or 25,000 bushels, a fact which will open the eyes of the Canadian public.

The present Erie Canal which is a mule-power canal and has a capacity to accommodate only 240-ton barges, is now being enlarged by the State of New York at a cost of \$101,000,000, and will only accommodate barges of 1,000 tons capacity. The barges will be 150 feet long, 25 feet wide and 10 feet draught; the depth on the lock sills being 11 feet. It will thus be seen by comparison that the

Trent Valley Canal, which will accommodate barges of 800 tons capacity, will only cost \$9,000,000 when finished, as against the enlarged Erie Canal at a cost of \$101,000,000, plus the cost of the original canal; and the Trent Valley Canal besides will give a route between the North-West wheat fields and Europe 1,500 miles shorter in the return journey.

Another advantage in favor of the Trent Valley route is that it will be much quicker, inasmuch that there will be only 13 miles of actual canal cuttings in the Trent Valley, plus 45 miles on the St. Lawrence Canals, a total of 58 miles, and some 410 miles of river and lake route between Midland and Montreal; whereas by the enlarged Erie Canal between Buffalo and New York there will be actually 257 miles of canal cuttings and 233 miles of lake and river. It having been proven, by experiments made by the late state engineer of New York, Mr. Sweet, C.E., that the same power that will propel a barge 4 miles per hour in the Erie Canal will drive a barge nearly 6 miles per hour in open water, by which it can readily be seen how much quicker the Trent Valley

route is over the new Erie Canal route by this feature alone.

Detailed figures as to probable cost of carriage by Trent Valley steam barge with several tow-barges in consort between Midland and Montreal were submitted to the Royal Commission on Transportation at their recent sitting at Peterborough, made by practical marine men, bear out my contention that grain could be shipped via Trent Valley in a much shorter time and at a cheaper rate than via the new enlarged Erie route.

Besides, as the Trent Valley district will develop by reason of the construction of its canals, the return freight traffic will be greatly increased, thereby much lessening the cost per bushel on grain carried through it.

Hereby the most ardent of ship-canal advocates must admit, that in the action of Germany and New York State, in their adoption of a barge-canal system each at a cost of more than \$100,000,000, the ship-canal idea is exploded.

Franco and Belgium, too, are forging ahead in the construction of barge canals, and in fact many of the manufacturing countries of the world have realized that in the struggle for trade, barge waterways play a most important part; and yet with all this great movement, Canada, with practically a natural waterway in the Trent Valley, is content to stand idly by and look upon it as a political plaything. Even now in the face of a determined effort to urge completion of this great national work, we find it being again belittled by some selfish power-holders who seek to divert public funds ostensibly for navigation purposes, but really only to enlarge the capacity of their water-powers. This selfish endeavor was turned down by the then Minister of Railways and Canals, two and a-half years ago, who is reported to have told them also that "it was water-power they were after and not navigation"—as per press reports of the conference. The situation in this



Hydraulic Lift Lock—View from Lower Level.

matter is that these power-holders having used up the flow of water as established and paid for in the Government leases of dams, now seek to secure additional flow of water by constructing headwater reservoirs (for water-power purposes at the expense of the public treasury).

I advocate the Port Hope outlet to Lake Ontario because I believe it to be the best route for foreign trade and will better market the product of the 6,000,000 acres within ten miles of the canal waters, and which will open up 1,000 miles of inland shore line. If I believed that the Port Hope route offered an obstacle to the grain traffic I would not advocate it.

The Port Hope outlet will place Peterborough and Lindsay and the whole district 85 miles nearer Toronto, Hamilton and Oshawa than via Trenton outlet, a saving of 170 miles in a return journey. In fact if the outlet is by Trenton then Western Ontario can say farewell to the products of Central Ontario and the lumber trade of Georgian Bay shores, and also to a market for heavy goods made in Western Ontario with Central Ontario. The barges must be lake worthy too, so as to secure the coal trade from the American ports across the lake, and also to navigate the seven miles this side of Kingston, the worst stretch on Lake Ontario, as also to handle the Georgian Bay lumber trade and the 20-mile stretch on Lake Simcoe which is exceedingly nasty on the shallows near Beaverton,—so that the 26-mile stretch between Port Hope and Presque Isle harbor, the entrance to the Murray Canal, cannot honestly be used against the Port Hope outlet. Port Hope, Toronto, Hamilton and London are asking the government for a disinterested and unbiased report and survey of the two outlets. I am satisfied, too, that the Port Hope outlet will cost less than half that of the Trenton outlet, and I base my contention not only on my own observation, but on the survey and report made by an imperial government engineer some years ago, who reported as to the Port Hope outlet, viz: "This is the natural and best possible route, and that the cost from Rice Lake to Trenton by the Trent river would alone cost as much as the canal from Lake Simcoe to Port Hope." This is easily seen as there is a deep ravine running all the way between Rice Lake and Port Hope, a distance of only twelve miles, with the exception of a small hog's back of earth near Rice Lake, whereas by the Trenton route the line of the canal will be diverted from the river, in several places,—a ten mile cutting through rock across country in one place, and another two-mile rock cutting, with probably a third diversion giving another seven miles of rock cutting.

Besides, this imperial report was only for a four-foot canal, while to-day it is being constructed for 8½ feet over lock sills, requiring at least 9½ feet in canal reach, which would necessitate over 5 feet more depth of rock cutting on the Trenton route, and only requiring a heightening of the dams in the report of the Port Hope outlet, making the cost still much lower by Port Hope than by Trenton than figured.

A feature in the construction of the

Trent Valley Canal is the great double-balance hydraulic lift lock at Peterborough only now completed. Another such lift lock is now half completed near Lake Simcoe, and, in fact, five hydraulic lift locks will be constructed in this canal waterway—nature having adapted herself for the purpose on the route, which together will save some six hours over the ordinary system of locking as used on the Welland and Erie Canals.

This hydraulic lift lock simply copies the method adopted in the modern European canals, and its use was recommended by Frank Turner, C.E., of Toronto, who, along with John Kennedy, C.E., harbor engineer of Montreal, and Judge Weller, of Peterborough, composed the joint canal government commission of 1887—who, by the way, reported favorably as to the Trent Valley route, both as to its water supply, feasibility and utility, and advised its completion.

A number of such hydraulic lift locks have been in successful use in Europe for

used to close the ends of the reaches of the canal on the upper and lower levels. The pontoons, guided between three massive concrete towers, are each supported on top of the steel pistons, 7½ feet in diameter, which work in watertight steel wells, one under each piston. Each pontoon is simultaneously up and down, being worked in balance.

A great advantage of the opening up of the Trent Valley Canal route, is that it will give cheap water transportation to immense farming and mining districts in Central Ontario; and it will also bring the great lumbering regions of Georgian Bay into close touch with Lake Ontario ports and the east; and by reason of the fact that vessels can make three trips between Lake Superior iron fields and Midland as against only two trips between Lake Superior and Welland Canal ports, one can readily realize that the Trent Valley district should become a great iron manufacturing centre. The thousands of horse power adjacent to the line of canal will also be



(FROM THE BROOKLYN DAILY EAGLE)

some years. The lock at Les Fontinettes in France was constructed in three years and completed in 1888 and replaced six ordinary connecting locks, reducing the time as well as operating charges.

The German lock lifts a 1,000-ton barge, while the Peterborough lock lifts an 800-ton barge. There is also such a double-lift lock at La Louviere in Belgium, built in 1888, and also a lock at Anderton in the west of England. The canal, on the level above the Peterborough lift lock, starts at Nassau, where it is diverted from the River Otonabee and is carried along the high tableland and parallel with the river for four miles, and is lowered by means of the lift lock into the river below Peterborough. The Peterborough hydraulic lift lock will lift these 25,000-bushel barges from the lower level of the canal 65 feet up to the higher level, or vice versa, by means of two immense steel pontoons. These pontoons are closed at their ends by means of gates hung on the lower edges, and gates being also

the means of attracting great flour mills to the district, as it already has at Peterborough and Lindsay. Canadians are inconsistent in their "Made in Canada" cry when to-day wheat, the greatest product of the country, is shipped to Europe as raw material.

Cheap power and cheap transportation are the two principal factors of the cost of manufacture, and with such advantages as the cheap power now offering at Peterboro', Lindsay and elsewhere on the canal, it does not take a Rothschild to see as he did in 1898 when he made the statement that "This district is destined to become one of the great manufacturing centres of the continent." Surely it must be admitted the possibilities of this district are that it will become a great industrial bee-hive, and that Midland and other towns on the Georgian Bay, as well as Orillia, Barrie, Lindsay and Peterborough on the line of canal, will be simply feeders to the trade and prosperity of Toronto and Hamilton, as well as points

east and Montreal. Here it may well be noted that the manufacturing development at Peterborough, in particular, has been remarkable indeed the past three years.

Mr. John Chamberlain, the marine expert correspondent of the Cleveland Marine Review, referring to the Trent Valley Canal as the only Canadian route, feared speaking of the enlarged Erie Canal, says: "Let other routes go on as best they may. There is only one that can do us any great harm, and that is the canalizing of the streams and lakes from Georgian Bay to Lake Ontario through the Trent Valley, and it is even then a problem as to results, for the great cost and the short season are both very seriously against it."

If Mr. Chamberlain knew that a sum of \$9,000,000 will be the total cost of the completed Trent Valley Canal, how much more would he fear its competition? It is not the expenditure upon this almost natural waterway, but a continuation of the political abuse which has made the Trent Valley Canal a shuttlecock for the use of politicians, and the years of protracted construction which is responsible for the mistaken idea that an immense sum has been expended.

It is claimed that grain by the Trent Valley route could be moved to Liverpool without taking it south of the isothermal line in which it is grown. Grain deteriorates in grading in transportation of long distances in high temperatures, but Canada, in the Trent Valley Canal, possesses a cold water route which would help to make it most attractive to shippers. It can be claimed, also, that a great expenditure can be saved in the necessary grain elevators—now a serious handicap at Montreal. Floating elevators may be used to discharge the grain direct from barge to ocean steamer and if market conditions are not right the barges themselves may be used for storage purposes. Again, the

claim can be made that they may also be used for winter storage purposes—arguments which have been used in favor of the enlarged Erie Canal.

There are even now periods when the moving tonnage is more than taxed to its utmost capacity, sometimes brought about by the conditions of the market rather than by the largeness of the crop. Therefore the quickest and easiest method to help the country's transportation needs is to immediately complete the Trent Valley Canal or what I have termed "Nature's Short-Route Grain-Carrying Waterway."

One of the best endorsements the Trent Valley Canal has ever received is embodied in a letter, which was recently written to myself by Mr. Henry B. Hebert, chairman of the Erie Canal Association of Greater New York, which represents practically all the public, manufacturing and financial bodies of New York State.

Mr. Hebert writes: "I read with great interest your paper relative to the Trent Valley Canal. I really do not understand why your people do not push this improvement. \$5,000,000 is no great sum for the Dominion Government to raise for this purpose, especially as you state it would open 1,000 miles of inland shore line. We had a great fight to get through the Erie Canal enlargement, but we won out after many defeats and discouragements caused by indifference of our legislators and railroad influence."

It has now taken over 20 years to expend \$4,000,000 on the present work, and I ask for what purpose the money has been expended at all, when done thuswise. Some \$120,000 interest is now lost annually on this outlay, which loss will be increased for the next twenty years it will take to complete the work by this dilatory method of construction.

The spirit of progress that is affecting Canadians and the Government is proven by the recent action of Government

appointing men of large experience in transportation matters and of great business ability—as the Royal Commission on Transportation—and to them we look with faith that the opportunity with which nature has so richly endowed us in the Trent Valley waterway will be speedily and economically embraced. If so, Canada will be in a position to hold her own against all opponents in transportation to the world's markets.

I would humbly submit that the Canadian Government should at once give her waterways a fair consideration and take advantage at least of the natural waterway through the Trent Valley, by making the necessary vote of the comparatively small sum of \$5,000,000 for the completion of the work, thus giving the district not only its needed water transportation, but to the country—what will be a link of the cheapest through route from Britain's Granary to Europe.

J. A. CULVERWELL.

PETERBOROUGH, July 15, 1904.

Plans for a corundum mill of 100 tons daily capacity to be situated at Palmer Rapids, Renfrew County, Ont., were accepted at a recent meeting of the directors of the Corundum Refiners, Limited, held in Toronto. There were present at the meeting Messrs. J. N. Scatcherd, W. B. Rankins, C. R. Huntly, J. C. Conway, and Edward Michael, of Buffalo; James A. Roberts, of New York; J. P. Tilden and H. P. Coburn, of Hamilton. The company now controls nearly 1,400 acres of corundum lands in Regina Township, the greater part of which has been acquired by private purchase. It is expected that the new mill will be in operation by next summer.

A contract has been made by the Mosaic Tile & Cement Brick Machinery Co., Detroit, Mich., with Messrs. Scott & Scott, Toronto, for the sale of their patent rights for the Dominion of Canada.

A CYCLONE GRINDER.

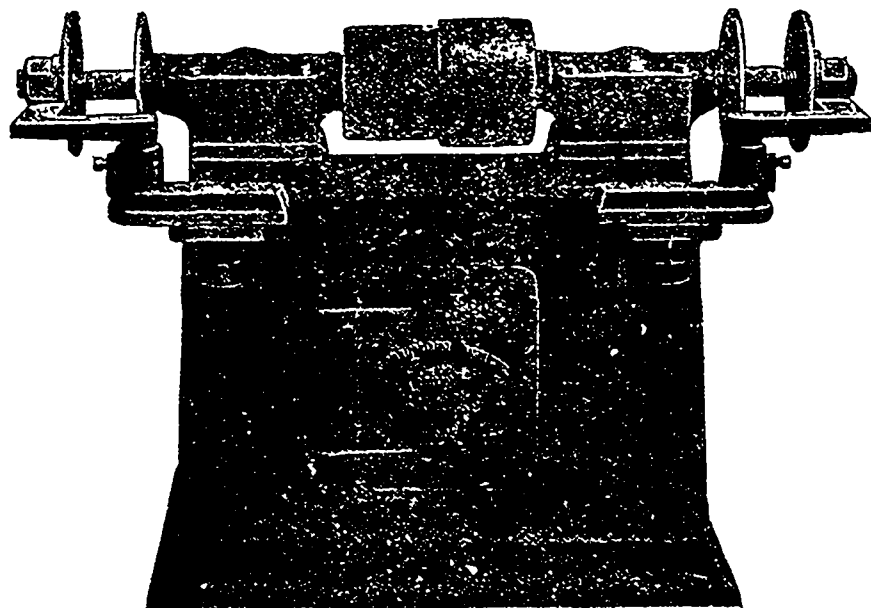
Of the many types of improved grinding machinery manufactured by the Hart Corundum Wheel Co., of Hamilton, Ont., Cyclone Grinder No. 19 illustrated herewith is enjoying a large sale. Like all of the grinding machinery manufactured by this company, this grinder is built on the most up-to-date and scientific principles. All the bearings are absolutely dust-proof and fitted with automatic oilers. This grinder is built to carry two wheels from 20 to 30 inches in diameter and 4 inches thick. The countershaft has cone pulleys, 17x18x6 1/2 inches and is fitted with tight and loose pulleys, 8 inches in diameter and 7-inch face and has a speed of 450 revolutions per minute.

The frame work of the machine is very solidly built and well finished. The arbor is of crucible steel and 57 inches long with a height from floor to centre of 34 inches. Size of base is 31x41 inches; diameter of collar, 10 inches, and diameter of arbor between collars, 2 inches. The bearings are 16x2 1-16 inches and distance between the wheels, 45 inches.

Like the other products of the company this machine represents the most advanced

ideas in grinding machinery and is now in wide use by manufacturers, machinists,

metal workers and others requiring such appliances.



Cyclone Grinder No. 19.



### THE TYPE OF ECONOMIZER FOR HIGHEST EFFICIENCY.

The two most essential qualities of a fuel economizer are its ability to utilize most efficiently for heating water a maximum amount of heat (otherwise wasted, from the escaping gases, and the accessibility of all surfaces for cleaning, repairing and renewals. The Sturtevant "Standard" and "Pony" type economizers were designed to make possible these two requisites. These economizers utilize practically all the waste heat from the gases by a patent system of staggered pipes. This system compels all the hot gases to encircle the pipes increasing the effective heating surface to a maximum. The gases are thus broken up and forced to give up their heat to the surrounding surfaces.

A fuel economizer must be accessible both inside and outside if it is to be a valuable adjunct to a power plant. To make this possible the joints of the Sturtevant Economizer are made taper metal to metal, and are so designed that any pipe can be taken out and a duplicate substituted without disturbing any other pipe, section or side walls. This would not be possible if packing, cement or rusting were used to make tight joints.

Any header can be withdrawn and a duplicate substituted without disturbing any other header, section or side walls. Any section can be withdrawn and a duplicate replaced without disturbing any other section or side walls. There are no connection pipes to remove and all water surfaces are rendered accessible by the simple removal of the caps.

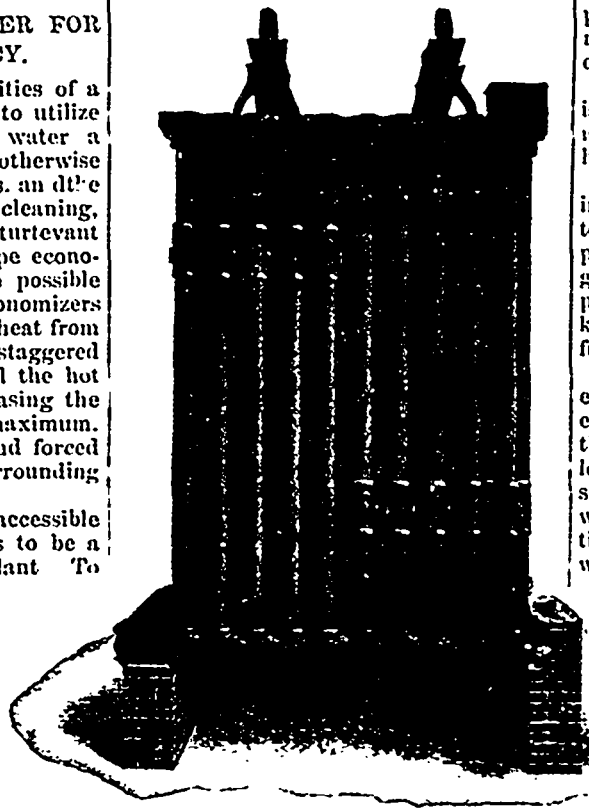
The taper metal to metal joints make these economizers especially valuable for high pressures and are a marked improvement over gasket joints which spring and leak under such pressures.

The scrapers are interchangeable and the driving mechanism positive in action. A guide plate for the scrapers is used to insure the scrapers position and prevents them from sticking and breaking. The driving pulley can be belted up parallel or perpendicular to the length of the economizer.

The Sturtevant Economizers are not designed for forced circulation, but the connections are made in such a way that the flow of water is started in the right direction and tends to keep the flow up and down the consecutive sections without making undue work for the pump.

The foundations required for these economizers are comparatively simple. This is due to the fact that the machines are so constructed that the parts themselves contain the rigidity that would otherwise be required in the foundations. The fact that taper metal to metal joints are used also eliminates the necessity of building more rigid foundations, as there are no gaskets to loosen and leak if the foundations spring slightly.

Two general types of economizers are made by the B. F. Sturtevant Co., the "Standard" and "Pony."



The Sturtevant Standard Economizer.

The "Standard" is built in sections containing pipes from four to twelve wide, the staggered system of pipes making it possible to build sections of an odd as well as an even number of pipes. The "Standard Economizer" is adaptable to

power plants of almost any size, but is more commonly used for boiler capacities of 350 h.p. and over.

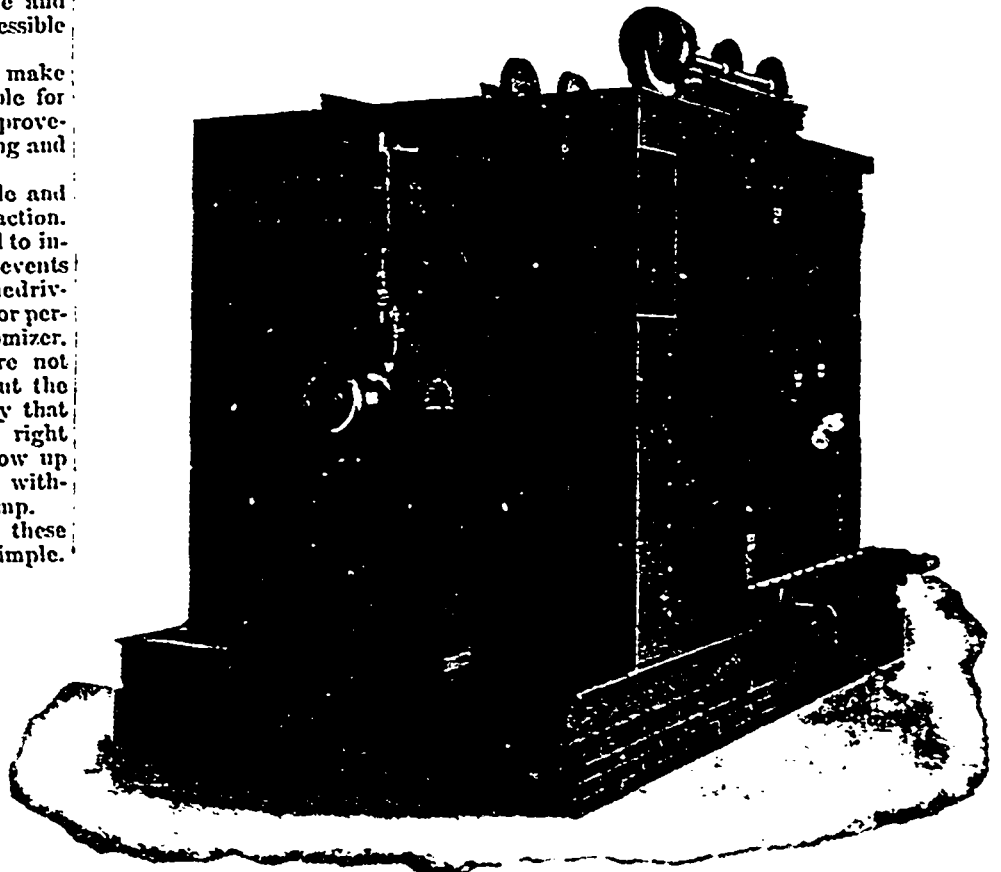
The "Pony" type, as its name implies, is smaller than the "Standard" and is more adaptable to power plants of 350 h.p. or less.

All machines are made of the best cast iron for the purpose. All parts are tested to three hundred and fifty (350) pounds pressure before leaving the works and guaranteed to be sound and tight. All parts are machined to special gauges and kept in stock so that duplicates can be furnished without delay.

The several installations of the Sturtevant Economizers have proven highly efficient. Not only has it been proved that the gases are reduced to a remarkably low temperature with a comparatively small amount of heating surface, but the water has also been heated to an exceptionally high temperature. In cases where the feed water contains foreign substances the owners have found these machines to be especially valuable owing to their accessibility and ease of cleaning.

An illustrated catalogue describing the Sturtevant Standard and Pony Economizers is issued by the B. F. Sturtevant Co., Hyde Park, Mass., and is of interest to all steam users.

The Martin Electric Supply & Construction Co., St. Catharines, Ont., have been awarded the contract of installing an electric plant of 150 lights in the Aylmer Canning Co.'s factory at Aylmer, Ont.



Special Arrangement of Sturtevant Pony Economizer with Mechanical Draft Apparatus.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

## CAPTAINS OF INDUSTRY.

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

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

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

A by-law to take \$20,000 worth of stock in the Queenston, Niagara & St. Catharines Electric Railway Co. has been carried by the town of St. Catharines, Ont.

The Steele Engineering Co., Philadelphia, Pa., who have had charge of the work on the addition to the plant of the Toronto Carpet Mfg. Co., have about completed their contract.

The Rand Drill Co. have been awarded the contract for furnishing two large compressors to be used in the central air power plant, 18 miles below Sault Ste. Marie. They will supply air to operate 25 Little Giant rock drills, 4 three-ton cableways and 4 large water pumps. Their combined capacity is 6,600 cubic feet of free air per minute. The work in hand is for constructing and dredging a two-mile channel in the Soo River, wide and deep enough for the navigation of large vessels.

The new grain-carrying steamer Had-dington, launched at the shipyards of the Bertram Engine Works Co., Toronto, last week, will run between Fort William, Ont. and Montreal. She is 254 feet long, 42 feet beam, 18 feet deep, and fitted with two Scotch return tubular boilers 10 feet in diameter and 11 feet long. Her engines, which are of the triple expansion type, have cylinders of 15 inches, 25 inches, and 42 inches in diameter, and a 30-inch stroke. She will have six 3-ton cranes for handling freight, and has a capacity to carry 75,000 bushels of wheat.

The Canadian Westinghouse Co., who are erecting large shops in Hamilton, Ont., intend to heat their buildings by the blast or fan system of heating and ventilating. The contractors for the erection of their buildings, the Westinghouse Church Kerr Co., of New York city, have placed the order for four large fans with Sheldon & Sheldon, Galt, Ont. The four fans in question have a combined capacity of handling 152,000 cubic feet of air per minute.

The Guelph & Goderich Railway Co., capital \$125,000, have been organized to build an electric railway between the two points. Some 80 miles have already been surveyed. William Bell, Guelph, Ont. is interested.

Since the acquisition by the Grand Trunk of the Hamilton, Grimsby & Beams-

ville Electric Road the Canadian Pacific Railway have been busy trying to acquire similar lines on the fruit belt of the Niagara Peninsula, and are reported to be after the Hamilton Electric Radial Railway Co.

The County Commissioners have granted the Hamilton, Caledonia & Lake Erie Electric Railway Co. the right of way over the major portion of the Caledonia road, but at points where the road is narrow the company will have to purchase the right of way through private property.

The Metropolitan Electric Railway, which runs from Toronto to Newmarket, a distance of 40 miles, has been sold to the Toronto Railway Co. The Schomberg & Aurora Electric Railway, which runs from Aurora on the line of the Grand Trunk to Schomberg, has also been sold to the Toronto Railway Co. The Toronto & York Radial Electric Railway Co., which recently received a charter, have sold their franchise to the Toronto Street Railway Co.

The Lake Superior Corporation have begun shipping iron ore from the Helen mine, at Michipicoten. Its product has been sold to American furnaces.

R. H. Flaherty, who has been exploring on the Canadian side of the international line north from Minnesota for several years, most of the time for the United States Steel Corporation, has found what he claims is a very valuable iron ore property a short distance east of Port Arthur, on Thunder Bay.

Chadwick Bros., brass manufacturers, Hamilton, Ont., will erect a new factory in the northern part of that city.

W. J. McGuire & Co., Toronto, representing the International Sprinkler Co., Philadelphia, gave an exhibition a few days ago at the works of Christie, Brown & Co., showing the operation of the new water curtain with which that factory has just been equipped. The system consists of a series of pipes fitted with sprinkler heads, and is designed to protect the outside of the building in connection with the interior sprinkler system.

A new water power plant will be installed by the Meaford Rolling Mills, Meaford, Ont.

The St. Anne Falls Power Co., Quebec

City, have been absorbed by the Quebec Power & Electric Co., of that city.

The Canadian Cement & Brick Co. purpose establishing a plant in East Toronto and have asked for exemption from taxation.

A new fog horn is being installed at the Eastern Gap, Toronto. An air-compressing engine will be installed in the new power-house, which will be run by electric power supplied by the Toronto Electric Light Co. The air to blow the horn will be carried to the light-house at the end of the wharf through a pipe. The whistle can almost instantly be blown, as all the man in charge needs to do is to turn on the electric power.

The W. J. Gage Co., Toronto, have purchased property on Spadina Avenue, near King Street, and will erect a factory 20x120 feet.

Sir Frederick Borden, the Dominion Minister of Militia, has practically completed the negotiations which he has been carrying on for some time past with the celebrated English gun and ammunition manufacturing firm of Armstrong & Co. for the establishment and operation of cartridge factories at various points in the Dominion. A contract is now being prepared, and will be executed shortly, under which Armstrong & Co. will establish and operate at or near Ottawa a cartridge factory with a capacity of 20,000,000 rounds annually. The capacity of the existing Government factory at Quebec is 24,000,000, so that the establishment of this factory will almost double the existing resources of the Dominion for providing ammunition for the militia force. The Minister has also made provision in the contract for the establishment of factories of similar capacity in Manitoba and British Columbia whenever required by the Government.

The Metal, Shingle & Siding Co., Preston, Ont., whose plant was destroyed by fire July 15, with a loss of \$40,000, are preparing to rebuild.

Tenders for a telephone franchise for the City of Toronto will be received by the City Controller up to October 1, 1904. The franchise is to be granted for ten years with renewal privileges.

Workmen have commenced excavating the foundation for the new \$100,000 sub-station to be erected on the west side of Davenport road north of the Canadian Pacific Railroad tracks for the Toronto & Niagara Power Co. The excavation indicates that the building will be 225 feet long and 80 feet wide. It was stated that the structure would be absolutely fireproof, the material consisting of concrete, brick, stone and iron. The company will build another sub-station on the banks of the Niagara River above the power house. The two substations will be almost identical in construction.

W. J. Devlin, Pembroke, Ont., has organized a company with a capital of \$20,000, to erect a foundry at North Bay, Ont.

A move is on foot to establish a glass works at Dundas, Ont. Mayor Lawson, of that town, is interested.

The Canadian Timber Co., Limited, with \$250,000 capital stock, headquarters, Ottawa, have been incorporated with a board of directors of the following: William B. McAllister, William Anderson, Ottawa; J. William Bryson, J. W. Hennessy, Fort Coulonge, Que.; H. S. Dowd, Quyon, Que.; and John A. Cameron, Dominionville, Ont.

The town of Paris, Ont., is voting on a by-law to expend \$10,000 in extending its electric system.

The MacGregor-Gourlay Co., Limited, Galt, Ont., have sold their pin business to the Montreal Small Wares Co. The business will remain in Galt for the present at least. Members of the firm of MacGregor-Gourlay Co., will still retain a large interest in the new company.

The contract for a new power house to be located between Paris and Blue Lake, Ont., has been awarded to P. D. Secord & Sons, Brantford, Ont. by the Grand Valley Electric Railway Co.

The Brantford & Hamilton Railway Co., have been incorporated and will build an electric line between these two cities. The Thorold & Lake Erie Railway Co. have also been incorporated.

The International Gas Appliance Co., manufacturers of gas light fixtures, etc., are seeking a bonus from the town of Owen Sound Ont., and will likely locate a plant there.

The town of Owen Sound, Ont., are considering the matter of extending their gas mains and improving the gas plant.

The Chicago Telephone Supply Co. have made an offer to install a municipal telephone system at Brantford, Ont., for \$37,500. It is proposed to supply the present customers of the Bell Co. with phones free of charge until their existing contract expires.

The Grand Trunk Railway will substitute electricity for steam in the Sarnia Tunnel and will install a plant for that purpose to cost \$500,000. The third rail system will be used.

The Canadian Michigan Gold Mines, Limited, Sault Ste. Marie, Ont., have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include J. A. McPhail, Wm. Coyne, Sault Ste. Marie, Ont., and E. S. B. Sutton, Sault Ste. Marie, Mich.

The Eldorado Mining Co., a United States incorporation, have been licensed to do a mining and milling ore business in Ontario with a capital of \$50,000. G. H. Draper, Rat Portage, Ont. is their attorney.

The Hawkesbury Light & Power Co., Hawkesbury, Ont., have been formed with a capital of \$100,000 and will install an electric lighting plant at that place. J. W. Ross is at the head of the company.

The Canadian Northern Express Co., The Canadian Northern Telegraph Co., and the Canadian Northern Transfer Co., have been incorporated by interests connected with The Canadian Northern Railway.

A gas plant with appliances for utilizing the by-product coke is proposed for Fort William, Ont., Mr. S. Johnston, London, England, is promoting the project.

The Capital Fuel Co., Ottawa, have been incorporated by Jno. Heney, J. J. Heney and C. F. McCarney, to deal in coal, peat, wood, etc.; capital \$75,000.

The Lakefield Canoe Building & Mfg. Co., Lakefield, Ont., have been incorporated with a capital of \$40,000, to manufacture canoes and boats. E. R. Tate, J. E. Richardson and H. G. Fitzgerald are among the promoters.

The Fruitland Brick & Supply Co., Hamilton, Ont., have been formed with a capital of \$40,000, to manufacture brick and building blocks. F. Hamilton, Jos. Tweddle and James Dickson are interested.

Geo. M. Sinclair & Sons, Ltd., Warrton, Ont., have been incorporated to acquire the business of Geo. M. Sinclair & Son, founders and manufacturers of tools, machinery, boilers, etc., and to manufacture the Sinclair Patent Shaft Coupler. The company are capitalized at \$40,000. The plant will be increased.

The Bertram Brake Co., have been formed in Toronto with a capital of \$40,000, to manufacture car brakes. C. J. Leonard, Chas. Heath and Goldwin Gibson are among the provisional directors.

The Woodruff-Robins Co., Toronto, have been formed by S. H. Woodruff, and F. B. Robins, Buffalo, N.Y., and C. W. Winyard, John Payne and William Gilchrist, Toronto. The company will engage in the work of constructing engineers and builders.

The Canada Cork Co., have been formed by G. T. Dennison, jr., N. B. Egan, F. A. Fleming and others of Toronto to take over the Canada Crown Cork & Seal Co., Toronto.

The Ontario Crude Oil Co., Toronto, capital \$300,000, have been formed by J. W. Stokes, Sarnia, Ont., W. D. Earngey and A. M. Miller, Toronto.

The Sault Ste. Marie News states on the authority of Mr. J. H. Moore, attorney for the Lake Superior Corporation, that Mr. F. H. Clergue is promoting a company who will build an extensive coking plant at the American Soo. In their rail mill alone the corporation uses an average of 350 tons of coke per day. There is no duty on coke going into Canada, but there is a duty of 52 cents per ton on coal, so that the company can manufacture coke on the American side of the river and ship it into Canada without the loss incurred in shipment and without duty.

It is reported that the Canadian Northern Railway Co. intend erecting at Port Arthur, Ont., one of the finest grain cleaning houses on the continent.

The Toronto Street Railway Co. have recently placed an order with Sheldon & Sheldon, Galt, Ont., for two 150 inch fans for forced draft, to be used in connection with the Jones stokers, which they have installed. These together

with the two other fans of the same size and make, which are already installed, will make the largest plant probably of this kind in Canada. The fans are of the three-quarter housing type, direct connected to engines and have a capacity of approximately 90,000 cubic feet of air per minute each at two ounce pressure.

A deputation from Kingston, Ont., waited on Mr. Emmerson, Minister of Railways and Canals, a few days ago, with reference to extending the Rideau Canal from a point near Bedford to Long Lake, Ont., through valuable mineral lands. Unless this branch is cut, these valuable deposits, where millions of dollars worth of minerals are lying idle cannot be worked. It is promised that within one year of the completion of such a canal a thousand miners will be actively at work, and that a large amount of capital will be invested.

Objection has been raised to the transfer of the Hamilton, Beamsville & Grimsby Electric Railway to the Grand Trunk Railway, on the grounds that the company is not empowered to hand the road over to the Grand Trunk Railway without the consent of the municipalities through which it runs, since the municipalities are shareholders in the company. The Hamilton, Grimsby & Beamsville bill as it passed the House of Commons expressly provides that steam cannot be used for operating the road. Manager Waller states that the line will be operated the same as it was before the deal with the Grand Trunk.

Messrs. Alex. McArthur & Co., Montreal, inform us that their new felt factory, tar distillery and saturating plant is fully equipped with the most up-to-date machinery and appliances adapted to turning out first-class paper and felt for building appliances. At their Joliette, Que., paper mills are manufactured their own special brands of Sheathing and Cyclone, as well as building papers of all descriptions.

Mr. Albert J. Pitkin has been elected president of the Montreal Locomotive & Machine Co., Limited, to succeed the late S. R. Callaway. In addition to the amount paid for the plant at Longue Pointe the directors have authorized the expenditure of \$300,000 for the purchase and installment of new tools, equipment, etc., and the enlargement of the buildings. The company are building locomotives for the Canadian Pacific, the Grand Trunk, the Quebec Central, and other Canadian railways.

Randolph McDonald, Three Rivers, Que., has the contract for the construction of a wharf on the St. Lawrence at that place.

La Compagnie Electrique de la Baie des Ha Ha, Chicoutimi, Que., have been incorporated with a capital of \$18,000, to produce electricity and install a water works on Grande Baie River. A. Tremblay, Hebertville Station, Que., is interested.

The Emporium Cigar Co., St. Hyacinthe, Que., have been incorporated with a capital of \$50,000, to manufacture cigars, etc. The charter members in-

clude R. Deschenes and J. A. Deschenes, St. Hyacinthe.

The Pennsylvania Coal Co., Montreal, Que., have been incorporated with a capital of \$20,000, to manufacture fuel, lumber, tan bark, etc. The provisional directors include L. E. Kington, H. L. Mitchell and H. P. Mitchell, Montreal.

The St. Lawrence Construction Co., Montreal, have been incorporated with a capital of \$20,000, to carry on a general construction business. The provisional directors include O. Dufresne, Maisonneuve, Que., J. Ethier, and A. Dausereau, Montreal.

The R. W. Oliver Milling Co., Limited, Montreal, have been incorporated with a capital of \$100,000, to acquire the business of the R. W. Oliver Milling Co., and to carry on a flour milling business, etc. The provisional directors include R. W. Oliver, Jas. Ronald and Wm. J. Henderson, Montreal.

La Compagnie d'Eclairage de Saint Georges, Saint Georges, Beauce, Que., have been incorporated with a capital of \$150,000 to produce electricity, etc. The provisional directors include G. Cloutier, G. Lamelin and J. Gilbert, Saint Georges.

The A. D. Gall Petroleum Chemical Co., Montreal, have been incorporated by A. D. Gall, formerly of the Gall-Schneider Oil Co. which was recently absorbed by the Canadian Oil Co. and others, of Montreal. Capital \$200,000.

The Montreal Packing Co., have been formed with a capital of \$500,000 and will erect a plant in that city. R. M. Ballantyne and P. W. McLagan, Montreal, are among the promoters.

The Canadian United Milling Co., Montreal, have been incorporated to operate a cement mill, capital \$150,000. Chas. Brandeis, W. A. Weir and E. A. Schmidt, Montreal, are among the incorporators.

The Dominion Oil Cloth Co., Montreal, will erect a new five story factory in that city at a cost of \$75,000.

The Fairbanks Co., Montreal, will acquire the plant of the Northrop Iron Works, at Valleyfield, Que. The company intend to employ one hundred skilled mechanics and to commence operations immediately for the manufacturing of both brass and iron goods.

Messrs. Peter Lyall & Sons, Montreal, contractors, have purchased three hundred acres of land at Longue Pointe, Que., which for the present will be used for supplying stone for the foundations of the steel sheds at the harbor front, but afterwards it may be used for the purpose of establishing a cement works.

Hon. Senator Melvin Jones, Toronto, one of the directors of the Nova Scotia Steel & Coal Co., speaking of the affairs of the company, says: The new furnace at North Sydney will be ready and will be blown in before October 1. The balance of the new steel plant there will also be completed and ready for use, and it will also be running not later than January. With the new blast furnace we

will be able to make our pig iron materially cheaper than we have ever done heretofore, and there will be a larger saving in the cost of its manufacture immediately this furnace is in operation, as there will also be in the balance of the steel plant there, which will largely reduce the cost of production so that the whole of our new plant, which we have been building for the past two years, will be in full operation for the coming year, and the blast furnaces the last three months of this year. This industry is no experiment; it has taken 15 or 20 years to grow it into its present satisfactory position, and is managed by men who have grown up with it and are thoroughly practical and understand the business. Fortunately, however, its earning power is not affected by manipulation of the stock. It has made money and grown under conditions much less satisfactory than the present, and with our new plant almost now ready to start, it will be in better position than ever before, and in the near future Canadian people will realize this. We have an inexhaustible quantity of the very best coal. We have large quantities of splendid ore. We have an up-to-date plant for the manufacture of iron and steel. The Canadian market is yearly requiring much larger quantities. Very large supplies will be needed for railways alone for several years to come.

Sherbrooke, Que., has voted to raise \$200,000 to purchase the present lighting plant or establish a new one.

The transfer of the Cochrane Lake, N.S., coal properties to the new English syndicate which lately purchased them will be completed at once, when the purchase money will be paid over to the Cape Breton Coal, Iron & Railway Co., who will transfer the deeds of the property to the new company. The capital for development by the new concern will be furnished by Coates & Son, London, and Hanson Bros., Montreal.

Application has been made to the Dominion Government for permission to build a draw-bridge across Lennox Passage, in Richmond county, N.S.

The Kent Oil Co., Harcourt, N.B., have been incorporated with a capital of \$100,000, to manufacture and refine oil and gas. The provisional directors include Wm. R. Townsend, Moncton, N.B.; M. F. Keith, Harcourt, and H. H. Parlee, Sussex, N.B.

The Nova Scotia Water Power Co., have been incorporated for the purpose of generating electricity at the falls on the Liscomb River, near Goldenville, N.S.

The Reid-Newfoundland Co., St. John, N.B., will expend \$10,000 in improving their electric lighting system.

Edward C. Moxham, New York, and A. J. Moxham, formerly general manager of the Dominion Iron & Steel Co., will develop extensive iron pyrites deposits in Newfoundland.

The Winnipeg, Selkirk & Lake Winnipeg Railway are now ready for rolling stock. It will, for the present, be operated by steam.

It is announced that the Canadian Pacific Railway Telegraph Co. will put up new copper wires between Winnipeg and Regina, and between Montreal and Winnipeg.

Thomas C. Dougherty, of 490 Main Street, Winnipeg, is financing the building and equipment of the Interurban Railroad & Power Co. of Manitoba. This company intend to develop their water power situated on the Winnipeg River, estimated to have a minimum capacity of 50,000 h.p., to build and equip the Winnipeg and Fort Alexander Railroad, some 65 miles long, and acquire the charter rights, assets and privileges of the Lac du Bonnet Mining, Developing & Mfg. Co. of Manitoba.

The Fire, Water and Light Committee of the City Council, Winnipeg, Man., will call for tenders for the supply of 1,000 half inch water meters.

Mr. Charles Dykeman is building an elevator at Rosedale, Man., capacity 30,000 bushels.

A company has been formed at Deloraine, Man., to establish a gas plant. Work will be begun at once.

Couture Bros., St. Boniface, Man., are making important extensions in their brick yards in St. Boniface, with the intention of doubling their output. They have purchased a full equipment of American Martin brick machinery, also a 140-inch American Blower Co. three-quarter housed steel plate fan with direct connected engine, and a 6,000-foot heater to supply hot air to a Bechtel system dry shed, which, it is calculated, will enable them to start the manufacture of brick a month earlier in the spring and to run two months later in the fall than has heretofore been possible on account of frosts.

Work has been begun on the new water-works system at Moose Jaw, N.W.T.

The Canadian Smelting Works at Trail, B.C., will inaugurate a new industry in Canada by manufacturing completed lead products. The machinery is now at the smelter to manufacture lead pipe, and the company will be in the market with the pipe at an early day. Plans are being prepared for sheet lead machinery, another important branch of the industry.

Messrs. Bullen Bros., proprietors of the Victoria and Esquimalt Marine Railways, have acquired the Albion Iron Works' plant at Vancouver, B.C., and will operate the concern.

The Iowa Lillooet Dredging Co. have for some time been operating a dredge near Lillooet, B.C., and for ten days working have averaged 40 ounces of gold per shift, or \$1,000 per day.

Up to March 31, last, the Canadian lead producers in British Columbia had earned \$121,000 in bounties. The production of metallic lead to that date was 8,000 tons, as compared to 9,000 tons for the fiscal year of 1902-03.

Mr. James J. Hill and associates have secured the controlling interest in the Granby Mining Co., who own the large

properties at Phœnix, B.C., and the smelter at Grand Forks, B.C.

The Canadian Pacific Lumber Co.'s mill at Port Moody, near Vancouver, B.C., was destroyed by fire recently. Loss about \$125,000.

The Crow's Nest Pass Coal Co., Fernie, B.C., have arranged with Mr. Ferneau, London, England, for the erection of a zinc smelter plant at Fernie, B.C., at a cost of \$100,000.

The De Beers Mines Co., Kimberly, South Africa, have cabled an order for a third Westinghouse-Parsons steam turbine generating outfit of 1,500 k.w. capacity for their power plant at Kimberly. This machine will be similar in every respect to the two which the De Beers Co. have had in operation for somewhat over a year.

## FUEL.

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

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

Mr. J. H. Duthie, Canadian sales agent for Jules G. Hoffman, of Detroit, the well-known miner and shipper of Cambridge, Hocking, Pittsburg No. 8 and other grades of coal, reports a good demand for these fuels in Ontario.

Mr. J. H. McClellan, Peterboro', Ont. has been appointed northern agent for the Coaldale Mining Co., his territory embracing eastern Ontario and western Quebec.

Bruce Ellis, for some time the Canadian salesman of the Consolidated Coal Co., has engaged with Kinne & Co., of Buffalo. This latter firm has shipped considerable coal into Canadian territory from Sodus and is now preparing to do the same from Oswego.

A. Y. Malcolmson, of Detroit, Mich., to whom was recently awarded the yearly coal contract for the Toronto Water Works pumping stations, now conducts ten yards in Detroit with a track capacity of 330 cars, a storage capacity of 370,000 tons of coal, 110 wagons and 120 horses, and other facilities in keeping. Mr. Malcolmson has a trade organization of which he may justly be proud.

Mr. E. Wheeler, Toronto representative of the Connell Anthracite Mining Co., recently returned from the anthracite fields. He states that the new breaker erected by his company, at a cost of over \$300,000, is completed and in full operation. This breaker is equipped with the most modern machinery known to coal operators, and is looked upon as the most up-to-date breaker in the anthracite regions.

The Nova Scotia Steel & Coal Co. have leased all the submarine areas outside of the Dominion Coal Co. in Cape Breton, N.S., and for a distance of ten miles out. The company's areas now taken up extend

from Point a Coonie to the northern extremity of Scatarie, comprising over 100 square miles of coal areas, in which all the important coal seams of Cape Breton lie. Agents of the Nova Scotia Steel & Coal Co. have been going over the ground for some time, and recently paid a visit to the submarine workings of the Gowrie and Blockhouse collieries at Port Morien, getting information which it is said confirms their opinion of value of Cape Breton submarine areas. In taking up these submarine areas, the company are looking to the future rather than to the immediate present, and their stroke is an important one.

The annual report of the Acadia Coal Co., Halifax, shows that this corporation had a good year and is following a progressive course. The total sales for the year amounted to 344,260 tons, and the operations were conducted with a fair profit. A dividend of 3 per cent. was paid to the stockholders. It was decided to transfer the sum of \$100,000 to the credit of the Allan shafts out of the undivided profits, leaving a balance of \$107,000 to be carried forward.

W. R. Wilson, an experienced English mining man, who was assistant general manager of the Crow's Nest Coal Co., has been appointed general manager of the Imperial Coal & Coke Co. The president of this company, W. Herbert Evans, and Hume Hall, the secretary-treasurer, have left Montreal for the mines, British Columbia, accompanied by the new general manager.

The Nonax is a device which, according to public tests made recently in London, renders all receptacles containing inflammable liquids comparatively secure from explosion. The device is an application of the principle of the Davy lamp, supplemented by a fusible cap or plug.

If a vessel of ordinary type containing an explosive liquid be subjected to sufficient outside heat, or if the contents be lighted at the orifice, the walls of the tank will burst by the force of the expansion. At an exhibition given by the owners of the patent, the Non-Explosive Device Co., London Eng. a 20-gallon tank was partly filled with gasoline and placed upon a lighted bonfire. The fusible screw cap, made in two parts which were simply soldered together, soon blew out, the solder having melted, and the ascending vapor caught fire immediately; but no explosion followed because the orifice of the tank formed the upper end of a tube which projected down inside the vessel to its bottom, where it was closed. To allow the oil or gas to percolate from the interior of the tank each of the metal layers of which this tube was composed had been perforated, and, while the perforations would permit the spirit to be poured out, they prevented the passage of the burning gas to the interior by absorbing its heat as the wire gauze does in the Davy lamp. While the gasoline contained in the tube burned the flame did not extend to the liquid or accumulated vapor in the half-full tank and, consequently, there was not sufficient expansive force generated to burst the tank. The flame was easily

extinguished with a bundle of rags and then lighted and put out several times. The gasoline would, I judge, percolate constantly through the perforated layers of metal to the inside of the tube and there keep up a continuous burning; but according to the accounts of the tests which I have read, the flame does not appear to have been allowed to burn any length of time to see how long the metal layers of the tube could absorb the heat without becoming so hot that they would heat and dangerously expand the gasoline in the tank. A motor car tank to which the device was affixed was lighted with a match and extinguished at will. A gasoline can without the device exploded almost instantaneously when lighted. The device applied to small gasoline cans, kerosene drums, and other petroleum containers would undoubtedly serve a desirable purpose.

Referring to the use of coal briquettes by French railroads, United States Consul Covert, at Lyons, France, writes:—The inspector-general of the Paris, Lyons and Mediterranean Railway Co. says that his road uses large quantities of coal briquettes, about 10 per cent. of its fuel consisting of them. Thus the road is enabled to utilize all the slack and coal dust from the mines. The engineers can get up steam more quickly with briquettes than with any kind of coal without them. They form no slag or clinkers and tend to prevent the formation of clinkers when used with other coal. The company manufactures its own briquettes. About 65 per cent. of its fuel consists of fine coal, or slack. Coal briquettes are in very general use in France, hardly a household being without them during cold weather. They are more easily handled and more readily ignited and they throw out more heat than coal and make no dirt at all. They are preferred to any kind of coal.

## OLD SYDNEY MINES.

One who has not visited old Sydney Mines for a few years—say five—cannot but be impressed, and astonished, at the transformation that has taken place. A year or two ago there was scarcely a decent looking workman's cottage in the place. At the present time, wherever one goes in the town he is surprised at the number of pretty cottages built by the workmen and at their natty appearance. On some of the cottages the passer-by will notice a ticket on which is printed certain numbers. A numbered cottage, on the road to what was formerly Lazytown, indicates that the possessor has not as yet paid the steel company in full for the property. Where the number has disappeared there is a cottage on which the full amount has been paid and the property transferred. As soon as the purchase price of the property has been wholly paid the company sends one of its carpenters and has the ticket with the number taken down. The removal of a ticket from one cottage has a stimulating effect on the purchaser of an adjoining cottage. The latter wants the ticket which signifies indebtedness, to a less or more extent, removed, so that

he can step forth from the porch as free a man as his neighbor.

Five years ago there was one street, a few roads, and very many lanes at Sydney Mines; now there are many avenues, more streets, and few lanes. The situation of the new town is excellent. The ground rises gradually and the drainage is excellent. A visitor if he could keep his eyes from the right and look beyond the few rows of low old company houses would never imagine he was in a colliery town. A pleasing feature of the prospect is the variety of architecture. As stated, many of the workmen now own pretty cottages in which they live; and more than one have built cottages to rent. And the improvement in appearance noticeable in the town is also to be noted at the works. Take the old colliery. One remembers what a weather-beaten, tempest-tossed look it had, low screens, and log-looking structures. Now, though the steel blankhead has not yet replaced the old wooden one, very many improvements have been effected. Under the old regime there was no knocking screens, picking tables, conveyors, compressors, endless haulage engines, or wash plant. Now there are all of these.

Sydney No. 1 is the oldest working shaft in Nova Scotia, but it has less the appearance of age than 20 years ago. And then but a few steps from Sydney No. 1 is the bankhead of No. 2 which has many features about it reminding one of No. 3 bank. Indeed some say that No. 2 bank is similar to No. 3, but that is not how it strikes a stranger. I still am in love with No. 3. Its simplicity charms one. At No. 1 there is what is called an extension car-loading chute. When the empties are run in, the chute is extended so that its end reaches near to the bottom of the car. This is to save breakage of coal. At the end of the chute there is a movable jaw which opens and shuts while the coal is running from the mouth. The chute also opens at the elbows. This is to allow of an even distribution of the coal in the car. It is claimed for this chute that it saves breakage and dispenses with hand trimming of cars.

From the bankhead of No. 2, one has a splendid view of the ocean and the coast line. The mouth of the slope is noticeable several hundred yards in front, but the slope does not follow a straight line. Shortly after going under cover the slopes turn sharply to the right or oceanwards. Not until the slope is well under the ocean and sufficient cover has been attained will No. 2 be a large producer. Its coal may be equally good with Nos. 1 and 3, but it has not as good an appearance when exposed for a time to the weather.—*Maritime Mining Record.*

Mr. L. G. Mickles, Buffalo sales agent for the Western Pennsylvania Fuel Co., recently made an extended trip through Canada and reports the demand for soft coal much improved.

The Clinton Fireproofing Co., New York, and the Clinton Wire Cloth Co., Boston, Mass., will establish offices, yards and warehouses in Montreal to employ a large number of hands.

## WANTED.

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

**FERRO-TITANIUM ALLOY.**—A number of iron and steel manufacturers in the United States would use a ferro-titanium alloy in the processes of their business, and desire to be placed in correspondence with makers of such alloy. There is a field in Canada for the production of this kind of alloy, which should attract the attention of electro-chemists who control electric power.

**ENGINEERING CONTRACTS.**—Messrs. Weisel & Kok, of Parral, Chihuahua, Mexico, have obtained a contract for the construction and equipment of electric lighting, waterworks, and telephone systems at Jimenez, Chihuahua, Mexico. Further information concerning this contract may be obtained from the firm direct.

The Mexican Construction & Engineering Co., Mexico City, have recently obtained a contract for waterworks and drainage systems at Jalapa and Cordoba, State of Veracruz, Mexico. Information concerning this contract may be obtained direct from the firm; address, Centro Mercantil, Mexico City, Mexico.

James M. Harris, Sparta, Ga., wants to correspond with manufacturers of asbestos.

McLeod-Wilkins-King Co., Manning, S.C., want information regarding spool, bobbin and shuttle factories.

Messrs. Alfred Lonergan, Cristobal, Villanueva, and Estridion Ramirez, all of Ixtlan del Rio, Territory of Tepic, Mexico, have organized a company to build an electric light plant at a cost of about \$40,000.

David H. Sands, owning extensive mining properties in Jalisco, Mexico, is making preparations to develop them, and will soon be in the market for the necessary mining equipment. Address Engineer John Beck, Guadalajara, Mexico.

The Mexican Government proposes constructing a reservoir to have a capacity of 200,000 cubic meters of water, with an electric pumping system. Address Secretary Ramon Corral, government offices, City of Mexico.

The British Columbia Foundry & Engine Works, capital \$100,000; have been formed at Victoria, B.C., and will establish a foundry, machine shops, etc. The company will be in the market for a large amount of machinery and equipment.

The Maryland Color Printing Co., Baltimore, Md., are in the market for full automatic sprinkler equipment, with roof hydrants, underwriters' pump, roof tanks, etc.

The Dorsett Co., Siler City, N.C., want addresses of manufacturers of lumber wagons guaranteed to carry from 10,000 to 20,000 pounds.

The Georgia Foundry & Machine Co., Rome, Ga., want prices on engines, boilers, shafting, pulleys, hangers and belting.

The Monterey Electric Light & Power Co., Monterey, New Leon, Mexico, have under consideration the improvements to their plant, at a cost of \$150,000. It is the intention to install new machinery, and replace the present arc light system with a more modern one.

The El Oro Mining & Railway Co., El Oro, Mexico, are preparing to develop water power and transmit electricity for mining purposes. It is said that about \$75,000 will be expended. R. M. Raymond is general manager of the company.

The Elk River Coal & Oil Co., just incorporated at Victoria, B.C., with a capital of \$25,000, will develop coal and oil lands, and erect coke ovens.

Tenders are invited until August 13, for the construction of stone or concrete piers, and for a steel bridge, 84 feet long, across the Madawaska river, at Calabogie, Ont. Plans and specifications can be seen of the concrete piers at the office of J. L. Morris, C. E., Pembroke, Ont. Parties tendering for the steel work will furnish plans and specifications, with strain sheet, for a bridge to carry a rolling load of 125 pounds per square foot.

Mr. H. Davidson, Victoria, B.C., is inviting tenders up to August 31, for the purchase of the iron works and stove factory of the Albion Iron Works, Co., that city, either together or separately, as a going concern.

The Guelph & Goderich Railway Co., Guelph, Ont., are inviting tenders for the work on eight sections, each ten miles in length between Guelph and Goderich.

W. J. Martin, Ensley, N.W.T., wants addresses of firms manufacturing metal clasps, such as are used on suspenders, cuff-holders, hose-supporters, etc.

Mr. D. J. Raymond, Farm "Enow," Amersfoort P.O., Transvaal, South Africa, desires illustrated price lists of vertical and horizontal steam and other engines, in sizes ranging from one and a half to four horse power.

The proposed Canadian Pacific Railway line from Toronto to Sudbury, Ont., will cost \$8,000,000, and of this amount \$2,000,000 will be required for the construction of fifty-eight miles from Romford to Byng Inlet, Ont.

## INDUSTRIAL PUBLICATIONS.

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

We have from the British Foreign Office, London, Diplomatic and Consular Reports as follows: United States—Trade of Consular District of New Orleans; Germany—Prussian estimates for 1904-'05. Trade of Grand Duchy of Baden; Spain—Trade of Consular District of Cadiz; Austro-Hungary—General trade of; Russia—Trade of Consular District of Moscow; China—Trade of Ichang.

The Ontario Government have published a return asked for at the last session of the legislature showing the number of reproductive undertakings, such as water works, electric lighting plants, gas works, and other utilities operated by the various municipalities throughout Ontario, and also showing the rates charged consumers for water, gas, and electric lighting. The return is unusually complete, and it requires 45 pages of closely printed matter to furnish the information asked for.

Referring to the Toronto water works system, the return states that the total capital invested in it, exclusive of borrowed capital, provided by the corporation, is \$1,171,151.54. Of this \$3,395,094.32 is borrowed capital. The amount of capital borrowed which has been paid off is \$190,000. The average annual working expenses of the water works is \$181,542.46.

The following information in connection with municipal ownership is also furnished in the return:

The City of Stratford has recently taken over the water works system.

The town of Gravenhurst has purchased an electric lighting plant.

The town of Hawkesbury is constructing water works.

The town of Palmerston is purchasing an electric lighting system.

The town of Strathroy has purchased water works and an electric lighting plant.

The town of Listowel has maintained a water works system for fire protection purposes only, respecting which no figures have been supplied.

The village of Port Perry is constructing water works and an electric lighting plant.

The village of Southampton is constructing water works.

The village of Alvington maintains a water works system for fire protection purposes only, the power for the same being furnished by the Grand Trunk Railway at the rate of \$1 per hour.

The sixteenth annual reports of the inspectors of factories for Ontario has been issued. The inspector of the western district, Mr. James T. Burke, in his report states that the "industrial and commercial conditions were very satisfactory, and the year 1903 may be termed a bright one for our province. It was thought that the year 1902 was remark-

able on account of the nature and extent of the commercial progress which was then apparent, but the succeeding twelve-month was far ahead of it, as it carried with it large investments of capital and exceptionally good and remunerative agricultural yields, together with a large output from various factories, and both skilled and unskilled labor shared in the general prosperity."

The Lawrie Engine Co., Montreal, have issued folders on feed water heaters and on hangers and couplings.

Bristol's Recording Pressure and Vacuum Gauges are fully described and illustrated in a handsome catalogue just issued by the Bristol Co., Waterbury, Conn. The catalogue is revised to July 1, 1904, and cancels all previous catalogues and lists.

Anthracene Chrome Blue G. & B. B. are shown in an artistic sample book now being mailed by the Cassella Color Co., New York and Montreal.

Among the recent publications issued by Sheldon & Sheldon, Galt, Ont., is an illustrated catalogue and price list of steel plate planing mill exhausters, shaving separators and blast gates.

Jeffrey water elevators are described and illustrated in a booklet just published and which can be obtained from the A. R. Williams Machinery Co., Toronto, Canadian agents for the Jeffrey Mfg. Co.

The 1904 catalogue and price list of the Cleveland Twist Drill Co., Cleveland, Ohio, recently issued, is one of the most complete of the kind and should be in the hands of all users of this line of tools.

Under the title of "Westinghouse Industries" the Westinghouse interests have issued a handsome booklet exemplifying the exhibits of these interests at the Louisiana Purchase Exposition. Considerable space is given to the Canadian Westinghouse Co., and a cut of the Hamilton plant as it will appear when additions now under way are completed. The booklet is for distribution at the Exposition.

We are in receipt of the monthly report for April, 1904, of the Department of Trade and Commerce, which contains many valuable articles regarding the progress of Canada, statistical tables, tariff changes, reports of commercial agencies abroad, and other general commercial information, also unrevised monthly statement of imports entered for consumption and exports for May 1904 and the preceding eleven months, published by the Dominion Customs Department, also correspondence respecting the Alaska Boundary, together with the award of the Alaska Boundary Tribunal, a sessional paper printed by order of parliament.

Eighth Annual Report of Mr. A. W. Campbell, Commissioner of Highways of Ontario, respecting road improvements in this province.

The Ontario Government have sent us as follows:—"Reproductive Undertakings of Ontario Municipalities" a brochure published by order of the Legislative Assembly. It relates to reproductive undertakings operated by municipalities

in Ontario respecting waterworks, electric lighting plants, gas works and other utilities, also rates charged the consumers of water, gas and electric lighting. The report is similar to that ordered by the British House of Commons in 1902.

Sixteenth Annual Reports of the inspectors of Factories for the Province of Ontario. This report contains much matter of interest to all manufacturing and industrial establishments in the province.

The pneumatic tool department of the Ingersoll-Sergeant Drill Co., New York, have issued an attractive pamphlet containing a full description and excellent illustration of the construction of the Haeseler "Axial Valve" Hammers. Interesting reference is also made as to the scope of a recent decision of the Supreme Court bearing on patented features of pneumatic hammer handles.

There has been during the past few years a steadily-increasing application of concrete steel to engineering work. A pioneer in this field of engineering was Ernest L. Ransome, and to-day the Ransome System is extensively used in important construction work in all parts of the world. Concrete steel construction is based upon the principles of so combining the steel with concrete that the full compressive strength of the concrete can be utilized, and this is effectively accomplished by the use of the twisted bar. The Ransome Concrete Machinery Co., 11 Broadway, New York, are issuing a booklet which gives important facts and figures and formulas regarding the Ransome system that will greatly interest architects, contractors and others.

The Mexican Permanent Exposition Co. have been organized, secured a government concession, and are erecting extensive exposition buildings, which will be ready for occupancy in October. It is the intention of the company to maintain a permanent exhibit in the City of Mexico, of such products of other countries as are best adapted to Mexican uses. J. Landero Y Cos is president, and E. Hegewisch is secretary.

The National Machinery Co., Tiffin, Ohio, manufacturers of bolt and nut machinery, forging and bending machines, wire, nail, spike and special machinery, have issued a new catalogue and price list, which is one of the most artistic of the kind ever published. The catalogue contains 170 pages, and in it is illustrated and described complete lines of the above mentioned machinery. Copies of the catalogue can be obtained from the company or from their Canadian agents, the A. R. Williams Machinery Co., Toronto.

The D. VanNostrand Co., 23 Murray St., New York, have sent us a copy of the ninth edition of Mr. F. A. Halsey's "Slide Valve Gears," being an explanation of the action and construction of plain and cut off slide valves. The different parts of the book have reference to the slide valve, with fixed eccentric; with shifting and swinging eccentric; with independent cut-off, and with link motion. Price \$1.50.

**PERSONALS.**

In consequence of the much regretted death of Mr. Alexander Gartshore, who was president of the Gartshore-Thomson Pipe & Foundry Co., of Hamilton, Ont., a reorganization of the officers of the company has been effected, the present staff now being as follows: James Thomson, president; J. G. Allan, vice-president; James A. Thomson, secretary, and John Gartshore, treasurer.

A. W. Mellon, who is slated to succeed Charles M. Schwab as a director of the United States Steel Corporation, is the head of the Pittsburg Reduction Co. and the Northern Aluminum Co., of Shawinigan Falls, Que., manufacturers of aluminum. He is closely associated with H. C. Frick in many business enterprises in Pittsburg and elsewhere, is one of the managing directors of the Union Trust Co., Pittsburg, and was associated with Mr. Frick in the Union and Sharon Steel Co's. which were sold to the United States Steel Corporation.

Mr. Charles Fergie has been appointed chief engineer and agent of the works of the Inverness Railway & Coal Co., N.S.

As the Inverness coal field is a big one, Mr. Fergie has a large field and increased scope for his well-known energy.

Messrs. Graham, Morton & Co., manufacturers of elevating and conveying machinery, etc., Leeds, England, write us with reference to an article which recently appeared in Johannesburg, South Africa, Star, to the effect that it was impossible to buy in Great Britain suitable and efficient labor-saving appliances for the equipment of coal mines there. Messrs. Graham, Morton & Co. are a leading British manufacturing concern, and their refutation of the insinuation made has been promptly published by the Star.

J. Milner, the superintendent of the Milner Petrolia Wagon Works, Petrolia, Ont., has resigned his position to accept a similar one at West Lorne, Ont.

The city of Kingston, Ont., have assumed control of the Kingston Light, Heat & Power Co., and have placed Mr. J. M. Campbell, a well-known electrical engineer in charge of the plant.


Horace Mayhew, one of the largest and wealthiest coal owners in England, has been at Sydney, N.S., looking over

the areas of the Cape Breton Coal, Iron & Railway Co. Mr. Mayhew is owner of the great Aston collieries in Flintshire, Wales, and is part owner and director of nearly all the more important coal mines in Britain. He may head an English syndicate to take over the Cape Breton properties.

The Canadian Casualty & Boiler Insurance Co., have opened an office in Winnipeg, Man., in charge of W. O. Tassie.

Chas. H. Vogel, Esq., C.E., mill and hydraulic engineer, Ottawa, was in this office last week.


The ninth annual convention of the National Association of Master Plumbers, Gas, Steam and Hot Water Fitters of Canada, was held in Toronto, July 20, 21 and 22. The following officers were elected for the ensuing year:—President, Robert Ross, Toronto; vice-president, A. J. Hammond, Winnipeg; treasurer, F. G. Johnson, Ottawa; secretary, I. G. Gordon; Presidents for Provinces—Ontario, Henry Mahoney, Toronto; Quebec, W. J. R. Hughes; New Brunswick, Wm. Watson, Moncton; Manitoba, Jas. Mould, Winnipeg; British Columbia, J. Cough-



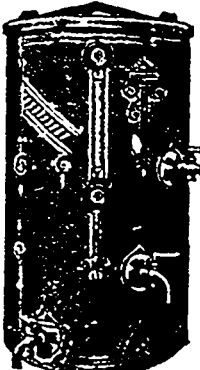
A brass foundry equipped with McCullough-Dalzell crucibles is assured the highest efficiency attainable. The increasing demand indicates their superiority.

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Say the cost of oil at your plant is \$300 per annum. If you used a

## Cross Oil Filter

you would

**save one-half the cost of Oil**

or \$150, which is the interest at six per cent. on \$2,500. Don't you think it worth while to order a Cross Oil Filter today? Filter is sent anywhere on thirty days approval.

"So far as we are aware, the Cross Oil Filter is the most satisfactory filter on the market."  
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**THE BURT MFG. CO.**  
LARGEST MFRS. OF OIL FILTERS IN THE WORLD.  
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A complete stock carried by the  
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Supplied also by Oil Companies, Engine Builders and Power Contractors.

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Boiler capacity increased 20 to 40%. Patent system of "staggered pipes" gives increased saving over straight pipe economizers.  
For high or low pressures, no leaky joints, easily accessible. Send for Catalogue.

**B. F. STURTEVANT CO.**  
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lin, Victoria. The next annual meeting will be held in Winnipeg.

Messrs. F. H. Hopkins & Co., manufacturers of railway, miners, and contractors' supplies, 286 St. James St., Montreal, are sending out a circular announcing to the trade and customers of the late James Cooper, that they have succeeded to the business carried on by him, having acquired the good will, stock-in-trade, warehouses, and continuing in the same line as before. They have also retained all the business agencies held by the late James Cooper. Their warehouses include the whole of the old Grey Nunnery building in Norman Street, which is filled with a completely assorted stock for railway, contractors' and miners' requirements, placing them in a position at all times to make quick deliveries. The new firm comprises Messrs. F. H. Hopkins, J. J. Rosevear, and R. A. C. McNally. Mr. Hopkins having been associated with the late James Cooper, and previously with the old firm of Cooper, Fairman & Co., for upwards of twenty-three years; Mr. McNally having been manager of the mining machinery department, at Ross-

land, B.C., and later at Halifax, N. S.; and Mr. Rosevear having been in charge of the finances of the late firm; therefore, all the associates are thoroughly familiar with the requirements of this business.

The Toronto Engineers' Club made their annual summer outing on July 22, to De Cew Falls, Ont., under the benignant chaperonage of Capt. Killaly Gamble, the president. The occasion was most enjoyable and instructive; and a good time generally was had. Included among those who enjoyed the festivities of the occasion were Messrs. A. C. Larkin, A. B. Berry, J. D. Shields, S. Dillou-Mills, A. T. Ward, John Williams, J. A. Culverwell, R. F. Tate, William Spry, C. E. Cooper, H. H. Miller, J. A. Hall, A. M. Wickens, E. R. Clarke, J. C. Johnson, J. J. Cassidey, C. W. Dill, R. B. Woolsey, A. J. Van-Nostrand, Henry McAll, C. N. Caniff, W. A. Clement, Acton Burrows, and C. H. Heyes.

The Cassella Color Co., New York, inform us that Mr. E. L. E. Drake has been appointed as manager of their branch house in Providence, R.I., vice Mr. J. C.

Hebden, resigned. With Mr. Drake will be associated Messrs. Homer Winslow and E. T. Harrall, both of whom have been for a number of years connected with the Providence district of the Cassella Color Co.

#### ONTARIO NIAGARA POWER CO.

The Niagara Falls Victoria Park Commission met a few days ago and approved the plan of the Ontario Niagara Power Co., for their power house at the foot of the Falls, and also for the gate and screen houses situated at the intake up the river. The power house will be built in three sections, and the total length will be 1,000 feet. The first section will be completed before the first of the year, and the company claim that they will be in a position to deliver power early next summer.

All the buildings approved are to be constructed of the most substantial and finished class of masonry, and have been designed with a view to harmonizing with the park surroundings and interfering as little as possible with the beauties of the Falls.

## CORUNDUM WHEELS, EMERY WHEELS and GRINDING MACHINERY

## CANADIAN CORUNDUM WHEEL CO. HAMILTON, - ONT.

### THE IMPERIAL OIL COMPANY, Limited

Highest Awards at the World's Fair, Chicago, upon

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We manufacture all grades of oils, greases, soap stocks, candles, wool stocks, leather and tanners' oils, fuel gas, machinery, cylinder oils, &c. And solicit opportunity to compete against any oil on the market. Write for prices and samples.

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## THE McKELVEY CONCRETE MIXERS

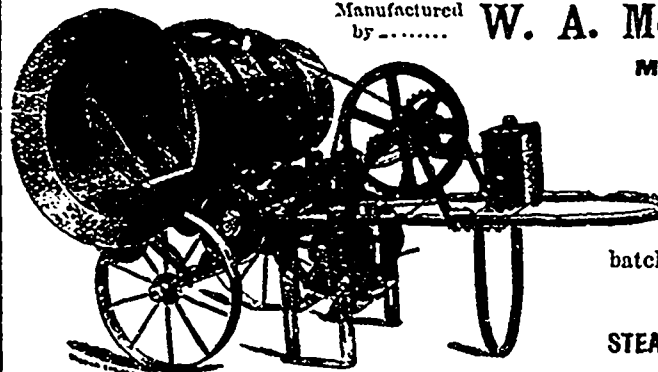
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batches, and can be operated

EITHER BY HAND,  
STEAM OR GASOLINE POWER



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# Engineers

This  
bevel  
edge  
rule  
is yours.

## *Lord's Water Purifying Chemicals*

If you will send us a specimen of boiler scale or a sample of the water used in the boilers for us to analyze.

When you have to use impure boiler feed water it is not an easy matter to keep the boilers free from scale.

If you must use water, however, that is impregnated with scale forming matter, LORD'S WATER PURIFYING CHEMICALS will prevent it from forming scale or any other deposit.

Send in the sample of scale and a specimen of the water and get the RULE.

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## D. SLEETH

SOLE AGENT FOR CANADA

13 ST. JOHN ST., - MONTREAL

All the power works were reported to be progressing very satisfactorily. The pipe line which will convey the water from the intake, has been about half laid. The pipes are 18 ft in diameter, or as large as the pipes being laid under the North River, New York, for the passage of Pennsylvania Railroad trains. The work of the Canadian Power Co., and the Niagara Development Co., is also progressing rapidly. The tunnel under the river of the latter company is about half finished, while the wheel pit of the former is nearing completion, and the structural work for the power house, plans for which were approved some time ago, is well under way.

The new refectory building erected in the park by the commissioners has been opened. The new scenic tunnel under the Falls is now in use, enabling visitors to obtain a splendid view of the great cataract. A point 100 feet under the Falls can be reached by the tunnel above mentioned.

#### CANADA'S MINING EXHIBIT.

Canada makes a good showing at the St. Louis Exposition, the mining exhibit being particularly attractive. "Mary Markwell" a correspondent of The Globe writes:

But it is when you come to our Canadian mining exhibit that you thank God for being a Canadian. We all love wealth; there is something in the glitter of gold that reaches the human heart. That is

why you find, at the Metallurgy Building an always admiring and asking crowd of sightseers, for there the British Columbia and Nova Scotia as well as Ontario, Quebec and Yukon mines are shown in all the perfection of their splendid wealth. Just one word about the Yukon exhibit.

It represents sixty thousand dollars in gold dust, nuggets and native rock, copper-gold, gold ores, silver-lead, molybdenite, placer-gold, gold-mica and cinibar.

From Altin—Stipinito (nickel ore), arsenical ores, galena and gold ores with copper-gold.

From Ontario silver, nickel, cobalt, granite, chromium, irons (varied), mica, manganese, hematite, molybdenite, corundum and talc, with graphite. I may here state that the only exhibit of black marble in the entire department comes from Cornwall, Ont.

Quebec sends asbestos, slate and granite marble.

Nova Scotia, free milling gold ores. New Brunswick, silver, gold and copper.

Cape Breton, coal, copper and gold ores.

Alberta shows coal from sixty-three thousand square miles of deposit lands.

British Columbia, coals and smelter products.

The boundary country, mining and smelter work.

Our granites, in white, grey and a beautiful bronze, which take a fine polish, are there too, while the limestones, white and grey, are very fine specimens of building stone. Some mica

## IRON FOUNDRY

### Attention!

I have a household necessity, which is a very quick seller, that can be made by an iron foundry for \$2.00 and sells for \$10.00, which I wish to have manufactured in Canada on a mutually beneficial arrangement. I will send sample for full test to those interested.

Address:

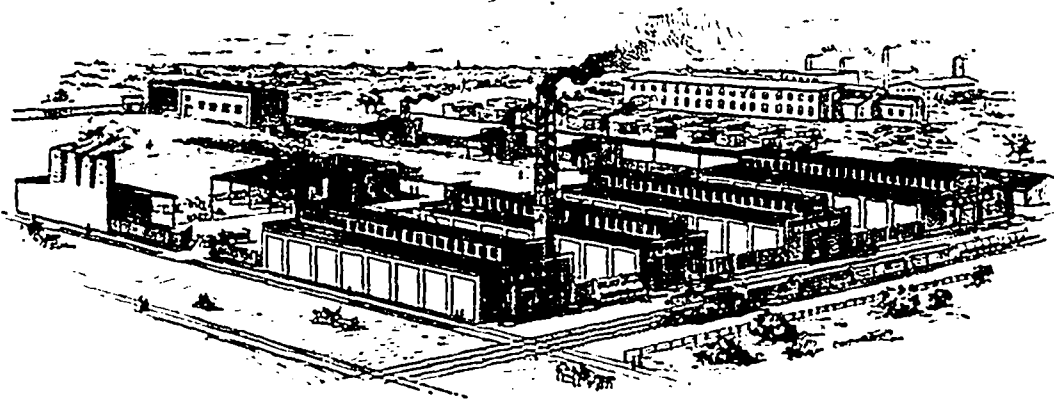
Box 607, - - WINDSOR, ONT.

in sheets four feet wide and seven feet long are shown, while this legend attracts the eye of every passer-by:—

"In 1890 Canada produced 6,013,071 pounds of copper, value \$947,153. In 1903 the output was 43,281,158 pounds, value \$5,728,261, an increase of nearly 700 per cent.

#### \$50.00 TO CALIFORNIA AND RETURN

via the Chicago, Union Pacific and North Western line, from Chicago, August 15 to September 10. Choice of routes going and returning. Correspondingly low rates from all points in Canada. Two trains a day from Chicago through without change. Daily and personally conducted tourist car excursions. Write for itinerary and full particulars regarding special train leaving Chicago August 18 and 25. B. H. Bennett, 2 East King Street, Toronto.



## It is nearly Half a Century

since we commenced to make Varnish. During this period we have acquired a knowledge not only of Varnish, but of the varied needs of varnish consumers that nothing but time can impart, and have also learned how to cater successfully to every varnish want.

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Good cement property. Limestone and Shale, or Clay preferred. Must be well located near railroads, and good water supply.

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Made to any shape for special purposes.

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Steam Geared or Electrically Driven.

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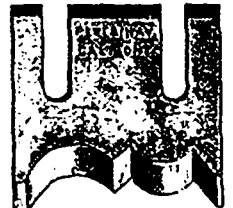
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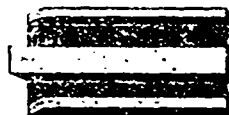
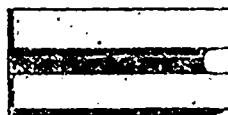
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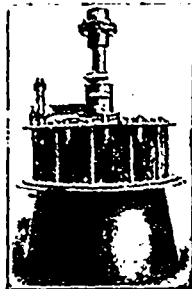
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FOR ALL HEADS

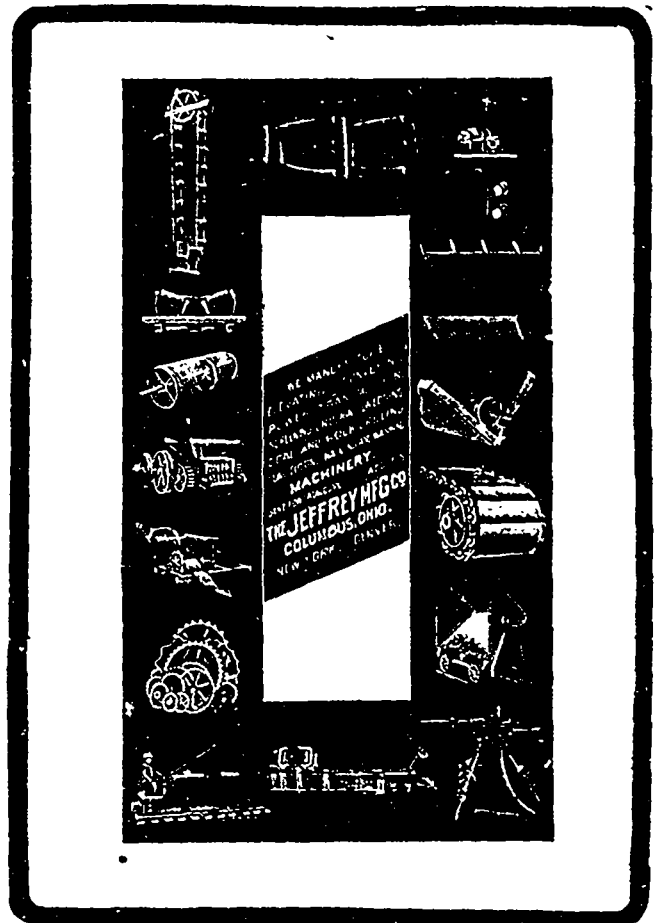


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CANAL CITY"

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Other inducements offered by Municipal Corporation.

Canadian Pacific Railway now taps Lindsay, a growing manufacturing centre, which is also tapped by several branches of the Grand Trunk Railway.

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— WE KNOW HOW TO MAKE THEM —

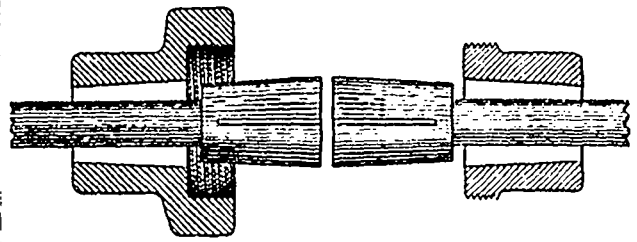
THE

# GEO. B. MEADOWS

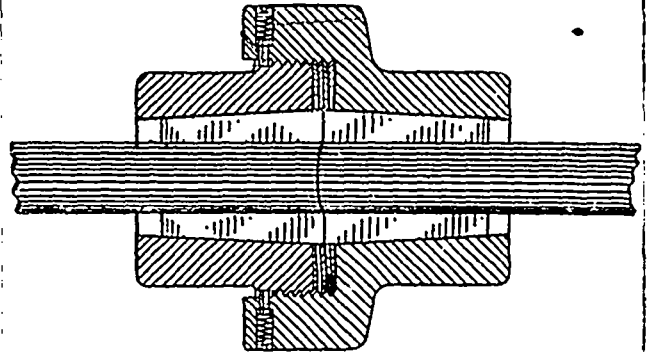
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National Portland Cement Co., Durham, Ont.  
Sandusky Portland Cement Co., Syracuse, I. J.  
Newaygo Portland Cement Co., Newaygo, Mich.  
Great Northern Portland Cement Co., Baldwin, Mich.  
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Iroquois Portland Cement Co., Caledonia, N. Y.  
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Whitehall Portland Cement Co., Cementon, Pa.  
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Penn-Allen Portland Cement Co., Allentown, Pa.  
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Wolverine Portland Cement Co., Coldwater, Mich.  
Bronson Portland Cement Co., Bronson, Mich.  
Quaker Portland Cement Co., Sandia Eddy, Pa.  
Diamond Cement & Lithograph Stone Co., Chicago, Ill.  
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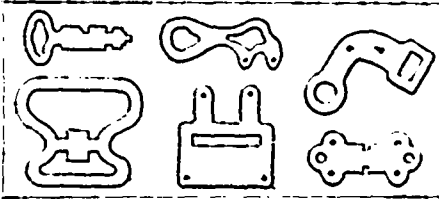
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of inspecting boilers is appreciated by our clients (amongst whom are the largest steam users in Canada) simply because of the utmost pains we are taking to give a service that is reliable because up-to-date in its thoroughness.

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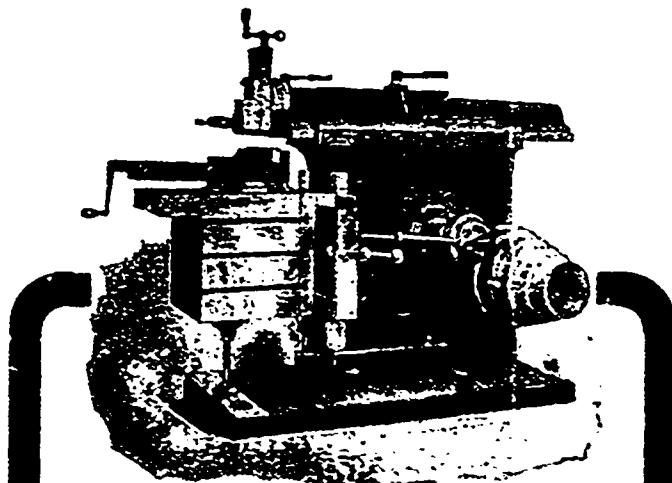
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Makers of THE Shaper. CINCINNATI, OHIO.  
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The Threshing belt that gives the greatest satisfaction is the

**"MAPLE LEAF" STITCHED COTTON DUCK BELT**

—Manufactured only by—

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FULL STOCK ON HAND

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OUR PRICES ARE LOW

**Rubber Belting**

D. K. McLAREN

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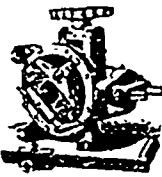


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- ARTHUR W. HOLMES, Parliament Buildings, Toronto.
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Persons having business with any of the Inspectors will find them at the above address.


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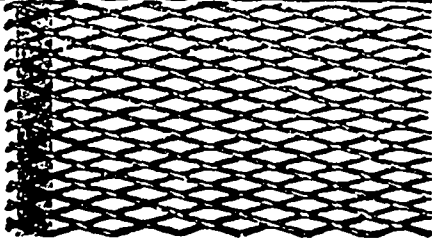


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 For Hand or Power. No. 0 Machine 1 to 2 inches. No. 1 Machine 1 to 3 inches.  
 No. 00 " 1 to 1 " No. 10 " 1 to 1 " No. 2 " 1 to 4 " No. 3 Machine 1 to 6 inches.  
**Save Time and Labor.**

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ARE MANUFACTURED BY **FITTERS' TOOLS**

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Expanded Metal is made in Canada.  
 Used in FIREPROOF concrete roofs, walls, floors, etc.  
 Stop building heavy and expensive brick, terra cotta, or solid concrete arches. Get our prices on factory wall and roof work. We sell material, furnishing full working-drawings, and foreman's instructions. Or we submit estimates and undertake contracts.  
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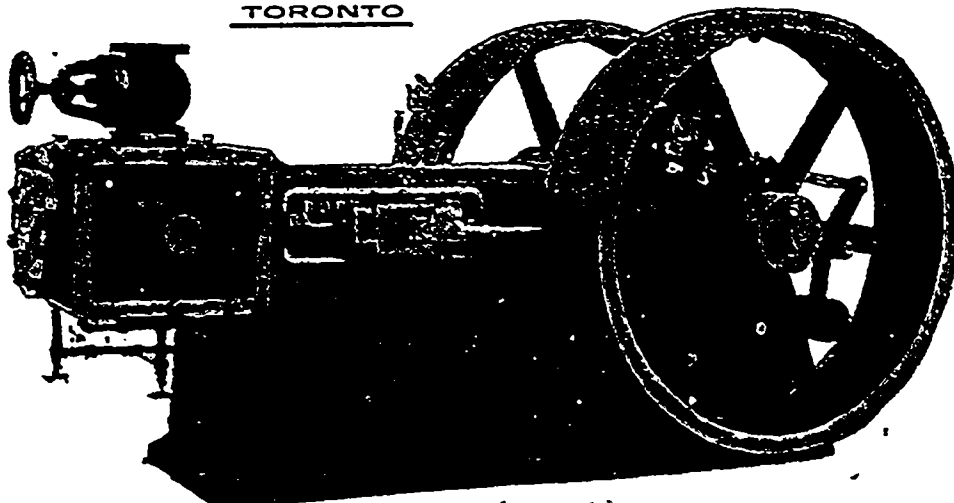
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 Engines, Boilers  
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A Complete Assorted Stock of the above always on hand.

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**BLEACHING POWDER,**HIGH STRENGTH, 35/37% IN  
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Manufacturers of **Oilcloths** of Every Description.

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FINE BANK OFFICE, OFFICE, SCHOOL, CHECK AND POST OFFICE, DRUG STORE FITTINGS.  
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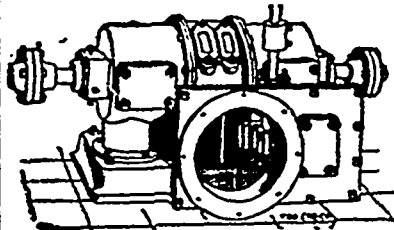
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FILE and RASP MANUFACTURERS AND RE-CUTTERS.

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C. P. MOORE, PROPRIETOR.

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INGERSOLL, ONT.  
Mfrs. of Set, Cap and Special Screws, Studs, Finished Nuts, etc.

WORK AND PRICES RIGHT  
**GALVANIZING** ONT.  
ENGINE & PUMP CO. WIND TORONTO, ONT. L. M. T. E. D.

"The Perfect Solid Lubricant"  
**DIXON'S PURE FLAKE GRAPHITE**  
Prevents shutdowns and saves oil, coal, repairs and trouble.  
Please mention Canadian Manufacturer.  
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Water Wheel Governors, Machine Dressed Gearing, Pulleys, Shafting and Bearings.  
Catalogue and Gear List mailed on application.

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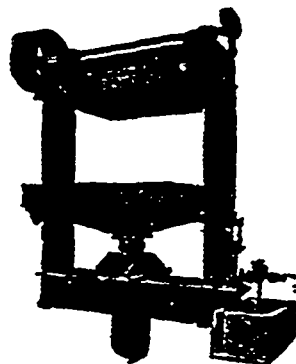
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BUILT IN 44 SIZES.

We guarantee a higher percentage of power from water used than any other wheel on the market.

Correspondence Solicited.

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## Hydraulic Screw

— and —

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**WILLIAM R. PERRIN & COMPANY, Limited**  
Toronto, - Canada.

ESTABLISHED 1823.

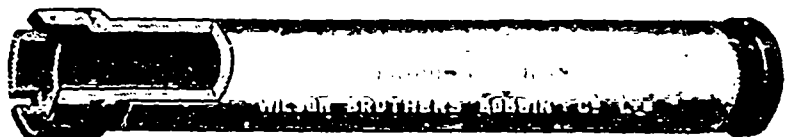
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LARGEST MAKERS IN THE WORLD

46 GOLD MEDALS AND DIPLOMAS



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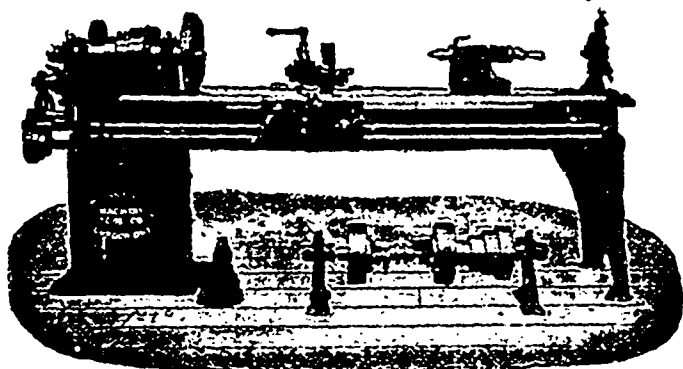


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ABC and AI Codes

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Office and Showrooms—14 Market Place, Manchester.

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OF

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LATHES  
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BULL DOZERS  
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## "NOVO" Air Hardening STEEL

Unexcelled for Turning, Planing, Shaping, Boring, Milling and Reaming.  
Stock of all sizes, including ANNEALED Steel, always on hand.

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REFITTED AND FIRST-CLASS.

QUARANTEED

2-Snow Compound duplex, 14 x 20 x 12 x 16.

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6-Duplex Boiler Feed, 6 x 4 x 6.

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(INCORPORATED)

American Manufacturers

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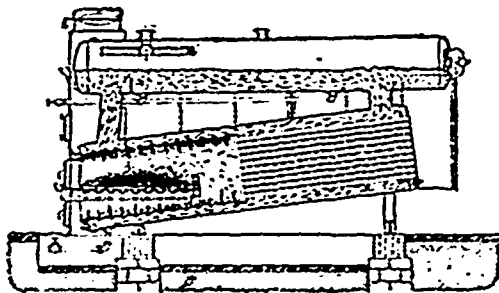
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Window Signs.

Chamber of Commerce Building,  
CHICAGO.

## INTERNAL FURNACE

## SAVES 10 PER CENT.



An externally fired boiler wastes fuel because of the radiation of heat from the outside of the brickwork and the leakage of cold air above the fire, which causes a double loss by heating the excess of air and by producing imperfect combustion.

In a Robb-Mumford internally fired boiler the heat is transmitted directly to the water; and air cannot get into the furnace except through the regular drafts. This makes a saving of at least ten per cent.

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AMHERST, N.S.

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Rice Lewis & Son, Toronto.  
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American Steam Pump Co., Battle Creek, Mich.  
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Syracuse Smelting Works, Montreal.

### Banks

Bank of Hamilton, Hamilton, Ont.

### Bar Iron and Steel

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

### Belt Dressing

McLaren, J. C. Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Rosendale Belting Co., Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Bolt Fasteners

Bristol Co., Waterbury, Conn.  
McLaren, J. C. Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Rosendale Belting Co., Toronto.  
Williams, A. R. Machinery Co., Toronto.

### Belting (Cotton)

Dominion Belting Co., Hamilton, Ont.  
Fleming, W. A. & Co., Montreal.  
McLaren, J. C., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rosendale Belting Co., Toronto.  
Wilby, P. H., Toronto, Ont.

### Belting (Leather)

Canadian Oak Belting Co., Brockville, Ont.  
Fleming, W. A. & Co., Montreal.  
McLaren, J. C., Montreal and Toronto.  
McLaren, J. C. Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Wilby, P. H., Toronto, Ont.  
Williams, A. R. Machinery Co., Toronto.

### Belting (Rubber)

Gutta Percha & Rubber Mfg. Co., Toronto.  
McLaren, J. C., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.

# CLASSIFIED INDEX.

(CONTINUED).

## Boiling and Supplies

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

## Blot Hoating Furnaces

Morgan Construction Co., Worcester, Mass.

## Blowers

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

## Bobbins

Wilson Bros. Bobbin Co., Liverpool, England.

## Boiler Compounds

Lord, Geo. W. Co., Philadelphia, Pa.  
 Sleeth, D., Montreal.

## Boiler Inspection

Canadian Casualty & Boiler Insurance Co., Toronto.

## BOILERS (See Engines and Boilers)

### Brass Founders

Hamilton Brass Mfg. Co., Hamilton, Ont.  
 Meadows, Geo. B. Wire, Iron & Brass Works Co., Toronto.  
 McKinnon Dash & Metal Works Co., St. Catharines Ont.  
 Pemberty Injector Co., Windsor, Ont.

## Building Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Foundry Co., Toronto.  
 Expanded Metal & Fireproofing Co., Toronto.

## Bulldozers' Materials

Albert Mfg. Co., Hillsboro, Ont.  
 Canada Foundry Co., Toronto.  
 Canadian Otis Elevator Co., Toronto.  
 Canadian Portland Cement Co., Deseronto, Ont.  
 Expanded Metal & Fireproofing Co., Toronto.  
 Gartshore, John J., Toronto.  
 Hopkins, F. H. & Co., Montreal.  
 Meadows, Geo. B. Wire, Iron & Brass Works, Toronto.  
 Metallic Roofing Co., Toronto.  
 Owen Sound Portland Cement Co., Owen Sound, Ont.  
 Pittsburgh & Buffalo Co., Buffalo, N.Y.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Rice Lewis & Son, Toronto.  
 Sheldon & Sheldon, Galt, Ont.

## Cables

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

## Canada Plates

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

## Canoes

Peterborough Canoe Co., Peterborough, Ont.

## Caps

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

## Card Clothing

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

## Cast Iron Pipe

Canada Foundry Co., Toronto.  
 Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.  
 Rice Lewis & Son, Toronto.  
 Montreal Pipe Foundry Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.

## Castings (Iron and Brass)

Buhl Malleable Co., Detroit, Mich.  
 Kerr Engine Co., Walkerville, Ont.  
 McDougall, John, Caledonian Iron Works Co., Montreal.

## Cement Machinery

McDougall, John, Caledonian Iron Works Co., Montreal.  
 Wentz, R. F. Engineering Co., Toronto.

## Chain Making Machinery (Welded Coil Chain)

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

## Channols

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

## Charcoal Pig Iron

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

## Chemists

Archbold, Dr. Geo., Prescott, Ont.  
 Heys, Thomas & Son, Toronto.  
 Wentz, R. F. Engineering Co., Toronto.

## Clay Working Machinery

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

## Coal and Coke

Alexander, John H., Windsor, Ont.  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Brownlee, J., Galt, Ont.  
 Ferguson, J. D., Hamilton, Ont.  
 Hancock, J. M. & Co., Niagara Falls, N.Y.  
 Hoffman, Jules G., Detroit, Mich.  
 Milnes, James H. & Co., Toronto.  
 Ohio & Michigan Coal Co., Detroit, Mich.  
 Pittsburgh & Buffalo Co., Buffalo, N.Y.  
 Pittsburgh Coal Co., Pittsburg, Pa.  
 Shawmut Coal & Coke Co., St. Mary's, Pa.  
 Shepard, Charles G., Buffalo, N.Y.  
 Shipman, O. W. Co., Detroit, Mich.  
 Wick, H. K. & Co., Buffalo, N.Y.

## Coal Cutting Machines

Canadian Hand Drill Co., Sherbrooke, Que.  
 Jeffrey Mfg. Co., Columbus, Ohio.

## Coal Tipples

Jeffrey Mfg. Co., Columbus, Ohio

## Coll Chains

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

## Coke Oven Brick

Dunbar Fire Brick Co., Pittsburg, Pa.

## Collection Agency

Petrie, H. D., Hamilton, Ont.

## Concrete Construction

Stevens, A. J., Toronto.

## Concrete Mixers

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

## Continuous Rolling Mills

Morgan Construction Co., Worcester, Mass.

## Contractors' Machinery

Carlin's, Thomas Sons Co., Allegheny, Pa.  
 Gartshore, John J., Toronto.  
 Hopkins, F. H. & Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Shaw, Willis, Chicago, Ill.  
 Sinclair, G. S. & Sons, Wiarnton, Ont.

## Contractor's Plants

Hopkins, F. H. & Co., Montreal.  
 Petrie, H. W., Toronto.  
 Shaw, Willis, Chicago, Ill.  
 Von der Osten, E. & Co., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

## Conveying Machinery

Babcock & Wilcox, Limited, Montreal.  
 Buhl Malleable Co., Detroit, Mich.  
 Canada Foundry Co., Toronto.  
 Dodge Mfg. Co., Toronto.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Perrin, William R. & Co., Limited, Toronto.  
 Pittsburgh Shafting Co., Detroit, Mich.  
 Rossendale Belting Co., Toronto.  
 Stevens, Alfred J., Toronto.

## Copper Materials

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

## Corundum

Canada Corundum Co., Toronto.

## Corundum Wheels

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

## Covers

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

## Crayons

Lowell Crayon Co., Lowell, Mass.

## Crucibles

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

## Crucible Caps and Nozzles

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

## Crucible Covers and Stoppers

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

## Dies (Socket, Sewer Pipe and Tilt)

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

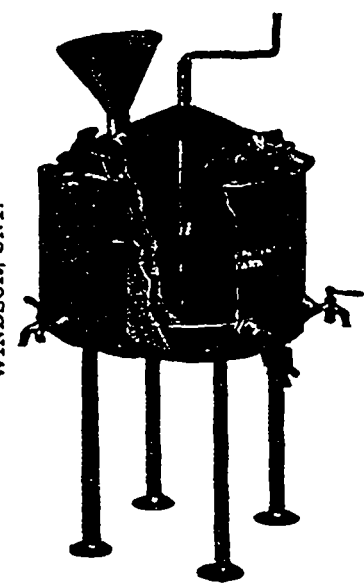
## Directories

Kelly's Directories, Limited, Toronto.

## Draw Benches (Wire)

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

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**CLASSIFIED INDEX.**

(CONTINUED).

**Drills**

Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
London Machine Tool Co., London, Ont.  
Petric, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Shaw, Willis, Chicago, Ill.

**Drills (Pneumatic and Rock)**

Canadian Hand Drill Co., Sherbrooke, Que.  
Jeffrey Mfg. Co., Columbus, Ohio.

**Drills (Twist)**

Cleveland Twist Drill Co., Cleveland, Ohio.  
Pittsburg Shafting Co., Detroit, Mich.

**Drop Forgings**

Globe Machine & Stamping Co., Cleveland, Ohio.

**Drop Forging Dies**

Globe Machine & Stamping Co., Cleveland, Ohio.

**Dry Kiln Apparatus**

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

**Dust and Shavings Separators**

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

**Dye Stuffs and Chemicals**

Bellhouse, Dillon & Co., Montreal.  
Benson, W. T. & Co., Montreal.  
Brunner, Mond & Co., Northwich, England.  
Casella Color Co., New York City.  
Geigy Aniline & Extract Co., New York City.  
Klipstein, A. & Co., New York City.  
McArthur, Cornelio & Co., Montreal  
Winn & Holland, Montreal.

**DYNAMOS (See Motors and Dyamos)****Electric Motors and Transformers**

Packard Electric Co., St. Catharines, Ont.

**Electric Mine Locomotives**

Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Shaw, Willis, Chicago, Ill.

**Electrical Repairs**

Volta Electric Repair Works, Toronto.

**Electrical Supplies**

Bristol Co., Waterbury, Conn.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jones & Moore Electric Co., Toronto.  
Packard Electric Co., St. Catharines, Ont.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Worth & Martin, Toronto.

**Elevators and Conveyors**

Buhl Malleable Co., Detroit, Mich.  
Canadian Otis Elevator Co., Toronto.  
Darling Bros., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.

**Elevator Insurance**

Canadian Casualty & Boiler Insurance Co., Toronto.

**Emery and Emory Wheels**

Canadian Corundum Wheel Co., Hamilton, Ont.  
Forman, John, Montreal.  
Petric, H. W., Toronto.

**Engineers (Comont)**

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

**Engineers (Chemical)**

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

**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.  
Electrical Supervision Society, Toronto.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kelsch, R. S., Montreal.  
Marion & Marion, Montreal.  
Morgan Construction Co., Worcester, Mass.  
Parke, R. J., Toronto.  
Perrin, William R. & Co., Limited, Toronto.  
Simpson, T. T., Deschênes, Que.  
Vogel, C. H., Ottawa.  
Volta Electric Repair Works, Toronto.  
Von der Osten, E. & Co., Toronto.  
Wentz, R. F. Engineering Co., Toronto.

**Engineers (Contracting)**

Babeock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.

**Engineers (Electrical)**

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

**Engineers (Mechanical)**

Babeock & Wilcox, Limited, Montreal.  
Buhl Malleable Co., Detroit, Mich.  
Darling Bros., Montreal.  
Delano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kelsch, R. S., Montreal.  
Kerr Engine Co., Waverlyville, Ont.  
Marion & Marion, Montreal.  
Morgan Construction Co., Worcester, Mass.  
Robb Engineering Co., Amherst, N.S.  
Sheldon & Sheldon, Galt, Ont.  
Wentz, R. F. Engineering Co., Toronto.

**Engineers (Mill and Hydraulic)**

Buhl Malleable Co., Detroit, Mich.  
Delano-Osborn Engineering Co., Toronto.  
Vogel, C. H., Ottawa.

**Engineers (Mining)**

Buhl Malleable Co., Detroit, Mich.  
Heys, Thomas & Son, Toronto.  
Mills, S. D., Toronto.

**Engineers (Municipal)**

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

**Engineers and Contractors**

Buhl Malleable Co., Detroit, Mich.  
Jeffrey Mfg. Co., Columbus, Ohio.

**Engineers and Bolfers**

Babeock & Wilcox, Limited, Montreal.  
Bertram Engine Works Co., Toronto.  
Canada Foundry Co., Toronto.  
Canadian Heine Safety Boiler Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Goldie & McCullough Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Hopkins, F. H. & Co., Montreal.  
Leonard, E. & Sons, London, Ont.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.

Petric, H. W., Toronto.  
Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.  
Robb Engineering Co., Amherst, N.S.  
Shaw, Willis, Chicago, Ill.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.  
Williams, A. R. Machinery Co., Toronto.

**Engravers**

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

**Exhaust Fans**

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

**Exhaust Heads**

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

**Factory Sites**

Central Ontario Power Co., Peterboro, Ont.

**Feed Water Heaters**

Babeock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.  
Petroleum Iron Works Co., Washington, Pa.

**Fires**

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

**Financial**

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

**Filters (Oil)**

Babeock & Wilcox, Limited, Montreal.  
Burt Mfg. Co., Akron, Ohio.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.  
Perrin, William R. & Co., Limited, Toronto.

**Filters and Filtering Systems (Water)**

Babeock & Wilcox, Limited, Montreal.  
McDougall, John, Caledonian Iron Works Co., Mont-  
real.

# CLASSIFIED INDEX.

(CONTINUED).

## Fire Brick and Clay

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

## Fire Escapes

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

## Forges and Blowers

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

## Founders

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

## Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

## Fuel Economizers

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

## Furniture (Lodge, Opera and School)

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

## Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

## Galvanizing and Tinning Machinery and Furnaces (Wire)

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

## Gas and Gasoline Engines

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

## Gas Producers

Morgan Construction Co., Worcester, Mass.

## Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

## Gauges (Steam)

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

## Gauges (Water)

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

## 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.  
Volta Electric Repair Works, Toronto.

## Gloves, Mittens and Moccasins

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

## Glue Heaters

Advance Machinery Co., Toledo, Ohio.

## Glue Room Equipment

Advance Machinery Co., Toledo, Ohio.

## Government Notices

Factory Inspectors,  
Minister of Agriculture.

## Graphite

Dixon, Joz., Crucible Co., Jersey City, N.J.  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.

## Grease Cups

Pemberthy Injector Co., Windsor, Ont.

## Grinding Machinery

Canadian Corundum Wheel Co., Hamilton, Ont.

## Grinding Pans

Carlins, Thomas Sons Co., Allegheny, Pa.

## Hand Travelling Cranes

Morgan Construction Co., Worcester, Mass.

## Hardware

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

## Heating and Ventilating Apparatus

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

## Hoisting Engines

Bertram Engine Works Co., Toronto.

## Hoists (Chain and Pneumatic)

Canadian Rand Drill Co., Sherbrooke, Que.  
Hopkins, F. H. & Co., Montreal.

## Hose (Fire and Pneumatic)

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

## Hydrants

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

## Hydraulic Accumulators

Morgan Construction Co., Worcester, Mass.  
McDougall, John, Caledonian Iron Works Co., Montreal.

## Hydraulic Cranes

Morgan Construction Co., Worcester, Mass.

## Hydraulic Machinery

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

## Industrial Plants

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

## Insulated Wires and Cables

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

## Iron and Steel Specialties

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

Nova Scotia Steel & Coal Co., New Glasgow, N. S.  
Petrie, H. W., Toronto.  
Petroleum Iron Works Co., Washington, Pa.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Ryall Machine Screw Co., Montreal.  
Sinclair, G. S. & Sons, Warton, Ont.

## Injectors

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

## Iron and Steel Inspection

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

## Lamps—Electric

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

## Lathes

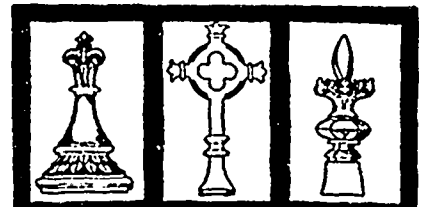
Cowdrey, C. H. Machine Works, Fitchburg, Mass.  
London Machine Tool Co., London, Ont.  
Petrie, H. W., Toronto.  
Williams, A. R. & Co., Toronto.

## Lathes (Wood-Working)

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

## Lubricators

Pemberthy Injector Co., Windsor, Ont.



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(CONTINUED).

- Machinists**  
Bertram Engine Works Co., Toronto.  
Buhl Malleable Co., Detroit, Mich.  
Goldie & McCullough Co., Galt, Ont.  
London Machine Tool Co., London, Ont.  
Worth & Martin, Toronto.
- Machinists' Supplies**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Buhl Malleable Co., Detroit, Mich.  
Butterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Goldie & McCullough Co., Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hopkins, F. H. & Co., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
London Machine Tool Co., London, Ont.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Ryall Machine Screw Co., Montreal.  
Sinclair, G. S. & Sons, Warton, Ont.  
Worth & Martin, Toronto.
- Machine Tools**  
Abbott, William, Montreal.  
Bertram, John & Sons Co., Dundas, Ont.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Cowdry, C. H., Machine Works, Fitchburg, Mass.  
Darling Bros., Montreal.  
London Machine Tool Co., London, Ont.  
Petrie, H. W., Toronto.
- Machinery Repairs**  
Bertram Engine Works Co., Toronto.
- Malleable Iron Castings**  
Buhl Malleable Co., Detroit, Mich.  
McKinnon Dash & Metal Works, Co., St. Catharines, Ont.  
Smith's Falls Malleable Castings Co., Smith's Falls, Ont.
- Marine and Stationary Engines and Boilers**  
Bertram Engine Works Co., Toronto.
- Mechanical Draft**  
Babeock & Wilcox, Limited, Montreal.  
Sheldon & Sheldon, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.
- Metal Shears**  
Morgan Construction Co., Worcester, Mass.
- Metal Stamping**  
Empire Machine & Metal Stamping Co., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.
- Metallurgists**  
Mills, S. D., Toronto.  
Wentz, R. F., Engineering Co., Toronto.
- Mill Machinery and Supplies**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Buhl Malleable Co., Detroit, Mich.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Cowan & Co., Galt, Ont.  
Darling Bros., Montreal.  
Fleming, W. A. & Co., Montreal.  
Gartshore, John J., Toronto.  
Goldie & McCullough Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hamilton Brass Mfg. Co., Hamilton, Ont.  
Hamilton, Wm., Mfg. Co., Peterborough, Ont.  
Hay, Peter Knife Co., Galt, Ont.  
Hopkins, F. H. & Co., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Leonard, E. & Sons, London, Ont.  
London Machine Tool Co., London, Ont.  
Morrow, John, Machine Screw Co., Ingersoll, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
McLaren, D. K., Montreal and Toronto.  
Penberthy Injector Co., Windsor, Ont.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Rice Lewis & Son, Toronto.  
Robb Engineering Co., Amherst, N.S.  
Ryall Machine Screw Co., Montreal.  
Sinclair, G. S. & Sons, Warton, Ont.  
Snence, R. & Co., Hamilton, Ont.  
Wilson, J. C. & Co., Glenora, Ont.
- Minors' Lamps**  
Anton, John & Son, Monongahela, Pa.
- Mining Machinery**  
Buhl Malleable Co., Detroit, Mich.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Corbett, R. B., Brooklyn, N.Y.  
Gartshore, John J., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Hopkins, F. H. & Co., Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.

- Perrin, William R. & Co., Limited, Toronto.  
Petrie, H. W., Toronto.  
Shaw, Willis, Chicago, Ill.  
Williams, A. R. Machinery Co., Toronto.
- Motors and Dynamos**  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Corbett, R. B., Brooklyn, N.Y.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Petrie, H. W., Toronto.  
Toronto & Hamilton Electric Co., Hamilton, Ont.  
United Electric Co., Toronto.  
Volta Electric Repair Works, Toronto.
- Moulding Sand**  
Hamilton Facing Mills Co., Hamilton, Ont.
- Novelty Manufacturers**  
Worth & Martin, Toronto.
- Nozzles**  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.
- Office and Bank Fittings**  
Canadian Office & School Furniture Co., Preston, Ont.  
Mendows, Geo. B., Wire, Iron & Brass Works Co., Toronto.
- Oils and Lubricants**  
Dixon, Jos., Crucible Co., Jersey City, N.J.  
Fleming, W. A. & Co., Montreal.  
Hart & Co., Chicago, Ill.  
Imperial Oil Co., Petrolia, Ont.  
Queen City Oil Co., Toronto.
- Oil Cloth**  
Dominion Oil Cloth Co., Montreal.
- Oil Cups**  
Penberthy Injector Co., Windsor, Ont.
- Paints and Colors**  
Bellhouse, Dillon & Co., Montreal.  
Fleming, W. A. & Co., Montreal.  
Geigy, Aniline & Extract Co., New York City.  
Klipstein, A. & Co., New York City.  
McArthur, Cornelia & Co., Montreal.
- Paper Manufacturers**  
Barber, Wm., & Bros., Georgetown, Ont.  
Toronto Paper Mfg. Co., Cornwall, Ont.
- Patents**  
Budden, Hanbury, A., Montreal.  
Case, Egerton R., Toronto.  
Fetherstonhaugh & Co., Toronto.  
Marion & Marion, Montreal.  
Patent Exchange & Investment Co., Toronto.
- Perforated Metals**  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Greening, B. Wire Co., Hamilton, Ont.  
Stanyon Metallic Furniture Co., Toronto.
- Personal Accident**  
Canadian Casualty & Boiler Insurance Co., Toronto.
- Phosphorizers**  
McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Pittsburg Crucible Works, Pittsburg, Pa.
- Pig Iron**  
Bourne-Fuller Co., Cleveland, Ohio.  
Canada Iron Furnace Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Shepard, Charles G., Buffalo, N.Y.  
Syrause Smelting Works, Montreal.
- Pipe (Rivoted, Iron and Steel)**  
Babeock & Wilcox, Limited, Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petroleum Iron Works Co., Washington, Pa.
- Pipe Threading Machines**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Butterfield & Co., Rock Island, Que.  
Petrie, H. W., Toronto.  
Rice Lewis & Son, Toronto.
- Pipes and Tubes**  
Abbott, William, Montreal.  
Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.  
Montreal Pipe Foundry Co., Montreal.  
Rice Lewis & Son, Toronto.
- Plaster**  
Albert Mfg. Co., Hillsborough, N.B.
- Plates**  
Bourne-Fuller Co., Cleveland, Ohio.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Rice Lewis & Son, Toronto.

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(CONTINUED).

## Plumbago

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

## Pneumatic Tools

Canadian Rand Drill Co., Sherbrooke, Que.

## Pointor Rolls (For Rods and Wire)

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

## Portland Cement

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

## Power Plants—Equipments

Babcock & Wilcox, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Corbett, R. B., Brooklyn, N.Y.  
Darling Bros., Montreal.  
Delano-Osborn Engineering Co., Toronto.  
Electrical Construction Co., London, Ont.  
Goldie & McCullough, Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Kelsch, R. S., Montreal.  
Leonard, E. & Sons, London, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Packard Electric Co., St. Catharines, Ont.  
Perrin, William R. & Co., Limited, Toronto.  
Petrie, H. W., Toronto.  
Phillips, Eugene F., Electrical Works, Montreal.  
Pittsburgh Shafting Co., Detroit, Mich.  
Robb Engineering Co., Amherst, N.S.  
Sinclair, G. S. & Sons, Warton, Ont.  
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 (Tilo, Sewer Pipe, Nozzles and Sleeves)

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

## Pulleys

Darling Bros., Montreal.  
Goldie & McCullough Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
McLaren, J. C., Belting Co., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Wilson, J. C. & Co., Glenora, Ont.

## Pumps and Pumping Machinery

Canada Foundry Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Darling Bros., Montreal.  
Downie Pump Co., Downieville, Pa.  
Goldie & McCullough Co., Galt, Ont.  
Kerr Engine Co., Walkerville, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Ontario Wind Engine & Pump Co., Toronto.  
Petrie, H. W., Toronto.

## Punches and Shears

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

## Purifiers

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

## Purifying and Softening Systems (Water)

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

## Railroads

Chicago & North-Western Ry., Toronto & St. Paul, Minn.  
Quebec Central Railway, Sherbrooke, Que.

## Railway Supplies

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

## Reamers

Butterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.

## Rivets

Bourne-Fuller Co., Cleveland, Ohio

## Roll Lathes

Morgan Construction Co., Worcester, Mass.

## Roller Bearings

Pittsburg Shafting Co., Detroit, Mich.

## Rolling Mills

Morgan Construction Co., Worcester, Mass.

## Rolling Mill Engineers

Bourne-Fuller Co., Cleveland, Ohio.  
Morgan Construction Co., Worcester, Mass.

## Roofing

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

## Rubber Goods

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

## Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

## Rubber Washing Tubs

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

## Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

## Safes and Vaults

Goldie & McCullough Co., Galt, Ont.

## Scrows

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

## Screw Plates

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

## Sewer Pipe

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

## Shafting

Bourne-Fuller Co., Cleveland, Ohio.  
Goldie & McCullough Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.

## Shafting Cupler

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

## Shapers and Carvers

Advance Machinery Co., Toledo, Ohio.

## Shear Knives

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

## Shoots (Iron and Steel)

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

## Shoot Metal Goods

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

## Sheet Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.  
Metallic Roofing Co., Toronto.  
Ryall Machine Screw Works, Montreal.  
Stanyon Metallic Furniture Co., Toronto.

## Ship Builders

Bertram Engine Works Co., Toronto.  
Clyde Steel Works, Toronto.

## Smoke Stacks

Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petroleum Iron Works Co., Washington, Pa.

## Solder

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

## Special Machinery

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

## Speed Recorders

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## Spring—Flat and Spiral

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(CONTINUED).

**Stamps & Stencils**

Globe Machine & Stamping Co., Cleveland, Ohio.  
Hamilton Stamp & Stencil Works, Hamilton, Ont.  
Stanyon Metallic Furniture Co., Toronto.

**Steam Pumps**

American Steam Pump Co., Battle Creek, Mich.  
Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Goldie & McCullough Co., Galt, Ont.  
Leonard, E. & Sons, London, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petrie, H. W., Toronto.  
Pittsburgh Shafting Co., Detroit, Mich.  
Shaw, Willis, Chicago, Ill.  
Williams, A. R. Machinery Co., Toronto.

**Steam Separators**

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.

**Steam Specialties**

Darling Bros., Montreal.  
Penberthy Injector Co., Windsor, Ont.  
Sheldon & Sheldon, Galt, Ont.

**Steam Valves**

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

**Steel and Composite Ships**

Bertram Engine Works Co., Toronto.

**Steel Plants**

Morgan Construction Co., Worcester, Mass.

**Steel Rails**

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

**Steel Shafting**

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

**Stocks and Dies**

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

**Stoppers**

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

**Structural Steel**

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

**Suspension Furnaces**

Continental Iron Works Co., New York City.

**Tanks (Oil and Water)**

Canada Foundry Co., Toronto.  
Corbett, R. B., Brooklyn, N.Y.  
Goldie & McCullough Co., Galt, Ont.  
Hamilton, Wm. Mfg. Co., Peterborough, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Ontario Wind Engine & Pump Co., Toronto.  
Petroleum Iron Works Co., Washington, Pa.

**Taps and Dies**

Butterfield & Co., Rock Island, Que.  
Cleveland Twist Drill Co., Cleveland, Ohio.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Hamilton Stamp & Stencil Works, Hamilton, Ont.

**Tees**

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

**Textile Manufacturers**

Canadian Colored Cotton Mills Co., Montreal.  
Dominion Oil Cloth Co., Montreal.  
Hamilton Cotton Co., Hamilton, Ont.  
Morrice, D. Sons & Co., Montreal.  
Smith Mfg. Co., Toronto.  
Storey, W. H. & Sons, Acton, Ont.

**Textile Supplies**

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

**Thermometers (Recording)**

Bristol Co., Waterbury, Conn.

**Tin**

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

**Tool Steel**

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

**Trucks**

Corbett, R. B., Brooklyn, N.Y.  
Hopkins, F. H. & Co., Montreal.  
Morgan Construction Co., Worcester, Mass.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Sheldon & Sheldon, Galt, Ont.

**Trucks (Railway)**

Canada Foundry Co., Toronto.

**Trucks (Wire Mill Supplies)**

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

**Tubs (Cleaning and Coating Wire)**

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

**Tugs**

Bertram Engine Works Co., Toronto.

**Tumbling Barrels**

Globe Machine & Stamping Co., Cleveland, Ohio.

**Turbines**

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

**Typewriters and Supplies**

United Typewriter Co., Toronto.

**Valves**

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

**Valves (Rubber)**

Gutta Percha & Rubber Mfg. Co., Toronto.

**Varnishes**

Berry Bros., Walkerville, Ont.

**Ventilators**

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

**Wagon and Carriage Wood Work**

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

**Washers or Rollers (Cleaning Rubber)**

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INDEX TO ADVERTISEMENTS (Continued).

I	PAGE			S	PAGE
Imperial Oil Co., Petrolen, Ont.	32	McKinnon Dash & Metal Works Co., St. Catharines, Ont.	ofc	Shaw, Willis, Chicago, Ill.	10
Industrial Publication Co., New York, N.Y.	47	McLaren, D. K., Montreal and Toronto	38	Shawmut Coal & Coke Co., St. Mary's, Pa., and Hamilton, Ont.	6
Industries, Youngstown, Ohio	47	McLaren, J. C., Belting Co., Montreal and Toronto	obe	Sheldon & Sheldon, Galt, Ont.	12
		N		Shepard, Charles G., Buffalo, N.Y.	8
J		Neff & Postlethwaite, Toronto	9	Shipman, O. W. Co., Detroit, Mich.	7
Jeffrey Mfg Co., Columbus, Ohio	36	Northern Aluminum Co., Shawinigan Falls, Que. and Pittsburgh, Pa.	5	Simpson, T. T., Deschenes, Que.	9
Jones & Moore Electric Co., Toronto	13	Nova Scotia Steel & Coal Co., New Glasgow, N.S.	4	Sinclair, G. S. & Sons, Warton, Ont.	37
Jones, J. L., Engraving Co., Toronto	47	O		Sleeth, D., Montreal, Que.	33
K		Oakey, John, & Sons, London, England	7	Smith Mfg. Co., Toronto	45
Kelley's Directories, Toronto and London, England		Ohio & Michigan Coal Co., Detroit, Mich.	7	Smith's Falls Malleable Castings Co., Smith's Falls, Ont.	obe
Kelsch, R. S., Montreal	9	Ontario Wind Engine & Pump Co., Toronto	41	Spence, R. & Co., Hamilton, Ont.	41
Kerr Engine Co., Walkerville, Ont.	45	Owen Sound Portland Cement Co., Owen Sound, Ont.	8	Steel Age, Pittsburg, Pa.	47
Klipstein, A. & Co., New York, N.Y.	40	P		Stanyon Metallic Furniture Co., Toronto	14
L		Packard Electric Co., St. Catharines, Ont.	12	Steptoe, John Shaper Co., Cincinnati, Ohio	38
Leonard, E. & Sons, London, Ont.	3	Parke, Roderick J., Toronto	9	Stevens, Alfred J., Toronto	9
Leslie, A. C. & Co., Montreal	ofc	Patent Exchange & Investment Co., Toronto	9	Storey, W. H. & Son, Acton, Ont.	42
Lewis, Rice & Son, Toronto	10	Penberthy Injector Co., Windsor, Ont.	2	Stowe-Fuller Co., Cleveland, Ohio	9
London Machine Tool Co., London, Ont.	42	Pennsylvania Fire Brick Co., Lock Haven, Pa.	8	Sturtevant, B. F. Co., Boston, Mass.	31
Lord, The Geo. W. Co., Philadelphia, Pa., and Montreal, Que.	33	Perrin, William R. & Co., Limited, Toronto and Chicago, Ill.	41	Syracuse Smelting Co., Montreal and New York	5-13
Lowell Crayon Co., Lowell, Mass.	44	Peterborough Canoe Co., Peterborough, Ont.	44	T	
Lysaght, John, Limited, Bristol, England and Montreal		Petrie, H. D., Hamilton, Ont.	97	Toronto & Hamilton Electric Co., Hamilton, Ont.	13
M		Petrie, H. W., Toronto	11-12-35	Toronto Paper Mfg. Co., Cornwall, Ont.	43
Marion & Marion, Montreal	46	Petroleum Iron Works, Washington, Pa.	10	Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio	10
Meadows, Geo. B. Wire, Iron & Brass Works Co., Toronto	37	Phillips, Eugene F., Electrical Works, Montreal	13	U	
Metallic Roofing Co., Toronto	45	Pittsburgh & Buffalo Co., Buffalo, N.Y.	6	United Electric Co., Toronto	obe
Meyercoed Co., Chicago, Ill.	42	Pittsburgh Coal Co., Pittsburgh, Pa.	6	United Typewriter Co., Toronto	35
Mills, S. D., Toronto	9	Pittsburgh Crucible Works, Pittsburg, Pa.	31	V	
Milnes, J. H. & Co., Toronto	7	Pittsburgh Shafting Co., Detroit, Mich.	obe	Vogel, C. H., Ottawa	9
Montreal Pipe Foundry Co., Montreal	4	Q		Volta Electric Repair Works, Toronto	13
Morgan Construction Co., Worcester, Mass.	9	Quebec Central Railway, Sherbrooke, Que.	5	Von der Osten, E. & Co., Toronto	9
Morrison, T. A. & Co., Montreal	9	Queen City Oil Co., Toronto	ofc	W	
Morrow, John, Machine Screw Co., Ingersoll, Ont.	41	R		Wardlaw, T. D., Toronto	40
Mc		Rice Lewis & Son, Toronto	10	Wentz, R. F. Engineering Co., Toronto	9
McArthur, Corneille & Co., Montreal	obe	Robb Engineering Co., Amherst, N.S.	42	Westinghouse Electric & Mfr. Co., Pittsburg, Pa.	51
McCullough-Dalzell Crucible Co., Pittsburg, Pa.	31	Rossendale Belting Co., Toronto	ofc	Wick, H. K. & Co., Buffalo, N.Y.	7
McDougall, John, Caledonian Iron Works Co., Montreal	51	Rountree Publishing Co., Birmingham, Ala.	48	Wilby, P. H., Toronto	obe
McKelvey, W. A., Toronto	32	Royal Machine Screw Co., Montreal	44	Williams, A. R. Machinery Co., Toronto	5-38-39
				Winn & Holland, Montreal	40
				Wilson Bros Bobbin Co., Todmorden, England	41
				Wilson, J. C. & Co., Glenora, Ont.	41
				Wire & Cable Co., Montreal	ofc
				Worth & Martin, Toronto	32
				Wynn, W. H. & Co., West Decatur, Pa.	9

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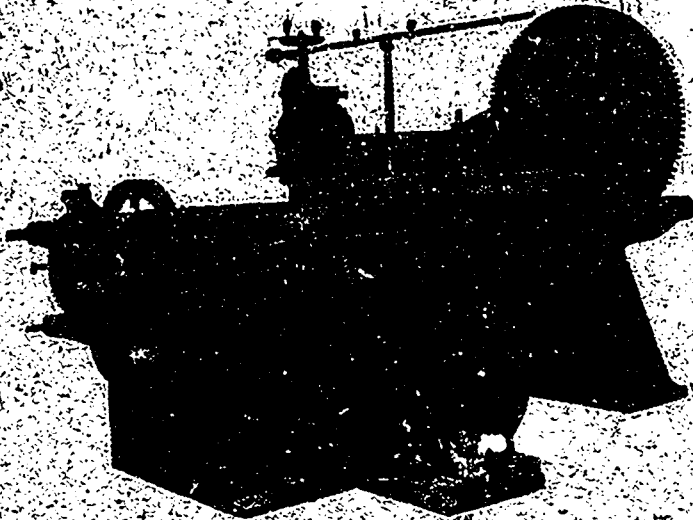
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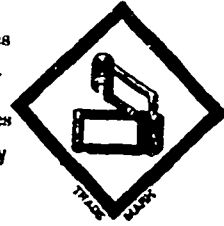
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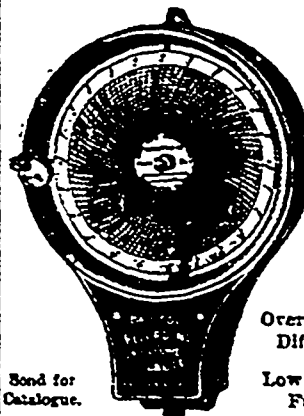
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