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Vol. 51.

TORONTO, JULY 7, 1905.

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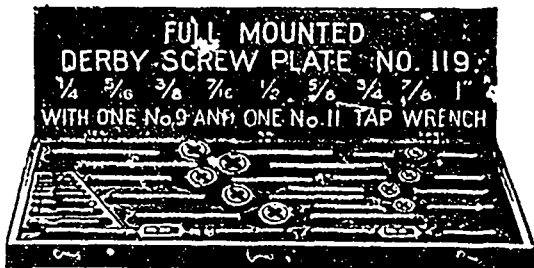
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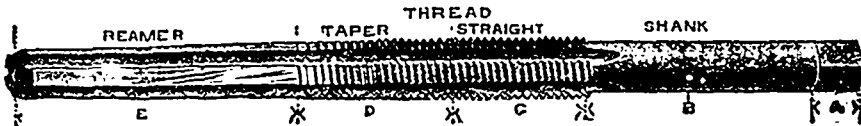
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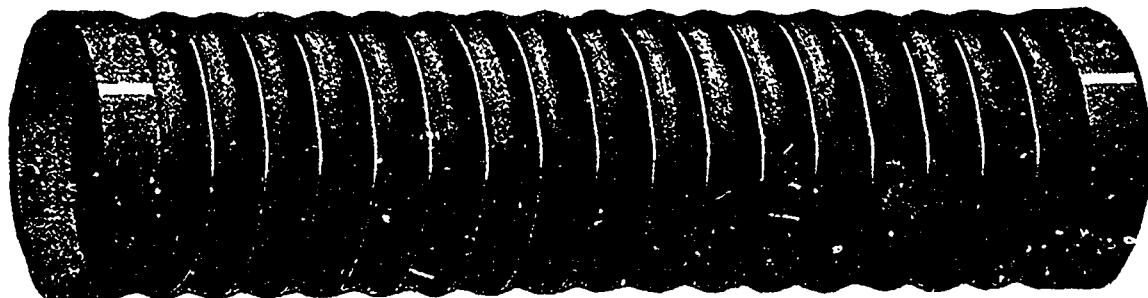
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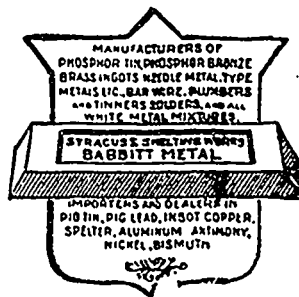
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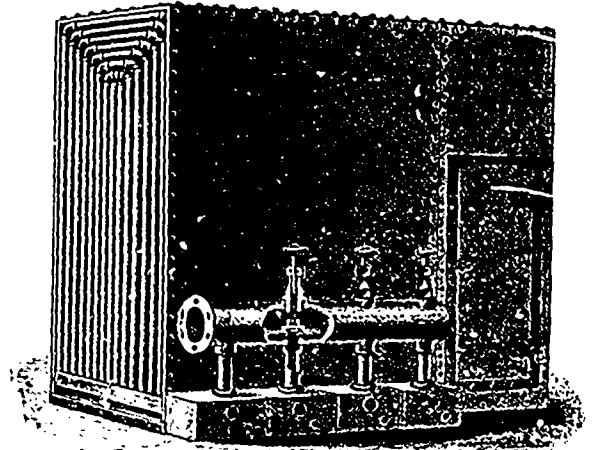
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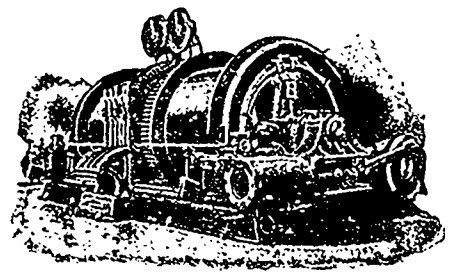
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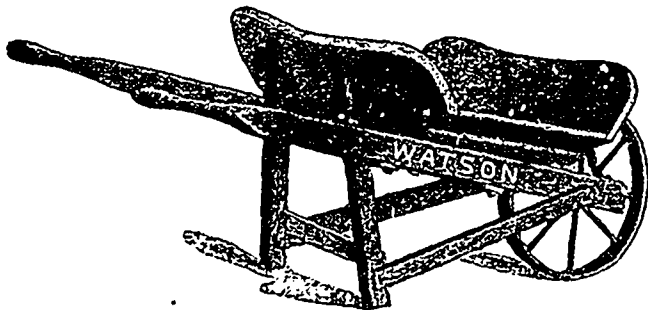
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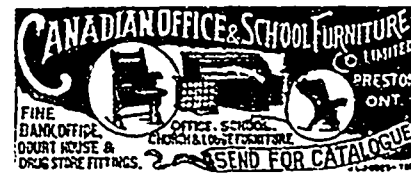
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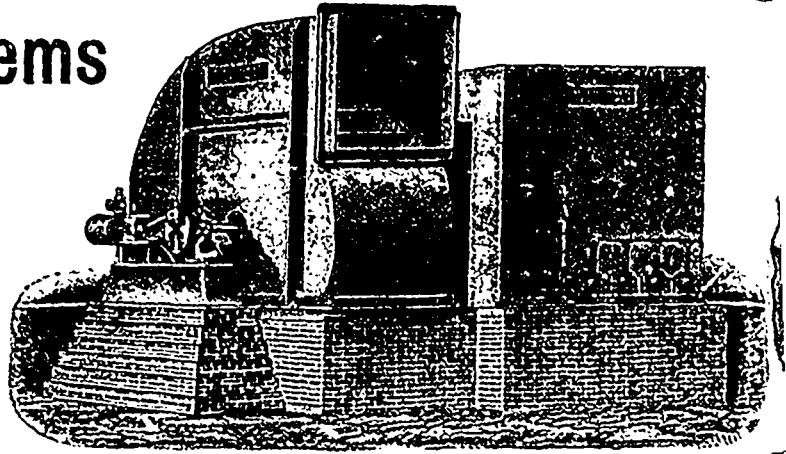
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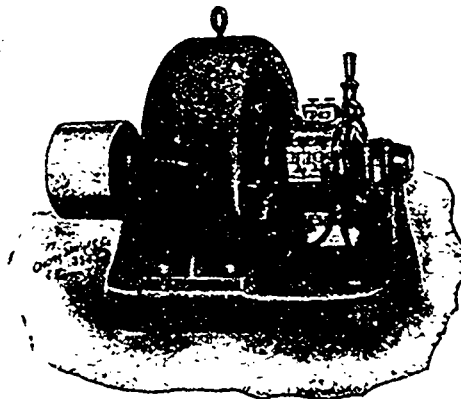
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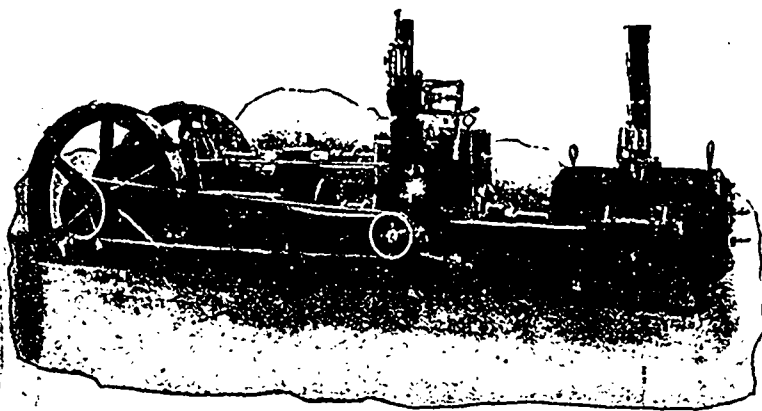
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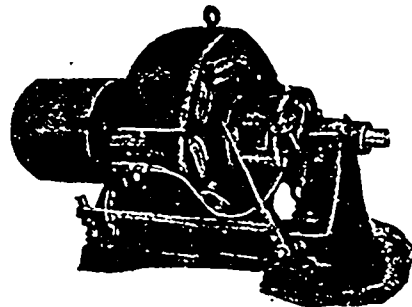
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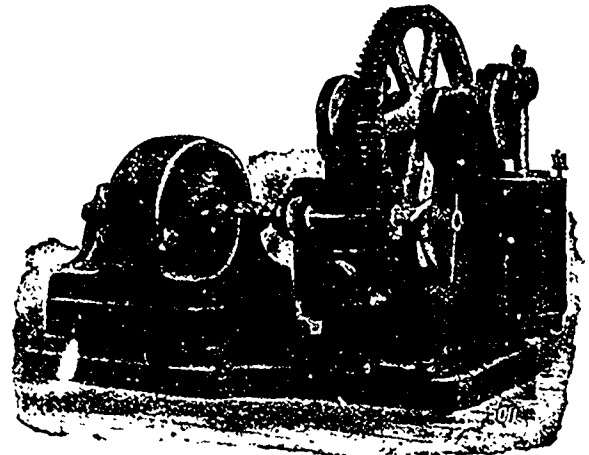
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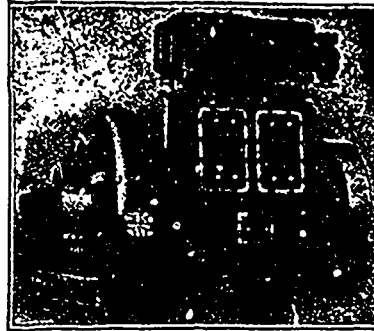
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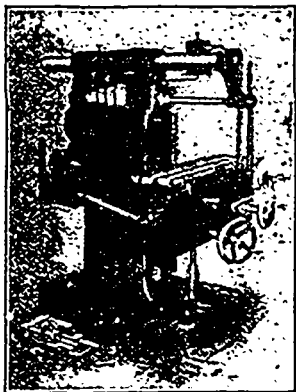
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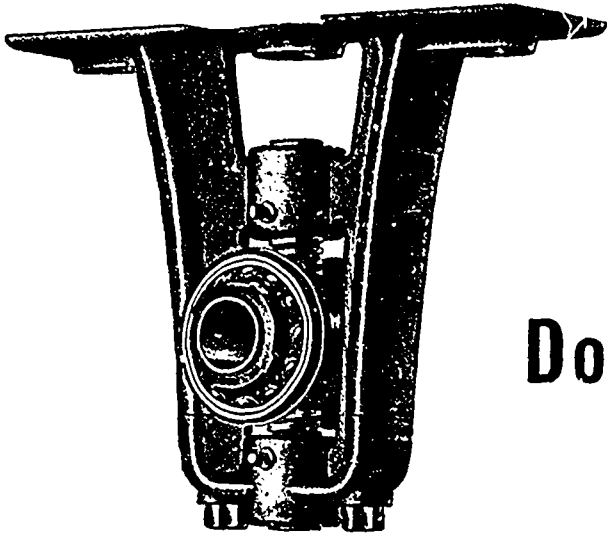
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J. J. CASSIDY, Editor and Manager.

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Index to AdvertisersPage 49

PRODUCTION OF IRON IN CANADA.

The American Iron and Steel Association have received from the manufacturers the statistics of the production of pig iron in the Dominion of Canada in the calendar year 1904. They show an increase of 5,524 gross tons, or a little over two per cent., as compared with 1903.

The total productions of all kinds of pig iron in Canada in 1904 amounted to 270,942 gross tons, against 265,418 tons in 1903, 319,557 tons in 1902, 244,976 tons in 1901, and 86,090 tons in 1900. In the first half of 1904 the production was 120,643 tons and in the second half it was 150,299 tons, an increase of 29,656 tons. In 1904 of the total production 251,371 tons were made with coke and 19,271 tons with charcoal. About one-fourth of the total production was basic pig iron and a little less than one-tenth was Bessemer pig iron. Spiegeleisen and ferro-manganese have not been made in Canada since 1899.

The following table gives the total production of all kinds of pig iron (including spiegeleisen and ferro-manganese) in Canada from 1894 to 1904. Prior to 1894 the statistics of pig iron production in Canada were not collected by this Association.

Year.	Gross Tons.	Year.	Gross Tons.
1894.....	44,791	1900.....	86,090
1895.....	37,829	1901.....	244,976
1896.....	60,030	1902.....	319,557
1897.....	53,796	1903.....	265,418
1898.....	68,755	1904.....	270,942
1899.....	94,077		

On December 31, 1904, the unsold stocks of pig iron in Canada amounted to 35,119 tons, as compared with 19,168 tons at the close of 1903, about 20,000 tons at the close of 1902, 59,472 tons at the close of 1901, and 12,465 tons at the close of 1900.

On December 31, 1904, Canada had 15 completed blast furnaces, of which eight were in blast and seven were idle. Of this total 10 were equipped to use coke for fuel and five to use charcoal. In addition three coke furnaces, upon which work had been suspended for some time, were partly erected on December 31.

During the first half of 1904 Canada had 10 of its completed furnaces in blast, and during the last half of the year it had the same number of furnaces running. Of the active furnaces in each half year seven were coke and three charcoal furnaces.

TO OUR READERS!

Manufacturers in all lines of trade, Business Men of all descriptions, Engineers, Electricians, Inventors, Architects, Builders, Artists, Literary and Professional Men and Women in all Conditions of Life, Politicians and Statesmen derive benefit by reading what the Thinkers of the World say. It is impossible for them to excel in their enterprises unless they do. The study of some of the publications included in our Clubbing List in page 48 may supply just the correct ideas or information desired. The most successful business men and women are always those who are diligent students of Current Thought. Read the Clubbing List.

The American Iron and Steel Association have also received from the manufacturers the statistics of the production of steel ingots and castings and of rolled iron and steel in Canada in 1904.

The total production of steel ingots and castings in Canada in 1904 was 148,784 gross tons, against 181,514 tons in 1903, a decrease of 32,730 tons. Bessemer and open-hearth steel ingots and castings were made in each year. Almost all the open-hearth steel reported in 1903 and 1904 was made by the basic process. The direct steel castings made in 1904 amounted to 6,505 tons. Canada has not made crucible steel prior to the present year.

The following table gives the production of all kinds of steel ingots and castings in Canada from 1894 to 1904, in gross tons.

Years.	Gross Tons.	Years.	Gross Tons.
1894.....	25,685	1900.....	22,577
1895.....	17,000	1901.....	26,084
1896.....	16,000	1902.....	182,037
1897.....	18,400	1903.....	181,514
1898.....	21,540	1904.....	148,784
1899.....	22,000		

The following table gives the production of all kinds of iron and steel rolled into finished forms in Canada from 1895 to 1904.

Years.	Gross Tons.	Years.	Gross Tons.
1895.....	66,402	1900.....	100,690
1896.....	75,043	1901.....	112,007
1897.....	77,021	1902.....	161,485
1898.....	90,303	1903.....	129,516
1899.....	110,642	1904.....	180,038

The production of Bessemer and open-hearth steel rails in 1904 amounted to 36,216 gross tons, against 1,243 tons in 1903; structural shapes, 447 tons, against 1,983 tons in 1903; cut nails made by rolling mills and steel works having cut-nail factories connected with their plants, 99,000 kegs of 100 pounds, against 118,686 kegs in 1903; plates and sheets, 3,102 tons, against 2,450 tons in 1903; all other finished rolled products, excluding muck and scrap, bars, blooms, billets, sheet bars, and other unfinished forms, 135,243 tons, against 118,541 tons in 1903. The total quantity of all kinds of iron and steel rolled into finished forms in Canada in 1904 amounted to 180,038 tons, against 129,516 tons in 1903. Of the 180,038 tons of finished iron and steel reported for 1904 about 126,850 tons were rolled from steel and 53,188 tons from iron.

On December 31, 1904, there were 18 completed rolling mills and steel works in Canada. In addition three plants were being built and two plants were projected. Of the completed plants two were equipped for the manufacture of steel castings only, five for the manufacture of Bessemer or open-hearth steel ingots and rolled products, and 11 for the manufacture of rolled products only. Of the building plants one was being equipped for the manufacture of steel castings by a special process, one for the manufacture of open-hearth steel ingots only, and one for the manufacture of merchant bar iron, railway spikes, etc. One of the projected plants is to be equipped for the manufacture of skelp and bar iron and the other for the manufacture of wire rods.

Of the 18 completed rolling mills and steel works in Canada on December 31, 1904, three were located in Nova Scotia, five in Quebec, nine in Ontario, and one in New Brunswick. The building plants are in Nova Scotia, Ontario, Manitoba, and the projected plants are in Ontario.

The production of iron ore in Canada in 1904 amounted to 312,286 gross tons, against 235,977 tons in 1903, and the production of coal in Canada in 1904 amounted to 6,705,232 gross tons, against 6,824,999 tons in 1903. The figures for 1904 are subject to revision.

BOILER INSPECTION.

At the last session of the Ontario Legislature a Bill was introduced entitled "An Act to Regulate Stationary Engineers," the first reading of which was on April 5. It provided that every engineer operating stationary or hoisting steam plants having a boiler of 25 h.p. or over, shall hold a duly certified certificate granted by a board of examiners to be organized under the provisions of the Act; the said board to consist of at least three qualified persons appointed by the Government on the recommendation of the Minister of Agriculture, one member to represent the stationary engineers, one the boiler insurance companies, and one or more to represent the factories inspectors. The board was to issue without further examination certificates to all engineers who could produce satisfactory evidence of having served in such capacity for at least four years within the province, and who should also produce satisfactory evidence of good character. All certificates issued by the board should at all times be exposed to view in a conspicuous place in the engine or boiler-room; and the omission so to expose it was to be considered prima facie evidence of the lack of qualification required under the Act. Any fees for examination decided upon by the board not to exceed two dollars, and the fee for certificates thereafter not to exceed one dollar. Every boiler inspector appointed under the Act to make a report to the board of examiners of every boiler inspection made within ten days of making same, and neglect to do so should be sufficient reason for cancelling his appointment, and every company authorized to insure boilers to send annually a full list of boilers insured. Owners of plants using steam boilers of 25 h.p. or over who permitted a person to take charge of said boiler who could not show the required certificate, would be liable to a fine; and every engineer who assumed control of such a boiler, not having the required certificate, should also be liable to a fine.

The select committee appointed to consider the Bill rejected it. In the discussion before the committee it was advocated by the Stationary Engineers' Association on the ground that it was intended to protect human life; and it was combatted by representatives of the farmers, and also by a delegation from the Manufacturers' Association led by Mr. Stewart, the

secretary, who urged that there was no necessity or general demand for such legislation.

The requirements of the Bill were, without doubt, as has been shown, exceedingly simple and reasonable, and the opposition to it indicated a disregard for human life, growing out of extreme selfishness. Hundreds of steamers, yachts, tugs and pleasure boats, plying the waters of the province, propelled by steam, are forbid to leave their docks until every requirement of a stringent Dominion law has been complied with—a law passed expressly to protect human life, but unfortunately that law is not applicable to the use of steam on land; and whatever law of that character may be passed must be done by the provincial legislature. Efforts to effect such laws such as that here alluded to are no new thing, for the Stationary Engineers' Association and others, who appreciate the necessity for them, have, time and again, for many years past, gone to the government, showing the necessity for them only to be thrown down every time. The constant occurrence of boiler explosions in industrial and other establishments, and on farms also, with fearful loss of human life, causes but brief comment and is soon forgotten, except by widows and orphans.

A CASE IN POINT.

A few weeks ago a boiler in a saw mill in the village of Staples, Ont., exploded, by which Ralph Welsh was killed and several other persons were more or less injured, some of whom have since died. Coroner McNiven and a jury investigated the matter, the general opinion of the witnesses being that the boiler was defective, and that a so-called accident had been expected for some time. The employes about the mill seemed to think that the boiler could withstand a pressure of 85 pounds of steam, but felt somewhat nervous when, shortly before the explosion, the engineer allowed the pressure to rise to 120 pounds. It was in evidence that when the boiler was repaired in March it could not be tested by hydrostatic pressure owing to the fact that some of the valves were leaking. D. R. Menzies, the manager of the mill, said that the boiler was in use when he assumed the management in 1894. About four years ago the mill was destroyed by fire, and when it was being rebuilt the boiler was repaired, and he was not aware that at the time of the explosion there was a weak spot in it. Fisher, the engineer in charge of the boiler at the time of the explosion, and who was fearfully injured, testified that he had worked there only about three weeks, and intended leaving. He had heard that the boiler had a bad reputation among the employes, who had occasionally fled from the mill, seeking places of safety, because of the action of the boiler when under extra high pressure. He had intended to clean the boiler on Victoria Day (May 24) while the mill was closed for the holiday. He was in front of the boiler when it exploded. He noticed that it was leaking just where it had been repaired. The safety-valve was supposed to blow off at a pressure of 95 pounds. Another employe, Larondot, testified that the pressure on the boiler indicated 122 pounds ten minutes before the explosion, and that he and David Boyd had taken French leave when the 115 pounds mark was reached. The coroner's jury decided that Ralph Welsh came to his death as a result of an explosion due to a defective boiler in a mill operated by the Neibergall Stave & Lumber Co.; and "we attach negligence on the part of said company for not providing adequate protection by testing the said boiler for the safety of their employes."

Crown Attorney Reid, of Windsor, Ont., conducted the

investigation; but we have not yet learned of any criminal prosecution for manslaughter. Probably the poor widow of the dead man has no wealth with which to employ a lawyer to prosecute.

And still Mr. Stewart, secretary of the Manufacturers' Association, contends that there is no necessity or general demand for government boiler inspection and the licensing of stationary engineers.

CHAMBERLAINISM VS. CANADIAN MANUFACTURING INTERESTS.

The excursionists of the Canadian Manufacturers' Association have been having a real nice time in Great Britain, and have been the recipients of all the attention the occasion called for, which, of course, to some extent among some of them has developed a positive and instant demand for enlarged hatbands. At Birmingham a right royal reception was accorded them, with speech-making galore, at which Mr. George, the president of the Association, told Mr. Chamberlain that Birmingham had produced the greatest living statesman, and, speaking on behalf of Canadian manufacturers, declared that they were a unit for the Chamberlain policy.

Of course Mr. Chamberlain was well within the bounds of good politics in saying complimentary things to the visitors about themselves and their country, and it was exceedingly sweet of him to do so; and it would have been equally sweet and pleasant for Mr. George to repay the compliment in kind, praising the hospitality of his entertainers, expressing the delight he and his companions felt at treading the soil of the Old Land, and viewing the ancient and modern grandeur of what had been shown them, making some mention of the green fields, blue sky, pleasant breezes, et cetera; but Mr. George represented the sentiments of but few beside himself even of the excursionists who surrounded him when he declared that Canadian manufacturers generally, if that was what he meant, were "a unit for the Chamberlain policy."

No man knows better than Mr. George that as a general thing Canadian manufacturers look with much disfavor upon any Imperial or other scheme calculated in any way to establish a zolverein which would amount to free trade within the Empire; and that is what Mr. Chamberlain is aiming for.

And why should Mr. George and his excursionists take any part whatever in British politics? He should remember that even the King or the Governor-General of Canada could not properly make use of such an expression; and it was in exceeding bad taste, under the circumstances, for him to declare any preference in a question which is now having the attention of contending political parties in Great Britain.

MARCONI STATIONS IN CANADA.

In the June 2 issue of this journal was given an authoritative statement regarding the number and locations of the Marconi wireless telegraph stations in Canada, including those which are already finished and in operation as well as those under construction. The work of constructing the unfinished structures is being pushed as rapidly as possible particularly upon that of Sable Island—"the graveyard of the Atlantic."

The station at Camperdown, now about completed, a high wireless signal staff has been erected, from the top of which hangs four wires, or "aerials," fastened to posts with glass insulators. The gentlemen who have charge of the stations are graduates of British scientific institutes, and experienced in Marconi work. Each will have assistants, so that the stations will be constantly ready for transmitting.

Passing vessels fitted with wireless apparatus will send their messages in the direction of the island, and the receiver there will at once write each one out and hand it across the table to the sender, who operates an instrument which sends the dots and dashes for the different letters up the copper wires leading to the arm of the staff pointing toward Camperdown, and they are sent off into the atmosphere in waves, traveling in all directions, but particularly toward Camperdown, 160 miles away. There the message will be taken by the wires: it cannot ground, as is the inclination, because of the glass insulation, but must pass over the wire into the operating room. It is expected that telegraph companies having offices in Halifax will extend their wires to the Camperdown station, and then newspapers can give news by Marconi wireless telegraph.

Vessels having Marconi apparatus on board, when as far as 150 or 200 miles south, south-east, or south-west of Sable Island, can make the fact known to the island station, and have the news sent over the world. The Marconi officials claim that when the stations are in running order a message can be sent to Camperdown, thence to Halifax, and thence by cable to London in ten seconds. In some seasons there may be from twenty to fifty different vessels reporting daily to Sable Island, and when the system is in operation and well known in marine circles the captains, officers, and many passengers of the big ships will have messages to send, thus making Sable Island one of the most important marine stations in the world.

SORRY THEY DISOBEYED.

In a judgment handed down by Mr. Justice Anglin at Osgoode Hall on June 15, in the Buck Stove Co.'s suit against the Guelph Foundry Co., in which he finds that the latter company has been guilty of gross contempt of court, he comments in severe terms on the matter in which the Guelph Co. disregarded an injunction of the High Court. A writ of sequestration was ordered to issue to the sheriff under which the offending company's stock may be seized and destroyed.

This judgment is the result of an action brought a year ago for infringement of the Buck Co.'s Happy Thought range. The Guelph Co. were making a range they called the Grand Idea, which was practically a duplicate of the Happy Thought, and by the judgment in that action they were restrained from continuing to make ranges of that pattern or any similar to, or a colorable imitation of it.

Recently the plaintiffs found that the Guelph Co. was committing a breach of the injunction, and moved to punish it for contempt of court.

Mr. Justice Anglin finds in the plaintiff's favor. He says in part:

"I have no doubt whatever that the new Grand Idea range of the defendants is substantially of the same design as the prohibited Grand Idea, and is an imitation of it. It is true that the defendants point to many differences in detail, but in general outline, in configuration and arrangement of the parts in all that is essential, not merely to a stove, but to the former Grand Idea, the new stove is a mere reproduction."

The judge declines to accept the defendants' plea that their breach of this injunction had not been wilful. By some sort of casuistry they might have persuaded themselves that the two stoves were not of the same design, but that they were not similar to and the one a colorable imitation of the other would be impossible of belief.

The writ of sequestration is a severe and unusual weapon of the court, and in granting it Mr. Justice Anglin says:

"I fully appreciate the reluctance with which the court awards punishment for contempt. Yet in cases where intentional and deliberate violations of the spirit and the letter of an injunction is clearly established and the importance of enforcing respect and obedience outweighs all other considerations. The plaintiffs are entitled to the writ of sequestration they ask and to their costs.

"The plaintiff's counsel stated on the argument that they would not press for actual sequestration if the defendants would break up and destroy all the Grand Idea ranges in their possession and all parts and patterns.

"But the breach of an injunction concerns the court as well as the parties, and the contempt is not purged when the culprit has satisfied the other party. What further reparation the court may insist on in the present case I shall not now determine. The issue of the writ will be stayed for ten days to permit the defendants to destroy their stock. Upon that being done the defendants may apply to the court in view of their regret and desire to make atonement for their disobedience to be relieved from the penal consequence to which their offence has subjected them."

WHAT WILL UNCLE SAM DO?

Reports from China tell that the boycotting of American goods by the Chinese guilds is daily becoming more extensive; that the guilds have quietly determined to carry on the boycott in an effective manner, and that the prospect for American trade in China is gloomy. The native newspapers are refusing to advertise American wares. After all the efforts made by the United States to have an "open door" policy prevail in China, the question looms up of what they are going to do about it. Of course, one can turn to history for suggestions. Some sixty or more years ago Great Britain required that China should receive India's surplus output of opium. The Chinese government wanted to keep the drug away from its people and forbade the importation; whereupon Great Britain bombarded some of the Chinese ports, made the Emperor admit the opium, and confiscated Hong Kong as payment for the trouble taken in accomplishing this ungodly coercion.

It must be remembered, however, before the United States adopts such a course that some other nations also carry clubs. Even if American sentiment approved an attempt to compel Chinese concessions to Americans such as the United States withholds from the Chinese, it might encounter serious difficulties. The alternative is to treat in a decent manner respectable Chinamen who visit their country—but whether politics and labor unions will let the United States amend its present exclusion policy to accord with ordinary fairness and common morality is questionable. Already, though, a howl is heard from American exporters, who see their Chinese trade evaporating, that Washington cannot afford wholly to disregard.

EDITORIAL NOTES.

The usual annual convention of the Canadian Manufacturers' Association will be held in the city of Quebec on September 18, 19 and 20.

Elder Dempster & Co., steamship owners, Montreal, have completed arrangements with the Canadian and Mexican Governments for a steamship service between Canada and Mexico, calling at the Island of Nassau, in the Bahamas, and Havana, Cuba. The service will be inaugurated on July 20,

when the steamer Angola sails from Montreal. The sailings will be at regular monthly intervals from Montreal, in summer, and Halifax in winter.

The reports of the speeches made by Mr. Chamberlain and the representatives of the Canadian Manufacturers' Association at Birmingham, with the comments of the British journals, says the *Toronto Globe*, go to show the uselessness of holding a conference until after the people of Britain have decided on a general election what their trade policy is to be. One of the remarkable features of the occasion is that the visiting Canadian manufacturers should show any particular interest in the politics of the country whose hospitality they are now enjoying.

E. H. Gary, chairman of the Board of Directors of the United States Steel Corporation; F. J. Hearne, president of the Colorado Fuel & Iron Co.; J. Kruttschnitt, vice-president of the Southern Pacific, and others appeared before the Senate Committee on Interstate Commerce at Washington a few days ago, when Judge Gary told the committee that in some instances the Steel Corporation sold its products cheaper abroad than in the United States. The last sale of steel rails in Canada was made at \$6 a ton less than the price in the United States. Judge Gary said products were sold abroad at cost or less in order to keep mills running to their full capacity, and this cheapens the cost to the domestic buyer.

Official investigation at Ottawa has disclosed reasons for apparent monopolization by United States firms of space in Canadian steamers plying to South Africa which are subsidized by the Dominion Government. It seems that a great many large trading firms in the United States have established agencies in this country and are buying and shipping Canadian produce on Canadian railways and steamships to South Africa, and getting the benefit of the preference accorded to Canadian products. The man in South Africa is of course laboring under the impression that the goods in question thus handled by American firms are from the United States, although at points of entry they are regarded as Canadian. The American seller makes no effort to correct this impression. Then, too, the American firms shipping in this way have large distributing agencies all over South Africa, whereas Canadian firms have not. It often happens that the latter, on this account, sell their products to their American rivals, who place them on the market, and get the reputation and profit. There is a stipulation that Canadian shippers are to get ten days preference in loading their steamers, but it frequently happens that they sell their space to American shippers.

Commercial Intelligence, speaking of the Canal Trust project now proposed in Great Britain, says:

Under the present conditions the railway companies own 1,138 miles of the total 3,900 miles of canals and navigable waterways in this country. It is common knowledge that the principal object of the railway companies in their management of these canals is to make through traffic as difficult as possible, and drive the trade to the railways, and the proof of this is to be found in the published figures, for whereas the 2,750 miles of canals privately owned carry considerably over 33,000,000 tons of goods the 1,138 miles belonging to the railways carry but 6,000,000 tons. When we consider the methods of traction in vogue we find further evidence of the "policy" of the railway companies. On only four of the 32 canals under railway control are steam tugs employed, while 44 of the 84 other canals employ steam tugs. At present, we believe, no British canal is worked by electric power, though this is a form of haulage that is coming into popularity on the Conti-

ment. But whatever a Canal Trust decided to do in regard to haulage its first work would need to be the improvement of the existing waterways and locks. On some canals the locks are wide enough for two boats to pass through together, on others they are only wide enough for one at a time, which, since barges usually work in couples, means delay. Another point needing attention is the question of depth. Less than 250 miles of the total canals in this country are deep enough to accommodate vessels with a cargo capacity of 90 tons and upwards. Over 2,000 miles of canals will only accommodate shallow barges carrying from 40 to 60 tons, while 1,200 miles of canals are only large enough to admit the passage of boats carrying from 18 to 30 tons of cargo.

The official report of the minister of railways of Canada for 1904 shows that the number of steam railways in actual operation in Canada at the close of the fiscal year, June 30, 1904, was 191, including the two government roads, the Inter-colonial and the Prince Edward Island railways. As some of the roads are amalgamated or leased the total number of controlling companies was 85, not including the government railways. The number of companies absorbed by amalgamation was 54, and the number of leased lines was 38. The number of miles of completed railway was 19,611, an increase of 534 miles, besides 3,327 miles of sidings. The number of miles laid with steel rails was 19,545, of which 763 miles were double track. The number of miles in operation was 19,431. The paid-up capital amounted to \$1,186,546,918, an increase of \$39,996,149 over the previous year. The gross earnings of the year amounted to \$100,219,436, an increase of \$4,154,909, and the working expenses aggregated \$74,563,162, an increase of \$7,081,638; leaving the net earnings \$25,656,274, a decrease of \$2,926,729. The number of passengers carried was 23,640,765, an increase of 92,023.

The British Columbia Electric Railroad Co. introduced profit sharing three years ago, and it is now announced that the experiment has been eminently satisfactory. The company recognizes the men's union, pays standard wages, and frankly meets representatives of the union to discuss any matter which the men or the management desire to discuss. The company decided that in addition to paying union wages, one-third of the surplus earnings, after paying a 4 per cent. dividend, should be distributed yearly among all employees who had remained in the company's employ at least one year continuously. This surplus is divided equally among all employees, from the office boy to the general manager. At the close of 1902 the share of each employee was \$25; at the close of 1903 the amount was \$35, and although the amount for 1904 has not been ascertained it will probably reach \$40 per employee. There are between 300 and 400 employees who secure the bonus.

The annual Dominion fair at New Westminster, B.C., will be opened about September 20 by the Governor-General of Canada, Earl Grey. This year exhibits from all the Canadian provinces and from many sections of the United States will be installed. The exhibits will embrace specimens of blooded stock of all kinds, grain, fruit, and vegetables; the mineral wealth of the country will be represented by a large variety of specimens of ores, and the manufactures of Canada will be advertised by displays from all parts of the Dominion. Many exhibits from the United States have already been entered.

The Ontario Government have appointed the electrical power commission foreshadowed in the speech from the throne at the opening of the Legislature, and later in the address on the power question delivered by Hon. Mr. Beck,

the member for London, who has made a careful study of the subject. The latter gentleman, with Mr. P. W. Eilis, a well-known manufacturer of Toronto, and Mr. Geo. Pattinson, M.P.P. for South Waterloo, a manufacturer residing in Preston, constitute the commission. They are authorized to collect all information possible in regard to water-powers in the Province suitable for the development of electrical energy, estimates as to the cost of such development, the cost of such energy to manufacturers in comparison with the cost of steam power, and all other details that will enable the Government to adopt a definite policy in dealing with the power question. Hon. Mr. Beck will likely be appointed chairman at the first meeting of the commission.

What has become one of the leading and most attractive buildings at the Toronto Exhibition is the Process building, in which are shown a number of producing industries in actual operation. A novelty this year will be a complete demonstration of the manufacture of pure foods, showing the process of an up-to-date baking plant from the raw material to the finished article in the way of bread-baking, fancy cakes and cake decorations. The manufacture of shredded wheat will be shown. There will also be processes illustrating various forms of textile manufacture, such as cotton looms and cheese cloth looms. There will be a complete boot and shoe plant, demonstrating the numerous methods in the manufacture of ladies' foot wear from the leather to the finished article, the time used in the manufacture of a pair of shoes being ten to fifteen minutes; whereas in the olden times it took almost as many days. There will be shown the manufacture of Canadian tweeds and other cloths, as well as of spring beds and other articles of domestic use. There will also be on exhibition silk-weaving machines, which are almost human in their method of producing the delicate fabrics which are made from silk.

When visiting coal and metal mines, the writer has seen many piles of discarded boiler tubes. This is the case more often, where bad water is used in the boilers, and where the boilers have not had proper care in the way of cleaning, resulting in heavy deposit of scale, corroded and leaky tubes, which have to be cut out and replaced by new ones. These old tubes or flues, when sold as scrap, bring so little that it hardly pays the cost of removing them; yet, a few dollars spent in cleaning them and attaching flanges, will make of them excellent air or water pipe which can be used where the pressure carried does not exceed 75 or 100 pounds per square inch. Wherever compressed air is used or water is to be pumped, the outlay for pipe is one of the large items of expense, and when used underground, only a small percentage of this pipe is returned to the surface in a serviceable condition. A year or more ago, this company had several hundred old boiler tubes mostly three, three and a half, and four inches in size and 16 to 18 feet long which were considered practically useless until experiment proved their value for pipe. Threads and couplings cannot be used with success for joining the various lengths, for two reasons. First, the old tubes are usually too thin to allow for the threads, and secondly, they are apt to be out of a true circle. Flanging is therefore the best method for this purpose.—D. E. Rust, in *Mines and Minerals*.

Canada's trade with Japan is growing. A few years ago it was almost nothing. In 1903 Canada sent \$249,392 worth of goods to Japan. A good deal consisted of exhibits. The Canadian agent at Osaka, Mr. Maclean, reports that in 1904 Canadian goods in Japan were valued at \$418,246, an increase of 70 per cent.

MACHINERY AND ENGINEERING.

BRISTOL'S NEW RECORDING VOLT-METER FOR BOTH DIRECT AND ALTERNATING CURRENT.

The importance of maintaining uniform voltage in the generation and distribution of electricity for light and power has long been appreciated by both the producer and the consumer.

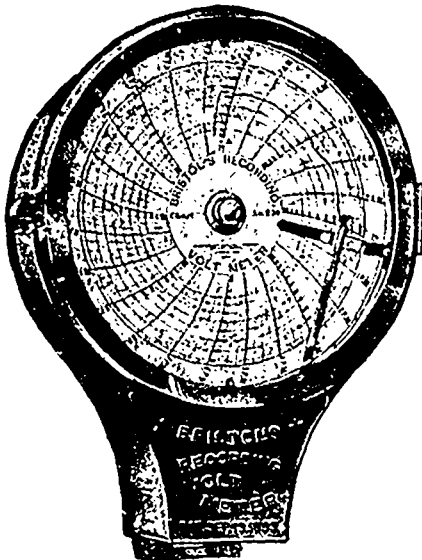


FIG. 1.—BRISTOL'S NEW RECORDING VOLT-METER.

A variation of comparatively a small percentage in the voltage of an incandescent lighting circuit from the standard for which the lamps are designed causes great loss in the life of the lamps, and results in wide fluctuations in the efficiency

The recording voltmeter has proven itself to be of great value, and is an indispensable part of a modern electric plant, since it accurately, automatically and continuously furnishes a written record of the slightest variation of the voltage. The recording voltmeters manufactured by the Bristol Co., Waterbury, Conn., have been extensively adopted, but up to the present it has been necessary to furnish the instruments with entirely different current coils, according as they were to be employed upon alternating or direct current circuits.

In many electric plants both alternating and direct current are generated, and if the same voltmeter can be used equally well for recording either kind of current, it is quite evident that a valuable advance has been made.

This has been accomplished, and Fig. 1 illustrates the standard station or switch-board design. In Fig. 2 a special portable form of the instrument is shown. The case is provided with a handle and leveling screws for convenient transportation and adjustment. The door is open, showing the construction and manner of operation.

The novel features and improvements to this new voltmeter are, first, it is equally applicable to both alternating or direct circuit; second, it requires only one-third as much current to operate as that necessary for the older design for alternating currents; third, it is more sensitive to very slight variations of voltage; fourth, the chart graduations are nearly uniform on both sides of the working range; fifth, the portable form of the instrument in its carrying case is only half the size and weight that was formerly required.

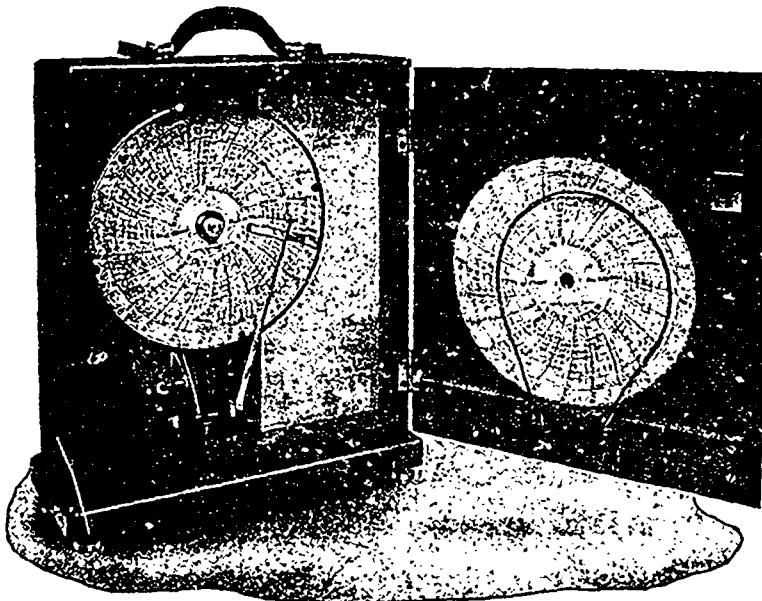


FIG. 2.—SPECIAL PORTABLE FORM BRISTOL'S RECORDING VOLT-METER.

and candle power. In the application of electric power as, for instance, on an electric railway, it is of great importance that the voltage be maintained regardless of the variations in the load.

The solenoids shown in Fig. 2 are connected so that when current is passing through them in series the movable solenoid will be repelled from, instead of being attracted toward, the stationary one.

The movable solenoid is mounted on a frictionless knife edge multiplying device, which transmits its motion to the pen arm, carried by the knife edge blade.

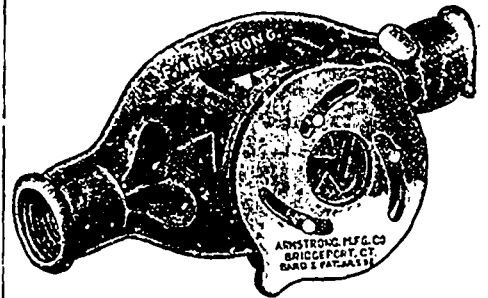
This simple multiplying device permits the solenoids to be located very near each other, and consequently the magnetic field of force is uniform throughout the motion of the solenoid resulting in the desirable scale divisions of the chart.

By making the constructions of the solenoids so that there is repulsion instead of attraction the mutual inductance between them is neutralized, thus making the same instrument suitable for recording either alternating or direct current. The instrument is independent of the rate of alternations, and is compensated for changes of atmospheric temperature.

ARMSTRONG'S BARD ADJUSTABLE BUSHING.

The Bard Adjustable Bushing made by the Armstrong Mfg. Co., Bridgeport, Conn., has some new features which will recommend it at once to all users of bushings as well as to the trade in general.

This bushing is fitted with hardened jaws which are moved to and from centre by means of a cam plate, and by fastening the plate with the thumb screw, the jaws are firmly held in any desired position.



BARD ADJUSTABLE BUSHING.

The adjustable jaws make a perfect centre for the pipe or rod, fit closely around the same and insure the cutting of a straight thread. When necessary a crooked or drunken thread can be cut with this bushing as easily as with a ring bushing.

When once attached to the die stock it can always remain there. It does away with the necessity of carrying a number of loose ring bushings, and saves the time now lost in hunting for and changing the bushing for each size of pipe.

No more winding tin or paper around pipe or rod.

This adjustable bushing can be furnished to fit the genuine Armstrong stocks and dies Nos. 1, 2, 2½ and 3.

The B. F. Sturtevant Co., Boston, Mass., have sold for export to Japan a complete lumber dry kiln equipment, consisting of a steel plate engine driven fan with direct connected heater, and a full outfit of iron work for lumber trucks, tee rails, etc.

STURTEVANT DUST COLLECTING SYSTEM AT CANADIAN PACIFIC RAILWAY SHOPS, MONTREAL.

Installed by G. H. Gifford & Co., managers of the Philadelphia House, B. F. Sturtevant Co.

This is undoubtedly one of the largest dust collecting systems upon this continent. The equipment consists of seventeen exhaust fans and six enormous dust collectors. Three of these are located upon the roof of the planing mill, and

discharge it to the second set, from which it is delivered either directly to the boilers or deposited in the shaving house. When the boilers are not in operation and the surplus is too great it is also possible to deliver directly to cars, beneath pipes and between the boiler and shaving houses. The feed pipes of the boilers may be swung out of position when not required.

This installation is an illustration of the high efficiency of operation which may be secured by careful and thoughtful



STURTEVANT DUST COLLECTING SYSTEM.

one upon the cabinet shop, where two others into which they discharge, are supported above the boiler house. All of the wood-working machines are hooded in the most approved manner so as to insure the maximum suction at the point where chips and shavings are made.

Not only can the light, thoroughly dry, refuse from the cabinet shops be handled in this way, but that which is made by the heavy machines, in the planing mill, is drawn up with facility, and discharged to the collectors. This stock is largely oak, wet, heavy and stringy with frequently an inch of ice which is taken off at the same cut. The fans vary in speed from about 650 to 825 revolutions per minute. The greatest distance through which material is conveyed is about 700 feet.

The efficiency of the system as compared with any method of collecting refuse by the hand is two-fold in its character. Not only is the expense of handling greatly reduced, but the refuse material is at once rendered available for fuel.

The boilers, which are four in number of about 425 h.p. each or 1,700 h.p. total, may be fed entirely by shavings which would otherwise be costly to transport and dispose of. At the boiler house are located additional fans which draw the refuse from the first set of collectors and

design. The power required to operate the fans is fully one-third less than that which would be necessary if the system had been installed along the lines which prevail in similar installations. The annual saving in power will probably be enough to pay the total first cost of the additional equipment to secure the increased efficiency.

THE CRESCENT CONTRACTING CO.

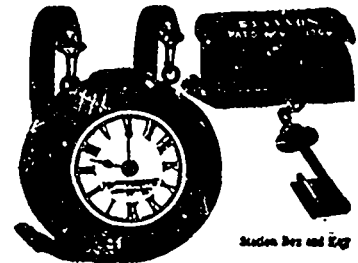
The Crescent Contracting Co., Montreal, of which Mr. C. M. Gardiner is manager, are making a specialty of the construction and erection of towers and tanks for manufacturing establishments, etc. They have recently completed equipments for the following Montreal firms: H. Kellert & Sons, L. Chaput & Fils, Lewis Bros. & Co., Williams & Wilson, H. Vineberg & Co., The Gault Estate for Montreal Lithograph Co., Ogilvie Milling Co., J. & T. Bell Co.

This company are also the eastern representatives of the Chapman-Double Bearing Co., Toronto, and the following installations of this well-known line of improved bearings have been made in Montreal: Wm. Rutherford & Sons, McLaurin Lumber Co., Bonner Leather Co., F. Galibert, Ryall Machine Screw Co., J. & T. Bell, Dufresne & Locke,

Chase & Sanborn, Ogilvie Milling Co., Northern Electric Co., Electrical Engineering Co., Lymburner & Matthews, H. J. Fisk & Co., Montreal Carriage Leather Co., H. Shorey & Co., Toilet Laundry Co., J. C. Wilson & Co., St. Lawrence Sugar Refining Co., Belding Paul & Co., H. R. Ives Co., Acme Can Works, Morton Phillips & Co.

PORTABLE WATCHMAN'S CLOCK.

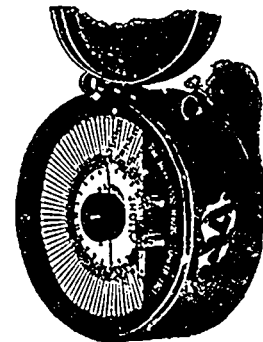
Portable time recorders have been in use for years, but it is but recently that the convenient Newman time recorder has been perfected and come into com-



NEWMAN PORTABLE WATCHMAN'S CLOCK.

mercial use generally. For many lines of business—lumber yards, railroad yards, mines, factories, etc., this is a very desirable system, because of its convenience and economy in cost.

The Newman Portable Watchman's Clock has been placed on the Canadian market by the Canadian Appraisal Co.,



SIDE VIEW PORTABLE CLOCK.

Montreal and Toronto. These clocks represent the latest improvements along these lines. The dial is arranged for 24 hours, the case being made of aluminum for lightness. The watchman carries the clock by a strap over his shoulder. The registering is made by embossing the numbers of the station into the dial, the mechanism for which being on the key. The Newman clocks are made in two sizes, the 9-key clock weighing about 28 ounces, and the 16-key clock weighing about 34 ounces. Larger clocks are made specially to order. The Canadian Appraisal Co., Montreal, who are handling this system in Canada will give full particulars.

Times are good. If they are not as profitable as you would like them, remember they might be worse.

DRY POWDER FIRE EXTINGUISHERS.

The following report upon the principle of dry powder fire extinguishers has been prepared by Mr. J. A. C. McCunig, manager of the Dominion Fire Protection Association, and will be found of interest to all who have had this class of extinguisher under consideration:

This appliance, in its popular form, consists of a sheet metal tube from 20 to 25 inches long, and about 2 inches in diameter, sealed at the bottom and closed at the top by a tight-fitting cap, to the outer surface of which is attached a ring, by which the tube is hung upon a hook securely fastened in the wall. The tube is filled with a fine powder which, it is claimed, contains chemical properties, which under the action of heat give forth immense volumes of fire-destroying gas. In case of fire the tube is jerked from the hook, pulling off the cap, and the contents thrown forcibly at the base of the fire.

For general use as a fire extinguisher the device has failed to win the approval of fire underwriters. The uncertainty in regard to the chemical properties of powders used; the difficulty of providing absolute assurance that the powder will not become caked from dampness or undergo deterioration; the impracticability in the case of certain fires such, for instance, as that of burning curtains, of effectively applying the powder; and the delay that might occur through an ineffectual attempt to extinguish an incipient fire with the dry powder when water might have been applied effectively, have all appeared good reasons to underwriters for discouraging the use of dry powder extinguishers.

That such extinguishers have some merit, however, cannot be ignored, for in the face of the discouragement given by underwriters, dry powder extinguishers, upon the simple basis of their ability to effectively extinguish fire under certain trying conditions, have been adopted as auxiliary appliances by some of the largest independent concerns in the United States and Canada, including the Standard Oil Co., the Canadian Pacific Railway Co., and the United States Navy.

The following deductions are made from the experimental tests to which various powders at present on the Canadian market have been subjected:

(1) It is strikingly apparent that there is an appreciable variation in the fire extinguishing powers of the different powders manufactured.

(2) It is extremely difficult to estimate how much the effective use of dry powder extinguishers depends upon the general experience, knowledge of the nature of fires and manipulatory skill of the operator. In exhibitions given by competing representatives of dry powder extinguishers, it is clearly evident that to a large extent there is a trial of men as well as a trial of appliances. It is found that after considerable experience in the handling of dry powder tubes, one is able to produce results impossible in the beginning, apparently attributable to the

development of an intuitive skill that gives force and direction in the application of the powder, causing it to act to some extent as a smothering agent as well as locating it where heat will most effectively liberate its inherent forces. Under the most favorable fire conditions considerable experience is required to use the powder successfully.

(3) Apart from the consideration of skill in manipulation it is evident that all such powders do their best work in the case of fires, the base of which is well defined, in which the heat is highly developed and concentrated, and where said base is easily accessible, and provides area and substance for application of the powder.

(4) It is beyond doubt that a large percentage of fires are not subject to control, even in their incipency, by dry powder extinguishers.

(5) The supreme achievement of dry powder is the extinguishment of benzine, oil and kindred fires. Under most conditions its use in such fires was attended by satisfactory results.

From chemical analysis a comparison was made between two of the leading powders tested. The result showed the percentage of the ingredient that furnishes fire extinguishing gas to be, in one case 87.36, in the other only 53.76. Both powders contained as filler, an ingredient calculated to prevent caking.

The conclusions reached are that while the time may never come when dry powder fire extinguishers can be approved, without qualification, for general use, yet the fire destroying virtues, and reliability against change of condition or deterioration, of certain composite powders may become so established that they may be recognized as valuable auxiliary agents in the extinguishment of fire in many classes of risk where fire, if it should occur, would in all probability be amenable to such an extinguisher, and where employees might be instructed successfully as to the use of dry powder tubes.

And, further, that dry powder tubes of capacity sufficient to contain not less than two and one half pounds of powder each, and containing a powder approved and certified to by official chemical analysis as to its high percentage (not less than 80 per cent.) of superior fire destructive ingredient, imperviousness to all cementing processes and integrity against deterioration, are valuable appliances, if placed in sufficient quantity (in groups of not less than six tubes), in all places where benzine, paint, oil, grease or kindred substances form or augment hazard; and in the equipment of rolling stock and steamboats, and such other risks as from their nature call specially for some such extinguisher.

It is important that all tubes in commission for fire service be effectively sealed to assure that contents have not been tampered with, and that such seal bear the guarantee of the manufacturer that the powder contained therein is composed, to the extent of 80 per cent., of chemically pure fire extinguishing ingredient.

The hooks upon which tubes are hung

should be at least seven feet, and not more than eight feet from the ground, and in addition to the hooks, cups should be provided as support for tubes.

By the side of tubes, wherever hung, a bright-colored card, preferably in contrast to the color of the extinguisher, should be nailed, giving directions for use of extinguisher.

AT THE ALLIS-CHALMERS-BULLOCK PLANT.

An interesting event in connection with the Convention of the Canadian Electrical Association, held in Montreal, June 21-23, a report of which appears elsewhere, was the visit to the plant of the Allis-Chalmers-Bullock, Limited, at Rockfield, and the luncheon given there by the company to the members of the Association.

At 1 o'clock on Thursday special cars took the visitors from Windsor Hotel to Rockfield, where the extensive plant of Allis-Chalmers-Bullock is situated. Luncheon was served to the party of nearly 300 by the company, and the plant was thrown open to the inspection of the visitors.

Mr. K. B. Thornton expressed on behalf of the association, when lunch was over, their pleasure in accepting the hospitality of the company, and paying a visit to their factory, which was one of the largest of Montreal. Mr. Geo. Bullock, president, and Mr. H. H. Henshaw, general manager, of the company, replied, and welcomed the delegates to the plant.

After luncheon, the shops of the company were visited. Included in the work now under construction in the electrical department is one of two 750 h.p. induction motor-generator sets for the Montreal Street Railway; two 600 k.w. alternating current waterwheel type generator for the Southern Light & Power Co., Toronto; and two of four 75 k.w. direct current engine type generators for the Canadian Pacific Railway Hotel at Winnipeg. The visitors were also shown the operation of air compressors, rock drills and coal cutters, in the mechanical department. Subsequently they paid a visit to the various electrical sub-stations in Montreal. The one in which they seemed to be most interested was that of the Shawinigan Water & Power Co., at Maisonneuve. In this terminal station there is one 8,000 h.p. frequency changer, five 1,200 h.p. frequency changers, two 900 k.w., three-phase transformers; two 500 k.w. rotary converter all installed by Allis-Chalmers-Bullock, Limited. The 8,000 h.p. frequency changer was carefully inspected by the visitors, for it is not only the largest frequency changer ever built, but is composed of the largest alternating current generator in operation at the present time, namely, 5,750 k.w., and the largest electric motor ever built, viz., 8,000 h.p.

Wherever that man goes he is almost invariably invited to call again, and yet he is the most unpopular man in town."

"Who is he?"

"A bill collector."

CAPTAINS OF INDUSTRY.

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

The Stratford Fuel, Ice, Cartage & Construction Co., Stratford, Ont., have been incorporated with a capital of \$100,000, to manufacture fuel, ice, building materials, etc. The provisional directors include W. J. Mooney, C. E. Nasmyth and S. J. Cook, Stratford.

The Petrolia Torpedoes, Limited, Petrolia, Ont. have been incorporated with a capital of \$50,000, to acquire the business of the Petrolia Torpedo Co., to produce oil and gas, and to manufacture nitroglycerine, explosives, etc. The provisional directors include David Barr, Dutton, Ont., W. M. Lowery, Petrolia, and J. H. Kittermaster, Sarnia, Ont.

The Sharples Separator Co., a United States incorporation, have been licensed to manufacture centrifugal separators, etc. in Ontario, with a capital of \$40,000, and have appointed C. A. Masters, Toronto, to be their attorney.

The Union Steamship Co., Hamilton, Ont., have been incorporated with a capital of \$100,000, to carry on the business of a navigation and transportation company. The provisional directors include R. O. Mackay, W. G. Walton and Wm. Southam, Hamilton.

The Rudolph & Begg Brewing Co., St. Thomas, Ont., have been incorporated with a capital of \$100,000, to manufacture malt, ale, porter, etc. The provisional directors include G. C. Begg, E. E. Boughner and A. N. C. Black, St. Thomas.

The Tuck Bone Oil Co., Smith's Falls, Ont. have been incorporated with a capital of \$30,000, to manufacture Tuck's Rheumatic bone oil, medicines, etc. The provisional directors include G. F. McKimm, C. A. McKimm, Smith's Falls.

The Britnell Adjustable Roller Bearing Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture roller bearings, etc. The provisional directors include Alex. Nelson, E. H. Adams and A. S. Dewar, Toronto.

The Lindsay Furniture & Mantel Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture furniture, carpets, etc. The provisional directors include J. B. Alderson, Frederick Morton and W. R. P. Parker, Toronto.

The Glenora Power Co., Picton, Ont. have been incorporated with a capital of \$100,000, to develop water powers, produce electricity, etc. The provisional directors include Wellington Boulter, D. L. Bougard and W. J. Carter, Picton.

The Western Canada Flour Mills Co., Toronto, have been incorporated with a capital of \$1,500,000, to manufacture flour, cereals, etc. The provisional directors include J. S. Lovell, Wm. Bain and Robert Gowans, Toronto.

The Standard Wire Fence Co. of Woodstock, Limited, Woodstock, Ont., have been incorporated with a capital of

\$100,000, to manufacture metal fencing, etc. The provisional directors include J. L. Hosack, G. H. Cock and Chas. Jones, Woodstock.

The Canadian Commercial Binder Co., Toronto, have been incorporated with a capital of \$200,000, to manufacture machinery for gumming, cutting and applying seals for sealing parcels, cans, etc. The provisional directors include A. H. Dewdney, North Toronto, J. O. Buchanan, and Frederick Diver, Toronto.

The Canadian Oil Co., Toronto, have increased their capital from \$1,000,000 to \$1,500,000.

Canada's Century Publishing Co., Toronto, have been incorporated with a capital of \$10,000, to carry on a printing and publishing business, etc. The provisional directors include B. L. Monkhouse, R. M. Walton and Christopher Wilkinson, Toronto.

The York Brick & Cement Ware Co., Lambton Mills, Ont., have been incorporated with a capital of \$40,000, to manufacture brick, brickware, cementware, etc. The provisional directors include Wm. Beith, Toronto, Robert Weddell, Trenton, Ont. and Robert Beith, Bowmanville, Ont.

The Canadian Seamless Wire Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture plated wire, metallic tubing, etc. The provisional directors include W. B. Gladding, E. H. Fairbrother, Providence, R. I., and H. E. Smith, Crauston, R. I.

The Seibert-Curtain Pole Co., Toronto, have been incorporated with a capital of \$20,000, to manufacture articles out of iron, metal, wood and fibre. The provisional directors include T. C. Seibert, E. J. Butler, and Edward Williams, West Washington, Pa.

The Ontario Wind Engine & Pump Co.'s goods (Toronto) are still finding favor abroad they having received by recent mail, an order from the British Government for one of the Crown Colonies for 15 complete Canadian Airmotor outfits. This patronage by the Imperial Government is sufficient warranty of the class of goods turned out by this firm and it certainly reflects credit to the country. They have just issued an up-to-date illustrated catalogue which is very complete, setting forth the various lines manufactured by them.

The Rideout Gilbert Co., Rat Portage, Ont., a Manitoba incorporation, have been licensed to manufacture furniture, hardware, etc. in Ontario with a capital of \$40,000. Harding Rideout, Rat Portage, is their attorney.

The Georgian Bay Fruit-Growers, Limited, Thornbury, Ont., have been incorporated with a capital of \$25,000, to carry on a fruit canning business, and to operate cider and pulp mills, etc. The pro-

visional directors include J. G. Mitchell, Geo. Mitchell and Albert Moore, Collingwood, Ont.

The Dominion School Supply Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture school supplies, chemical apparatus, etc. The provisional directors include Geo. Dunham, J. C. Spencer and W. W. Hodgson, Toronto.

The Automatic Train Stopping Co., Toronto, have been incorporated with a capital of \$250,000, to acquire the McPhee Automatic Railway signalling device and manufacture same, also electrical machines, apparatus, etc. The provisional directors include W. R. P. Parker, G. McP. Clark and J. A. McEvoy, Toronto.

Messrs. Fetherstonbaugh & Co., Patent Barristers, Toronto, Montreal, Ottawa and Washington, D.C. have obtained Canadian patents for the following:—F. Cords, Elmwood, Ont., clothes reels; C. S. Jackson, Bridgeburg, Ont., voting machines; C. C. Lougard, Halifax, N.S., wrenches; J. H. K. McCollum, Toronto, fluid turbine engines; C. Clarke, Toronto, dust collectors; W. G. Ross & D. McDonald, Montreal, passenger cars; A. S. Milne, Laskdale, Ont., dumping vehicles; J. H. Stone, Toronto, combined heating and cooking oil stoves; E. M. L. Evans, Toronto, clothes line posts; W. J. Clokey, Toronto, grain binders; P. Panfili, Toronto, tiles; O. Glatt, Toronto, piano actions; and R. Donaldson, Montreal, trucks.

The Fowlers' Canadian Co., Hamilton, Ont., a branch of the Swift Co., of Chicago, Ill., will enlarge their plant at a cost of about \$70,000.

Messrs. A. Rosenthal & Sons, Ottawa, have been incorporated with a capital of \$100,000, to acquire the business of A. Rosenthal and to manufacture jewelry, precious stones, etc. The provisional directors include Aaron Rosenthal, Adolph Rosenthal and Samuel Rosenthal, Ottawa.

The James Warnock Co., Limited, Galt, Ont., have been incorporated with a capital of \$200,000, to acquire the business of James Warnock & Co. and to manufacture tools, implements, springs, axles, etc. The provisional directors include C. D. Massey, K. B. Warnock, Toronto, and J. B. Warnock, Galt.

The Gladstone Development Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$150,000, to carry on a mining, milling and development business. The provisional directors include Wm. O'Brien, J. B. Pardee and H. P. Taylor, Sault Ste. Marie.

The Dunnville Mutual Natural Gas Co., Dunnville, Ont., have been incorporated with a capital of \$15,000, to produce electricity, natural gas, etc. The provisional directors include W. H. Penny, W. E. Traver and C. D. Trimble, Dunnville.

Messrs. F. W. Bird & Sons Co., manufacturers of roofing paper, etc., East Walpole, Mass., will erect a large factory in Hamilton, Ont., at a cost of \$20,000. They will give employment to about 200 hands.

The city of Toronto has been authorized to expend \$45,000 for a freight shed on the city wharf, and \$15,000 on other buildings on its Yonge-Bay street wharf.

The Western Construction Co., Toronto, have been incorporated with a capital of \$4,000,000, to carry on a general contracting and construction business. The provisional directors include A. P. Murray, J. G. Pyke and F. H. Hewitt, Montreal.

Fourteen years ago the Murphy Iron Works, Detroit, Mich., sold the first improved smokeless furnace to the Cambria Steel Works, Johnstown, Pa. Last week they made the 36th installation which included 16 furnaces, making a total of 264 furnaces installed for that company. Mr. M. C. Huyette, Board of Trade Building Toronto, is Canadian representative for the Murphy Iron Works.

The Banner Oil Co., Petrolia, Ont., have been incorporated with a capital of \$100,000, to produce crude petroleum, natural gas, etc., and to manufacture well-drilling tools and machinery. The provisional directors include J. C. Winters, Mount Morris, N.Y., C. H. Palmer, Rochester, N.Y., and D. S. Robb, London, Ont.

The Hope Lumber Co., a United States incorporation, have been licensed to manufacture lumber, shingles, etc., in Ontario with a capital of \$25,000, and have appointed Chas. McCrea, Sudbury, Ont. to be their attorney.

Messrs. G. Mason & Co., Ottawa, will rebuild their sash and door factory which was recently destroyed by fire.

The Climax Good Roads Machinery Co., Marathan, N. Y., manufacturers of structural steel road machinery, etc., are considering establishing a factory at Peterborough, Ont.

The Water and Light Commissioners, Woodstock, Ont., have recommended the expenditure of \$50,000 on the city's plant. It is proposed to build a reservoir, which will cost \$18,000, and to purchase a new pump at a cost of \$13,500.

The Northern Navigation Co.'s steamer City of Collingwood, was destroyed by fire at Collingwood, Ont., June 19. Loss about \$125,000.

The Grand Trunk freight sheds at Collingwood, Ont., were destroyed by fire June 19. Loss about \$10,000.

The Grand Trunk Railway station at Chesley, Ont. was destroyed by fire June 25.

A boiler exploded in Warwick's brick-making plant near London, Ont. on June 23. Damage about \$1,000.

The Pedlar People, Osbawn, Ont., manufacturers of expanded metal lath, metallic shingles, sidings, etc., have received the following orders recently:— The placing of expanded metal lath in the new Government buildings at Ville St. Louis, Que.; fireproofing of Strathcona Hall in connection with McGill University, Montreal, by using their perfect lath; expanded metal lath in the new Hampton apartments; and the lathing of the two new branches which are being erected for the Molson's Bank, Montreal.

Building permits issued in Toronto, provide for the erection of one hundred dwelling houses, also additions to the Home for Incurables, valued at \$2,000, a two-story brick stable and a one-story brick factory for the Dominion Paper Box Co., cost \$10,000; new firehall for the city cost \$20,000, and a six story fireproof warehouse for Mr. S. F. Wilson, to cost \$50,000; the Toronto Foundry Co. to erect a building to cost \$10,000 and the City Storage Co. to build two additional stories to their building to cost \$8,000.

The dam of the electric light company at Westport, Ont., was carried away by flood July 2. Damages to this and other property there amounted to \$10,000.

The Goderich Elevator & Transit Co.'s elevator at Goderich, Ont., was destroyed by fire July 3. Loss about \$150,000.

The town of Sussex, Ont., has decided to erect a new school building at a cost of about \$25,000.

R. T. Wright's cheese box factory at Thorndale, Ont., was destroyed by fire July 3. Loss about \$6,000.

The building occupied by the Palmer Piano Co., the Fairless Milling Co., J. G. Gilchrist, and the Ontario Power & Flats Co., was damaged by fire June 16. Loss about \$18,000.

The following buildings were destroyed by fire at Fort Frances, Ont., June 16: Alberton Hotel, Breckon's bakery, Fort Frances Hotel, Koochiching Hotel, Well's hardware warehouse, Bank of Commerce, and Williams & Co.'s departmental store. Total loss about \$200,000.

The ratepayers of Guelph, Ont., have voted favorably on a by-law granting \$55,000 towards the extension and improvement of the city's gas plant.

The Montreal Suspender & Umbrella Co., Montreal, have asked the town of Arnprior, Ont., for a \$50,000 factory building and exemption from taxation for ten years in consideration of which the company will commence the manufacture of their goods, and will employ a large number of hands.

The ratepayers of Perth, Ont., have voted favorably on a by-law granting \$25,000 to H. K. Wampole & Co., of Philadelphia, Pa., for the erection of a factory for the manufacture of milk sugar, etc.

The Plymouth Cordage Co., of Boston, have optioned 173 acres of land in Welland, Ont., and will invest a million dollars in a plant to employ 500 men. The town will give a fixed assessment and extend its boundaries to include the works.

The John Inglis Co., Toronto, have been awarded the contract for the installation of three new boilers at the waterworks at Brantford, Ont.

A three-story additional wing will be added to St. Michael's Hospital, Toronto, at a cost of \$50,000.

The Nasmith Co., Toronto, have purchased an eight-acre site upon which they will erect a large bakery.

A company has been organized for the purpose of erecting a factory for the manufacture of wooden and pulp articles

at Haileybury, Ont. They will employ about 600 hands, and expend \$500,000, of which \$200,000 will be for machinery. Mayor Lawlor, of Haileybury, is interested.

The Dennis Wire & Iron Co., London, Ont., will erect a new factory. It will be 160x72 feet, two stories high.

The House of Industry, Toronto, will be enlarged at a cost of about \$10,000.

The James Warnock Co., Galt, Ont., will devote all their factory space for the manufacture of tools, and will replace their spring plant with a modern tool plant.

The ratepayers of Stratford, Ont., will vote on a by-law to grant a bonus of \$30,000 to the Dominion Thread Co. in consideration for which the company will erect a factory at a cost of \$45,000, and will give employment to 100 hands. Dr. Beattie Nesbitt, Toronto, is president of the company.

The boiler in Joseph Doten's basket factory at Green River, Ont., exploded June 29, completely wrecking the building.

A report from Leamington, Ont., states that the South Essex Oil Co. have struck a well in Mersea township, flowing at the rate of 500 barrels of pure oil per day.

The Baptist Church building at Waterdown, Ont., was destroyed by fire June 28.

The Canadian Pacific Railway Co. intend to erect large elevators at Victoria Harbor, Ont., their newly-selected terminus on the great lakes, from which point there will be all-rail transportation to Montreal. The new route will save 150 miles of rail haulage compared with Owen Sound.

The Matthews Turbine Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture merchandise, smallwares, etc. The provisional directors include Ewen MacKenzie, Thos. Lawless, and C. B. Jackes, Toronto.

Messrs. M. Beatty & Sons, Limited, Welland, Ont., have been incorporated with a capital of \$300,000, to acquire the business of M. Beatty & Sons, and to manufacture dredges, machinery, contractor's plant, etc. The provisional directors include W. L. Beatty, H. I. Beatty, and A. O. Beatty, Welland.

The Canada Sand Lime Pressed Brick Co., Toronto Junction, Ont., have been incorporated with a capital of \$60,000, to manufacture brick made of sand and lime, stone, iron, etc. The provisional directors include Robert Kennedy, W. McI. Flavelle, and J. D. Flavelle, Lindsay, Ont.

The Point-Abino Sand Co., a United States incorporation, have been licensed to manufacture stone, cement, foundry supplies, etc., in Ontario with a capital of \$20,000. A. H. Kilman, Ridgeway, Ont., is their attorney.

The Ajax Production Co., a United States incorporation, have been licensed to produce oil, petroleum, etc., in Ontario, with a capital of \$40,000. G. A. McGillivray, Petrolia, Ont., is their attorney.

Canada Mail Orders, Limited, Toronto, have been incorporated with a capital of \$1,000,000, to manufacture smallwares, etc. The provisional directors include John Dryden, Toronto, T. M. Brown, Alliston, Ont., and O. C. Lawson, Trenon, Ont.

The Theo Noel Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture proprietary medicines, etc. The provisional directors include T. Noel, J. R. Noel, Chicago, Ill., and L. S. Bullen, Toronto.

The Dennis Wire & Iron Works Co., London, Ont., have been incorporated with a capital of \$50,000, to manufacture architectural iron work, structural steel, wire fences, etc. The provisional directors include J. H. T. Dennis, E. R. Dennis, and C. H. Ivey, London.

The Barrie Furniture & Mfg. Co., Barrie, Ont., have been incorporated with a capital of \$100,000, to manufacture lumber, furniture, etc. The provisional directors include A. A. Dickson, Jas. Morrison, and A. McN. Robb, Toronto.

The Capewell Horse Nail Co., a United States incorporation, have been licensed to manufacture horse-shoe nails, etc., in Ontario with a capital of \$400,000. C. Fleming, Toronto, is their attorney.

The American Radiator Co., a United States incorporation, have been licensed to manufacture radiators, heating apparatus, boilers, etc., in Ontario with a capital of \$50,000. Norman Whitelaw, Brantford, Ont., is their attorney.

The Falcon Press, Limited, Toronto, have been incorporated with a capital of \$20,000, to carry on a printing and lithographing business, etc. The provisional directors include K. Wheeler, S. Wheeler, and G. H. Wheeler, Toronto.

The New Toronto Home Building Co., Toronto, have been incorporated with a capital of \$40,000, to erect buildings, etc. The provisional directors include Alex. Keith, Wilnot Fitzsimmons, and R. C. Oswald, Toronto.

The Fairbanks-Morse Canadian Mfg. Co., Toronto, have been incorporated with a capital of \$250,000, to manufacture iron, steel, manganese, etc. The provisional directors include G. W. Sparks, Chicago, Ill., C. J. Brittain, and A. W. Olmsted, Toronto.

The Western Canada Cement & Coal Co., Ottawa, have been incorporated with a capital of \$1,250,000, to manufacture cement, artificial stone, etc., and to carry on coal mining business. The provisional directors include A. F. MacLaren, A. Irvin, S. F. Bell, and John Lavelle, Ottawa.

The Robins Belt Conveying Co., have opened offices in Montreal. The company are installing a conveying system in the plant of the St. Lawrence Sugar Refining Co., Montreal.

Albert Soaps, Limited, Montreal, have been incorporated with a capital of \$200,000, to manufacture soaps, and to acquire business of Alfred Savage & Son. The provisional directors include J. G. Savage, J. F. Savage and E. B. Busted, Montreal.

The United Shoe Machinery Co. of Canada, have been authorized to do business in Quebec and have appointed F. W. Knowlton, Montreal, as their agent.

The Singer Mfg. Co. have been authorized to do business in Quebec, and have appointed A. J. Brown, Montreal, as their representative.

N. J. Holden & Co., Montreal have purchased the Canadian Pneumatic Tool Co., of that city, and have removed their offices to McGill St.

The Montreal Belting Co., Montreal, have recently been reorganized and Mr. T. F. Mackay who is well-known in the belting business, is now manager of the company.

The Babcock & Wilcox Co., Montreal and Toronto, recently closed a contract with J. R. Booth, of Ottawa, for the installation of a battery of eight 250 h.p. B. & W. boilers.

The Drummond Mines, Limited, Montreal, have been incorporated with a capital of \$100,000, to carry on a mining, smelting and refining business, etc. The provisional directors include G. E. Drummond, W. H. Drummond and W. J. White, Montreal.

Messrs. R. McFarlane & Co., Limited, Montreal, have been incorporated with a capital of \$100,000, to manufacture sashes, doors, blinds, mouldings, etc., and to acquire the business of R. McFarlane & Co. The provisional directors include Robert McFarlane, F. S. McFarlane, Montreal, and H. D. Smith, Comp-ton, Que.

Messrs. Marion & Marion, patent attorneys, Montreal and Washington, D.C., have obtained the following Canadian patents recently:—Theophile Taillefer, Montreal, butter cutting and measuring device; Messrs. Reynolds & Bedard, Montreal, briquette press; D. J. McLean, Montreal, drying apparatus; Simeon Cyr, Little Falls, N.Y., land grubber; Joseph Poivin, St. David d'Yamaska, Que., ditching machine; J. C. Roy, Point St. Charles, Que., spoke extractors; C. A. Patriquin, Grand Pre, N.S., fruit packing device; Messrs. Thompson & Brown, Cambridge, Ont., wrench pipe jaws; G. F. Jaubert, Paris, France, preparation of oxygen; Adolar Lapointe, Three Rivers, Que., washing machine, and William Welsh, Kincardine, Ont., rotary cement block machine.

The Grondines Stone, Lime & Brick Co., Grondines, Que., have been incorporated with a capital of \$10,000, to engage in the stone, lime and brick business. The provisional directors include L. E. Dufresne, J. J. Ryan, Three Rivers, Que., and G. T. Hamelin, Grondines.

The Dodge Mfg. Co., Toronto, have been authorized to do business in Quebec and have appointed F. J. Hopkins, Montreal, to be their representative.

Messrs. J. S. Mitchell & Co., Sherbrooke, Que., have purchased a stock of nearly 1,000 squares of steel shingles from The Pedlar People, Oshawa, Ont.

Mr. D. R. Brown, architect, has prepared plans for the erection of a large apartment house, 170x125 feet in Montreal at a cost of about \$600,000.

The Royal Shoe Co.'s factory and Messrs. Smith, Carter & Smith Co.'s window shade factory in Montreal, were destroyed by fire June 16. Loss about \$25,000.

The congregation of the Annex Presbyterian church are considering the erection of a new church building at a cost of \$17,000.

The Montreal Steel Works Co., Montreal, will greatly enlarge and improve their works.

M. E. P. Charlton, Montreal, will erect a business block in that city at a cost of \$35,000.

The Boys' Home, Montreal, will be enlarged at a cost of \$20,000.

The Labelle Chemical Products Co., Labelle, Que., have secured from the Provincial Government 6,500 acres of timber lands on the shores of Lake Labelle, and they will now commence the erection of their extensive works for the production of wood alcohol, acetic acid, tar, etc.

The Canadian Fairbanks Co., Montreal, have been awarded the contract for supplying the transmission material to be used in the Canadian Government canal repair shop at Cornwall, Ont. The machinery ordered consists of Fairbanks universal giant hangers, shafting, etc.

The Northern Electric Co., Montreal, will erect a new building at a cost of \$30,000.

The Robb Engineering Co., Amherst, N.S., have received an order from the Dominion Coal Co., for two 100 h.p. Robb-Mumford boilers.

The contract for remodelling battery No. 9 of the Dominion Iron & Steel Co.'s coke ovens, and for building a new battery of 50 by-product ovens, has been secured by Messrs. Heyl & Patterson, Pittsburg, Pa., who built the washing plant. This addition to the ovens will increase the coke supply to the extent of about 250 tons per day.

The Canada Wire & Nail Co., Sydney, N.S., have been organized with a capital of \$200,000. J. E. Burchell, Sydney, is interested.

Messrs. Chappell Bros. & Co.'s wood-working factory at Sydney, N.S., was destroyed by fire June 18. Loss about \$30,000.

The Nova Scotia Steel & Coal Co., will probably remove their plant from New Glasgow, N.S., to Sydney Mines, N.S.

Messrs. Geo. E. Ford & Sons, Limited, Sackville, N.B., have been incorporated with a capital of \$30,000, to acquire the business of Geo. E. Ford, and to manufacture hardware, furniture, etc. The provisional directors include G. E. Ford, H. A. Ford and F. L. Ford, Sackville.

The Maritime Art Glass Works, Limited, St. John, N.B., have been incorporated with a capital of \$25,000, to acquire the business of the Maritime Art Glass Works and to manufacture mirror plate, prism lights, etc. The provisional directors include Archibald Bauer, W. C. Bauer and J. A. Bauer, St. John.

The Standard Mfg. Co., Sackville, N.B., are enlarging their plant and have

ordered a 125 h.p. Robb-Mumford boiler from the Robb Engineering Co., Amherst, N.S.

Plans are under way for the development of power at Grand Falls, N.B., by a company which will expend between \$3,000,000 and \$4,000,000. It is proposed to manufacture ferro-manganese, pulp and paper, to erect sawmills and operate electric railroads, and to transmit power to St. John to be utilized for lighting and manufacturing purposes. Mr. Barton E. King, New York City, is interested in the enterprise.

The O. F. Stacy Co., Limited, Bathurst, N.B., have been incorporated with a capital of \$50,000, to manufacture lumber, shingles, etc., and to acquire the business of O. F. Stacy & Co. The provisional directors include O. F. Stacy, George Gilbert and W. G. White, Bathurst.

The Eveleigh Dairy Co., Sussex, N.B., have been incorporated with a capital of \$9,900, to manufacture butter, cheese, etc. The provisional directors include N. W. Eveleigh, W. P. Fowler, Sussex, and N. B. Smith, Halifax, N.S.

Messrs. Stetson & Cutler, a leading lumber firm of St. John, N.B., have taken a lease of the Mispic pulp mill at that place, and will shortly install new machinery to increase the capacity from 7,000 to 10,000 tons.

Messrs. H. Copp & Co.'s woodworking factory at Sackville, N.B., was destroyed by fire June 26. Loss about \$15,000.

Messrs. James Pender & Co., St. John, N.B., will make the following extensions to their mill works: A new machine room, 48x40 feet; wire mill, 100x60 feet; cleaning house, 78x46 feet; rod warehouse, 86x50 feet; engine room, 38x25 feet; boiler house, 40x25 feet, and coal shed 40x40 feet.

The New York Rock Plaster Co. will commence the development of a gypsum deposit about fourteen miles from Hampton, N.B. The company expect to have an output of 30,000 to 50,000 tons of rock per year, and are asking that a branch of the Hampton & St. Martin's Railway be extended to the quarries.

The New Brunswick Iron Co. are proceeding with the development work on their ore property at Lepreaux, N.B., where they will shortly erect a smelter. C. V. Wetmore, Sydney, N.S., is president of the company.

The Mennonite Educational Institute Association at Altona, Man., will build a new institute at a cost of \$20,000.

A new high school building will be erected at Killarney, Man.

A four story addition will be built to the Bank of British North America at Brandon, Man.

The goal and reformatory building at Portage la Prairie, Man., will be enlarged at a cost of about \$20,000.

John Leslie will erect a six story building in Winnipeg, Man.

Messrs. Bulman Bros., Winnipeg, Man., will erect a seven story building at a cost of \$80,000.

The Sons of England will erect a hall in Winnipeg, Man.

Messrs. J. L. Neilson & Co., machinery agents, Winnipeg, Man., have recently sold one of the Chicago Improved Cubic Concrete Mixers to the City of Winnipeg, also two of the same machines to the contractors for the water power construction at Fort Frances, Ont.

J. H. G. Russell, Winnipeg, Man., has prepared plans for the new Fort Rouge Methodist church to cost about \$50,000.

Messrs. Oldfield & Gardner, Winnipeg, Man., will erect a six story office building.

J. S. Aikins and G. A. Mutlebury will erect a two story apartment block at Fort Rouge, Man., at a cost of \$30,000.

The Dominion Radiator Co., Toronto, will erect a large warehouse and office building in Winnipeg, Man.

The King Edward Lodge, A.F. & A.M., Winnipeg, Man., will erect a large building in that city.

The Hammond Block, Winnipeg, Man., will be enlarged by a two story addition.

The Central Congregational church, Winnipeg, Man., will be enlarged at a cost of \$25,000. A. & W. Melville are the architects.

The Dey-Manson Building & Construction Co., have been awarded the contract for the erection of a warehouse for the Moline Plow Co., at Winnipeg, Man.

The Manitoba Iron Works, Winnipeg, Man., have been awarded the contract for the two 66-inch boilers, as well as the 250,000 gallon steel water tower for the new Portage la Prairie waterworks, and all the cast iron work for the manhole and valve covers for the sewer system. This company have just installed \$5,000 worth of bolt-making machinery in their plant and are turning out a large quantity of bridge and other heavy structural iron work, all departments of the works being very busy.

The Brandon Hardware Co., Brandon, Man., will increase their capital from \$30,000, to \$60,000.

The Germania Printing & Publishing Co., Winnipeg, Man., have been incorporated with a capital of \$25,000, to carry on a printing and lithographing business. The provisional directors include F. N. Palm, F. W. Handle and W. J. Sanderson, Winnipeg.

The Portage Iron & Machine Co., Portage la Prairie, Man., have been incorporated with a capital of \$20,000, to carry on a foundry, moulding, iron and metal working business. The provisional directors include F. W. Clayton, G. B. Housser and J. O. Cadham, Portage la Prairie.

The Netly Improvement Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to construct wharves, bridges, etc. The provisional directors include A. E. Ham, W. L. Parrish and Hon. T. M. Daly, Winnipeg.

The Fleming Printing Co., Winnipeg, Man., have been incorporated with a capital of \$20,000, to carry on a printing, engraving and book-binding business. The provisional directors include John Mattson, J. A. Sandgren and J. M. Kullander, Winnipeg.

Messrs. J. C. Wilson & Co., manufacturers of turbines, pulleys, hydraulic machinery, etc., Glenora, Ont., have been authorized to do business in Manitoba, and have appointed J. E. Holland, Winnipeg, as their representative.

Messrs. Stevens & Son, Limited, Winnipeg, Man., have been incorporated with a capital of \$40,000, to manufacture surgical instruments and appliances. Provisional directors include B. J. McNeill, Stevens, F. W. Christie, Toronto, Norman Dack, Winnipeg.

The Southern Manitoba Publishing Co., Morden, Man., have been incorporated with a capital of \$10,000, to carry on printing and publishing business. Provisional directors include B. J. McNeill, Alexander McLeod and T. A. Morden.

Mr. E. S. Cooper, of the Cooper Galgery line Engine Co., Winnipeg, Man., has arranged for the installation of a suction gas plant. The big engine, which weighs 75,000 pounds, is being made by the Weber Co., Kansas City, Mo.

The A. Carruthers Co., Winnipeg, Man., have been incorporated with a capital of \$200,000, to manufacture products, cereals, flour, etc. The provisional directors include Andrew Carruthers, J. S. Rogers and W. F. T. Winnipeg.

The Whytefold Improvement & Works Co., Winnipeg, Man., have been incorporated with a capital of \$5,000, to construct a waterworks system and a electric lighting plant. The provisional directors include C. H. Newton, J. A. D. field and R. R. Sutherland, Winnipeg.

The Standard Plumbing & Heating Co., Winnipeg, Man., have been incorporated with a capital of \$60,000, to manufacture electrical supplies, hardware, etc. Provisional directors include T. A. James Mould and H. W. Hollis, Winnipeg.

The Douglas Printing & Binding Co., Winnipeg, Man., have been incorporated with a capital of \$20,000, to carry on printing, engraving and book-binding business. The provisional directors include John Watson, Johnson Douglas and C. W. Vigor, Winnipeg.

Messrs. Dunn Bros. & Co., Winnipeg, Man., have been awarded the contract for supplying 30,000 pink pressed blocks for the new Y.M.C.A. building at Brandon Man., and are also furnishing sand mould brick for Messrs. Campbell's block at same place.

Messrs. A. A. Woodward & Co., Winnipeg, Man., have secured the contract for the rebuilding of the Treherne mill and are equipping it throughout with Nordyke machinery.

The Dominion Bridge Co., Morden, Man., will install a plant in Winnipeg, to manufacture for their Western business.

Messrs. Robinson & Lynch, Assa., recently organized will have their plant in operation for the manufacture of sand cement bricks.

Cook's Hall at MacGregor, Man., was destroyed by fire June 24.

The Winnipeg City asphalt plant was damaged by fire June 28. Loss about \$10,000.

The Scott Furniture Co.'s warehouse at Winnipeg, Man., was destroyed by fire June 14. Loss about \$200,000. The company are considering rebuilding.

Messrs. A. Jarvis & Co., Toronto, have been awarded the contract for the installation of new waterworks and natural gas extensions at Medicine Hat, Assa., at a cost of \$54,973.

The town council at Moose Jaw, N. W. T., are considering extending the electric light system.

Mr. Somers, Edmonton, N. W. T., will build a three story hotel.

Plans have been received at Edmonton, N. W. T., of the proposed route for the Calgary & Edmonton line across the river into Edmonton. It is expected that a high level bridge, about 1,500 feet in length, will be constructed.

Messrs. Calhoun & Ferguson will build a large hotel at Edmonton, N. W. T.

The Weyburn Cement Brick & Block Co., Weyburn, N. W. T., have been incorporated.

The Canadian Northern Railway Co., will erect a station and freight sheds at Prince Albert, N. W. T.

W. T. Williams, has prepared plans for the erection of a new town hall at Medicine Hat, N. W. T., to cost \$30,000.

F. Fitzgerald and H. Bowen, Edmonton, N. W. T., will erect a theater building at a cost of about \$20,000.

The Edmonton Tent and Mattress Co., Edmonton, N. W. T., will erect a brick block in that town.

The Robb Engineering Co., Amherst, N. S., have received an order for two 100 p. Robb-Mumford boilers from the Western Canadian Collieries, Blairmore, Alberta.

The Salmon River Placer Mining Co., have been incorporated at Victoria, B. C., with a capital of \$40 000, to carry on a mining business, etc.

The Boundary Iron Works have been incorporated at Victoria, B. C., to carry on a general foundry business.

Plans have been prepared for the proposed works to be constructed by the Murray Lake Power Co., at Vancouver, B. C. O. William Kennedy, C. E., Montreal will design the hydraulic work, and R. S. Atchab, C. E., Montreal, the electric lighting.

The contract for the new Canadian Pacific Railway station at Revelstoke, B. C., has been awarded to Messrs. Smith & Burnburne, at a cost of \$25,000.

The Pollock Mines, Co., Yale, B. C., have been incorporated with a capital of \$100 000, to carry on a mining, smelting and refining business.

The Chilliwack Lumber Co., Chilliwack, B. C., have been incorporated with a capital of \$10,000, to manufacture lumber, etc., and to acquire the business of Robert Zink at Chilliwack.

The Canadian Fairbanks Co., Montreal, have been licensed to manufacture scales, weighing machines, tools, etc., in British

Columbia, and have appointed J. E. Botterell, Vancouver, B. C., as their representative.

The Penticton Lumber Syndicate have been incorporated at Victoria, B. C., with a capital of \$10,000, to carry on the business of lumbermen and sawmillers, etc.

The Baker Shoe Co., Victoria, B. C., have been incorporated with a capital of \$20,000, to manufacture boots, shoes, etc. and to acquire the business of J. H. Baker, of Victoria.

The William Ralph Co., Vancouver, B. C., have been incorporated with a capital of \$50,000, to acquire the business of Wm. Ralph, and to manufacture hardware, plated goods, stoves, etc.

The Laclede Mining Co., have been incorporated at Victoria, B. C., with a capital of \$150,000, to carry on a mining and refining business.

Shatfords, Limited, Fairview, B. C., have been incorporated with a capital of \$50,000, to acquire the business of W. T. Shatford & Co., at Fairview and Hedley, B. C., and to manufacture clothing, boots, shoes, etc.

The Shoks Co., have been incorporated at Victoria, B. C., with a capital of \$15,000, to build bridges, flumes, etc.

J. P. Graves, manager of the Granby Consolidated Mining & Smelting Co., states that a new shaft, to cost about \$100,000, will be constructed at once on the Victoria in the Granby group of copper-gold mines at Phoenix, B. C. It will be of three compartment size, and will be excavated by raising above the 400-foot level to the surface. It will be equipped with a crusher capable of handling 1,500 tons in 10 hours.

The British Columbia Wire & Nail Co., Vancouver, B. C., have purchased 20 nail machines to make one-half to six-inch nails; also a drawing bench. The firm also bought a machine shop outfit and a staple machine. They are now erecting large factory buildings which will have a capacity for turning out 10 to 20 tons of nails per day.

The Gooderham-Blackstock Syndicate have sold the War Eagle, Centre Star and St. Eugene Mines in British Columbia to capitalists representative of the railway and smelting interests of the West. The price paid was \$825,000.

The Vancouver Construction Co., Vancouver, B. C., have secured a five years' contract for the supply of crushed rock to the city of Vancouver. The same firm are also constructing the new Canadian Pacific Railway wharves at Victoria, B. C.

Messrs. Ross & Howard, Vancouver, B. C., will shortly commence work on the erection of a large business block in that city.

At Victoria, B. C., it is reported that the imperial authorities contemplate the restoration and enlargement of the military establishment at Esquimalt, B. C., at a cost of about \$1,500,000.

Capt. Troup, superintendent of the Canadian Pacific Railway steamship service at Victoria, B. C., has announced that a contract for a new steamer for the Canadian Pacific Railway will shortly be let.

She will cost about \$250,000, and will be a wooden vessel. She will be built at the Victoria shipyards, and probably ply alternately between that city and Seattle and to the north.

The Vancouver Fiji Sugar Co., Vancouver, B. C., have been incorporated with a capital of \$1,000,000, to acquire the business of the Fiji Sugar Co., and to manufacture sugar, etc. The provisional directors include J. S. Lovell, Wm. Bain, and Robert Gowans, Toronto.

The Red Cross Drug Co., Revelstoke, B. C., have been incorporated with a capital of \$10,000, to acquire the business of G. D. Beattie, and to manufacture drugs, medicines, etc.

The Advance Machinery Co., Toledo, Ohio, manufacturers of wood working machinery, has been reorganized as an Ohio corporation, and E. B. Smith, formerly with the Toledo Bridge Co., has become treasurer of the company. The business has grown rapidly and the company are planning improvements.

AN IMPORTANT COMBINE.

The consolidation of two of the largest drill manufacturing companies in the United States, which has just been effected, is attracting the attention of the entire machinery trade. The Ingersoll-Sergeant Drill Co. and the Rand Drill Co. have decided to end their controversies by uniting their interests under the title of the Ingersoll-Rand Co. The new corporation has secured a New Jersey charter and starts business with a capital of \$10,000,000, of which \$5,000,000 is preferred and the remainder common stock. The most important patents held by both companies will hereafter be used jointly. The consummation of all of the new corporations plans will entail some changes at the several factories which the combine controls; but the exact nature of this proposed action is not yet known.

Some of the Ingersoll-Sergeant methods of constructing machines will be applied to the Rand products, and a number of Rand patents will be used in the Ingersoll-Sergeant drills. The rule of combination of patents and ideas will be applied to the air compressors turned out by the new corporation as well as to all other machines.

The Ingersoll-Sergeant Co. controlled two large factories, one at Phillipsburg, N. J., and another at Easton, Pa., while the Rand Co. had factories at Tarrytown, N. Y.; Painted Post, N. Y.; Ossining, N. Y., and New York city.

The officers of the newly formed corporation are W. L. Saunders, president; G. Doubleday, J. R. Rand, J. A. McCall, J. P. Grace, and G. R. Elder, vice-presidents; G. A. Brainard, secretary, and W. R. Grace, treasurer. Mr. Saunders was formerly president of the Ingersoll-Sergeant Drill Co., while Mr. Rand held a similar position with the Rand Co. The two companies were each about thirty-five years old and they were active competitors during that time.

The world's production of copper last year was 632,166 tons, of which Canada contributed 21,500 and Australia 30,000.

ELECTRICITY.

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

The North Wellington Telephone Co., Arthur, Ont., have been incorporated with a capital of \$15,000, to carry on the business of a telephone company. The provisional directors include Michael Hefferman, West Luther, Ont., David Brocklebank and J. M. Roach, Arthur.

The Kakabeka Power Co., Fort William, Ont., have been incorporated with a capital of \$2,000,000, to carry on the business of a power and electric heating and lighting company, etc. The provisional directors include H. S. Holt, C. R. Hosmer, and F. W. Thompson, Montreal.

La Compagnie des Telephones du Comte de Sainte Maurice, have changed their name to the La Compagnie du Telephone Saint Maurice et Champlain, St. Maurice, Que., and have increased their capital to \$49,000.

The Campobello Island Telephone Co., Campobello Island, N. B., have been incorporated with a capital of \$2,000, to carry on a general telephone business. The provisional directors include J. M. Johnston, W. C. Osborn, and J. W. Mathews, Island Campobello.

The town of Dauphin, Man., has ordered from the Robb Engineering Co., Amherst, N.S., two 100 h.p. boilers and a 100 h.p. engine for the electric lighting plant which the town is installing.

A Norwegian has invented a telephone by which the noise made by fish in the depths of the sea can be heard. The instrument consists of a microphone in a hermetically sealed steel box. It is connected with a telephone on shipboard by electric wires, each sound in the water being intensified by the microphone. The inventor asserts that with its aid the presence of fish, and approximately their number and kind, can be recognized. When herrings or smaller fish are encountered in large numbers they make a whistling noise, and the sound made by codfish is more like howling. If they come near the submarine telephone their motion can be distinguished. The flow of water through the gills produces a noise similar to the labored breathing of a quadruped, and the motion of the fins produces a dull, rolling sound.

The delegates of the International Railway Congress recently witnessed at East Pittsburgh, Pa., the trial of a 125-ton single-phase electric locomotive, manufactured by the Westinghouse Electric & Mfg. Co. This is the heaviest and most powerful electric locomotive in the world. The trial demonstrated that the locomotive was capable of exercising a drawbar pull of 90,000 pounds, sufficient to start a train weighing 4,000 tons, and that it was able to haul a train weighing 2,000 tons, at a speed of 25 miles per hour. The remarkable nature of these figures may be judged when it is stated that the heaviest locomotives in this country do not weigh more than 92 tons, and that it

is very rare to find a passenger train exceeding 400 tons, or a goods train 700 tons in weight.

The Hamilton Cataract Power, Light & Traction Co., Hamilton, Ont., have acquired the Lincoln Light & Power Co., St. Catharines, Ont. The company will spend \$100,000 developing power for use in St. Catharines.

The Chatham (Ont.), Wallaceburg & Lake Erie Electric Railway Co., will erect a large power house.

The British Columbia Telephone Co., Victoria, B.C., will erect a three-story central exchange building.

The Mexican Electric Light Co., Montreal, have been incorporated with a capital of \$6,000,000, to carry on the business of an electric light, heat and power company, and to manufacture lamps, heaters, transformers, etc. The provisional directors include A. R. Doble, L. I. Edgar, and C. F. Hibbert, Montreal.

The Ontario Power Co., Niagara Falls, Ont., started the machinery of their first installation of 60,000 volts of electric fluid, July 1, and every part of the hydraulic and electrical machinery worked successfully.

The ratepayers of Dalhousie, N. B., will employ a competent engineer to prepare estimates of the cost of water, sewerage and electric lighting systems for the town.

FUEL.

For names of fuel dealers see "Coal and Coko" 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.

Tenders for coal for the public buildings throughout the Dominion will be received by the Department of Public Works at Ottawa.

A find of good bituminous coal is reported from Whitney township in the clay belt of New Ontario. The Bureau of Mines, Toronto, will investigate further.

Big steel barges, or whalebacks, are being brought down from the lakes to enter into the coastwise coal-carrying trade on the Atlantic. The barges have a capacity of from 2,200 to 2,600 tons each.

The British American Coal & Railway Co., with a capital of \$1,000,000, has been organized at Sydney, C.B., to develop the coal areas at Cumberland. It is said that some 20,000,000 tons of coal are available near tidewater on the Bay of Fundy.

The Maritime Coal Co. will shortly commence the development of an anthracite coal deposit near Norton, Kings County, N. B. B. A. Osgood, Wakefield, Mass., is manager of the company.

Messrs. Thomas Myles' Sons, Hamilton, Ont., have been awarded the contract for the supply of coal to the Hamilton Asylum, at the following figures:—Anthracite, \$5.99; screening, \$2.46; soft, \$2.88; cannel, \$6.25.

A combination of 26 coal companies Indiana, controlling 29,000 acres of lands, has been formed at Pittsburg, Mo. under the name of the Vandalia Coal Co. The new concern has a capital of \$7,000,000. A. M. Ogle, of Indianapolis, is president.

ONTARIO FUEL CONTRACTS.

Contracts for the supply of fuel for a number of Provincial institutions have been awarded by the Ontario Public Works Department as follows:—McGill & Co., Toronto, grate coal \$6 per ton, egg, stove and nut coal \$6 per ton, pea coal \$4.20 per ton, for the Normal and Model Schools, Osgoode Hall, Government House, School of Practical Science, and the Parliament buildings. This firm will also supply coal screening for the Parliament buildings at \$2.96 per ton. James Hammill & Co., Toronto, get the contract for pine slabs for all buildings mentioned, except the Parliament buildings at \$4 per cord. The Imperial Coal Co., Toronto, get the contract for supplying soft coal for Government House; Osgoode Hall, Normal and Model Schools and School of Practical Science. They also get the contract for hard pine wood for the same institutions, at a cord for the former and \$5 for the latter.

Geo. Plunkett will supply the Bellevue Institute for the Deaf and Dumb with pine and nut coal at \$6 per ton. The contract for large egg and stove coal for this institution goes to N. Allan at \$5.70 and \$6.10 per ton, respectively.

C. C. Roe & Co. get the contract for hard coal for the Ottawa Normal and Model schools at \$6.25 per ton. Robt. Geo. son & McLeod will furnish the hard coal for the same institution at \$5.75 per ton and pine slabs at \$2.75.

The soft coal for the Institute for the Blind, Brantford, will be supplied by N. Walsh at \$4 per ton. The Brantford Coal Co. will supply the hard coal at \$5.65 per ton.

William Buchanan gets the contract for the supply to the London Asylum of hard coal at \$6.35 per ton, and pine slabs at \$2.75 per cord.

The new Canadian-Mexican steamship line will begin operations July 20th, and is the first steamer subsidized by the Canadian and Mexican governments will sail from Montreal to Mexican ports, under the terms of the contract with the Mexican government, boats may carry cargoes and passengers from Canada to Cuba, Mexico and passengers both ways between Mexico and Canada, but on northbound trips no freight may be taken from Canada to Canada.

At a recent meeting of American cement manufacturers, at Atlantic City, New Jersey, prices were advanced considerably for early delivery with the understanding that there would be a further advance on or before December 31. All American mills reported down to "bare floors." Present indications there will soon be a shortage of cement in both the United States and Canada.

OPPORTUNITIES.

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

The Department of Public Works, Fredericton, N.B., will receive tenders for rebuilding the Phillip McKenzie railway bridge, near Petersville, N.B., and also for rebuilding the Upper Sheffield low-water wharf near Sheffield, N.B.

J. H. G. Russell, architect, Winnipeg, is inviting tenders for the erection of a five-story warehouse for Messrs. Bathgate & Co., that city.

R. R. Evans, architect, Winnipeg, will receive tenders for the erection of a five-story warehouse for Messrs. May, Lock & Larson; also for the erection of a three-story business block, 112x50 feet, for M. and L. Orris.

James McDiarmid, Winnipeg, Man., will shortly call for tenders for a new church building to cost \$18,000, for the United Douglas Presbyterians.

T. R. Vardon, MacGregor, Man., is inviting tenders for the erection of a municipal hall, 34x24 feet.

W. P. Bate, Saskatoon, N.W.T., will receive tenders for the erection of a new post office building there.

Geo. Miller, Oakbank, Man., will receive tenders for the erection of a municipal office building.

The Department of Public Works, Ottawa, will receive tenders for the supply of coal for the public buildings throughout the Dominion.

The Monterey Portland Cement Co., Box 247, Monterey, Mexico, a new concern with a capital of \$400,000, will erect a large cement mill.

The Department of Public Works at Ottawa are inviting tenders for the construction of an armory at Guelph, Ont.

The following recent mining projects in Mexico are among those of interest:—A syndicate of Wisconsin and Illinois capitalists has bought a 60 per cent interest in the La Chumata mine in the Arizone district, State of Sonora, and will shortly install machinery for its development. The San Diego mine at Parral is being an experimental plant and as they determine the right treatment will put up a large mill. Construction of this plant is in the hands of Walter Grant, for many years constructor for the Ontario Iron Works in Mexico. The Red Mountain Mining Co. are making preparations for the development of the Cerro Colorado mines in the Altar district, Sonora, seventy-five miles south of Santa Ana. A mill with a daily capacity of 500 tons of ore will be erected at the mine, and a pumping plant and line will be installed to convey water

to the mill from the source of supply, about six miles away. The officers of the Red Mountain Mining Co. are: J. S. Alexander, New York City, president; W. T. Fisher, Philadelphia, Pa., secretary. The corporation is capitalized at \$5,000,000.

The building of the Grand Trunk Pacific Railway to the Pacific Coast which is to be commenced this summer, will mean the addition of 4,500 miles of track to Canada's 10,000 miles of road. It has been figured that the project will require 10,500,000 ties, nearly 500,000 tons of rails, 42,000,000 spikes, 5,000,000 bolts, 2,500,000 angle bars and fish plates, guards and tie plates also in the millions. It is estimated 500 locomotives, 30,000 freight cars, and 500 passenger cars will be required. Other items are bridge timbers and steel, stations, telephones and telegraphs, water tanks, terminal facilities, fencing, etc., entailing an outlay of millions of dollars.

D. H. Ross, Canadian Government commercial agent at Melbourne, Australia, states, that owing to the great development in agriculture, there is a heavy demand in Australia for agricultural implements, Canadian plows are favored very much, and Canadian carriages are popular.

Gov. Enrique Creel, of the State of Chihuahua, Mexico, has granted a concession on behalf of the State Government to the American Smelting & Refining Co. for the construction of a mammoth smelter at Chihuahua. The plant will cost \$2,000,000 and will be completed in about a year. It will have a daily capacity of 2,000 tons of ore.

O. J. Godfrey, town clerk, Indian Head, N.W.T., will receive tenders for the following:—Section A—The supply and erection of a 150 k.w., 60 cycle 2,200 volt a. c. generator, with direct connected engine, also exciter (direct connected), switchboard regulator, etc., and all necessary wiring within the power house. Section B—The supply and erection of all necessary poles, including cross-arms, pins and insulators, transformers, arc lamps, etc., and the supplying and stringing of the necessary wires. Section C—A water tube boiler having an effective heating surface of not less than 1,800 square feet. Section D—The supply and erection of a 20"x12"x16" underwriter fire pump.

The Toronto City Engineer's Department will receive tenders for a 30-foot launch of about ten or twelve horse power.

The Department of Public Works at Ottawa are inviting tenders for repairs to Bryson bridge, and reconstruction of approach spans, etc.

E. J. Lennox, architect, Toronto, will receive tenders for the erection of three brick division stations for the Toronto & Niagara Power Co., to be erected at Stony Creek, Twenty-Mile Creek, and at Clarkson's, Ont.

The man who hopes for nothing will generally attempt nothing. "To-morrow" should always sing its light of promise upon "to-day."

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.

The Canadian Westinghouse Co., Hamilton, Ont., have sent us circular No. 1104, describing and illustrating Westinghouse portable instruments.

The Schutte & Koerting Co., Philadelphia, Pa., have sent us a copy of the Injunction issued by the Circuit Court of the United States at Philadelphia, Pa., in the suit of their company against H. Belfield & Co. for infringement of patent on check valves.

Messrs. Babcock & Wilcox, Montreal and Toronto, have issued illustrated circulars of the Neemes' patent shear-cut shaping grates, of which they are exclusive manufacturers in Canada.

H. W. Petrie, Toronto, has issued the June number of his monthly stock list of new and second hand machinery and supplies.

The Jeffrey Mfg. Co., Columbus, Ohio, have issued a neat supplement to their Screen Catalogue No. 69. It contains illustrations of a sufficient variety of screens to cover every purpose for which screens can be utilized.

We have just received the latest catalogue of electrical apparatus manufactured by the Canadian Westinghouse Co., Hamilton, Ont. This publication describes briefly the lines of apparatus manufactured by them. The lithograph cover strikingly illustrates the advances made in the science of lighting during the past hundred years.

A. S. Leitch, Hamilton, Ont., has issued a new catalogue of new and second hand machine tools.

Rear Admiral John D. Ford, J.S.N., is the author of a pamphlet dealing with the corrosion of boiler tubes. This publication contains an account of an investigation made at the instance of the Bureau of Steam Engineering of the United States Navy Department to ascertain the relative corrodibility of lap-welded Bessemer steel, lap-welded iron, seamless cold-drawn steel and seamless hot-drawn steel boiler tubes. The samples were obtained from the National Tube Co., who generously offered the use of their laboratory at McKeesport, and bore the expense of installing the necessary apparatus, furnished the sample tubes, assisted in conducting the tests, and directed the photographer to make the photographs by which to ascertain the nature of the corrosion. The pamphlet may be obtained gratis from F. N. Speller, of the National Tube Co., Pittsburgh, Pa.

Mr. S. Dillon-Mills, Toronto, has sent us a brochure concerning the "Occurrence of Hematite North of Little Current," in the Georgian Bay District of Ontario, the same as read by him at the recent meeting of the Canadian Mining Institute. It is illustrated by a map of the region which shows the chief topographical features of the region.

The publishers, Messrs. H. Alabaster, Gatehouse & Co., 4 Ludgate Hill, London, E.C., inform us that the 1906 edition of their "Universal Electrical Directory," is in course of preparation for its twenty-fifth annual issue, and will be published in January next.

The Ontario Wind Engine & Pump Co., Toronto, have just issued a complete catalogue, their twenty-first edition, covering the line of goods they manufacture.

"Ore and Coal Handling Machinery" is the title of the latest catalogue of the Wellman-Seaver-Morgan Co., Cleveland, Ohio. The catalogue is printed on the finest paper, and contains more than a hundred illustrations, to gether with descriptive matter of interest to every one contemplating the erection of plants for unloading, conveying or storing ore, coal, grain or other loose materials.

The Everbest Magazine is devoted to the interest of things electrical, and to those people who want to get a little good wisdom combined with a little good fun. It is published monthly. Those who think they will appreciate its merits and profit by its talks on things electrical, electric lighting and power, telephone systems, etc., are invited to send their names to the Ewing-Merkle Electric Co., St. Louis, Mo. It tells about telephone insurance, what to do when belts become oil soaked, renewing dry batteries, ceiling fans for direct current, new things for electrical contractors, and other timely topics that are helpful to workers in the industrial field.

The Goldschmidt Thermit Co., 43 Exchange Place, New York City, are sending out a pamphlet which deals with the repair of roll bosses by welding the broken parts with thermit. A peculiar advantage of this substance is that it may be ignited on the piece direct, obviating the expense of a crucible. About 30 pounds of thermit are required to a square foot of welded surface. A peculiar advantage is that steel may be welded to cast iron or vice versa. The back of the pamphlet contains testimonial letters.

Messrs. Baldwin, Tuthill & Bolton, manufacturers of saw and knife-fitting machinery and tools at Grand Rapids, Mich., have issued an illustrated catalogue on "B. T. & B. Cup Wheel Knife Grinders."

The seventh annual edition of the American Trade Index has just been issued by the National Association of Manufacturers of the United States, at New York City. It is a descriptive and classified membership directory. This year a slight change has been made, two editions being printed, one for presentation to leading business people in all foreign countries, including an introduction and indices in English, Spanish, German and French, while the other issue is for the special use of members of the association and large American buyers generally.

The July issue of Air Power, the technical quarterly devoted to compressed air and its uses, and published by the Rand Drill Co., will contain, among other things, a complete description, illustrated by diagrams, of a displacement pump,

written by Prof. E. G. Harris; a description of a recent installation of a compressed air mine haulage system, by A. A. Bowman, M.E.; "The Uses of Compressed Air in the Wood-Working Shop," by W. R. Hulbert, M.E.; a description of the construction of the new Duluth aerial bridge; an article on the Philadelphia high pressure pumping plant; a practical article on air compressor foundations, by E. M. Mackie, M.E.; three new inventions as follows: A new tunneling machine, a pneumatic stake driver used by Barnum Bailey, and a device for conveying hot rivets through a metal tube by compressed air.

Mr. James M. Swank, the general manager, has sent in his annual statistical report of the American Iron & Steel Association for 1904. It embraces all the leading features of previous reports and also many new features. The statistics of production of iron and steel are full and complete. Tables are given which show the annual imports and exports of iron and steel, tinplates, iron ore, etc. The price tables commend themselves to all who are connected with the iron trade. So also the tables relating to American production of steel, which give in detail the annual growth in recent years of every kind of steel, including all kinds of steel castings. Tables are given which show the production of leading iron and steel products, iron ore, etc., by the United States Steel Corporation and by independent companies in 1902, 1903 and 1904. Canadian iron and steel statistics are full and complete. Detailed statistics of the iron and steel industries of Great Britain, Germany, France and Belgium in 1903 and 1904 are also given. The report closes with statistical tables of the world's production of iron and steel and iron ore and coal.

"Methodist Magazine and Review" for July begins its sixty-second volume with the best number yet issued. It is a special patriotic Dominion number, and appears in a red, white and blue cover, with the British flag and Dominion coat-of-arms. There are seven illustrated articles, containing in all seventy-six cuts. Among these are: "Pioneering in the North-West"; "Britain's Oldest Colony," an account of personal travel in Newfoundland; "The Stranger Within Our Gates," describing the varied peoples of the North-West; "The Dominion Experimental Farms," acknowledged to be the finest in the world; "From the Prairie to the Seaboard," describing the transportation problems of the wheat crop, etc.

PACIFIC COAST EXCURSIONS.

During June, July, August and September the Chicago & North-Western Railway will sell from Chicago round trip excursion tickets to San Francisco, Los Angeles, Portland, Ore., (Lewis & Clarke Exposition), Seattle, Victoria and Vancouver at very low rates. Correspondingly cheap fares from all points in Canada. Choice of routes, best of train service, favorable stop-over and liberal return limits. Rates, folders and full information can be obtained from B. H. Bennet, General Agent, 2 East King Street, Toronto, Ont.

PERSONALS.

The headquarters of the Canada undum Co. are now located at 23 Street, Toronto.

Wayland Williams & Dudson, Montreal, representing a number of European and American iron and machinery concerns, are now located at 331 St. James Street.

The Canadian Buffalo Forge Co. is now located in the old plant of Sleeper Engine Co., Notre Dame Street, Montreal. A. G. McAvity is manager of the company.

The Canadian Appraisal Co., of Montreal. Mr. T. S. Maitland is general manager. They have opened offices at 4 Hospital Street, Montreal. Their Toronto offices are at 23 Scott Street in charge of Mr. De Loug.

Mr. E. C. Reeder, mining engineer, who has just been appointed representative of Allis-Chalmers-Bullock, Limited, at Nelson, B.C., is a native of Michigan and received his education in the public schools of that State. He graduated later from Michigan College of Mining and metallurgical engineering, and supplemented his college work with courses at the Massachusetts Institute of Technology. He had several years practical experience in Montana after graduating, when he worked as a miner and smelter in the mines and smelters at Butte. He went to Utah, where he held responsible positions as foreman and engineer for several of the large mining and smelting companies of that city.

C. W. Bongard & Co., electrical dealers and western representatives of the Wire & Cable Co., Montreal, removed their offices and salesroom to 130 Bay Street, Toronto. This company will also act as sales agent for the Daulton Co., Limited, Toronto.

P. W. Ellis, of Toronto, and Colonel Clarke Raymond, of Ottawa, Ont., have been appointed by the government, members of the Queen Victoria Niagara Falls Park commission. They succeeded Messrs. A. W. Campbell, commissioner of public works, and B. B. Bampfield, of Niagara Falls, who resigned. The other members of the commission are Messrs. J. W. Langmuir, man; Robert Jaffray, and George Wilkes.

We understand that Mr. W. G. Thomson, superintendent and designer of Oxford Woolen Mills, Oxford, N.S., resigned his position, and will leave company in a few weeks' time. Some years ago—nearly a half-century ago—he has revolutionized the textile trade, and from being a five-set mill, making only farmers' clothes, etc., it is now a well-equipped mill, making the finest class of textiles, costumes and homespun, which are successfully competing in the open market with the best of British goods. Thomson intends to reside in Toronto and will take up special work in connection with all classes of textiles.

Mr. W. A. Stadelman, eastern representative of the Wellman-Seaver-Morgan Co.,

has been in charge of the eastern office at 12 Broadway, New York City, has been appointed general sales agent of the same company, with headquarters at Cleveland, Ohio, taking effect July 1. Mr. Fred Stadelman has been appointed assistant manager of the New York office of that company. Mr. Harry V. Croll, N.E., for the past eight years with the E. P. Allis Co., and their successors, Allis-Chalmers Co., Chicago, Ill., has resigned, and accepted a position with the Wellman-Seaver-Morgan Co., Cleveland, Ohio.

Chief Engineer Kinnear of the Michigan Central Railway Co., Detroit, Mich., has resigned as chief engineer, and will devote his time to supervision of the construction of the double tunnel under the Detroit River. Mr. Kinnear is succeeded as chief engineer by his former assistant, G. H. Webb.

The Gutta Percha & Rubber Co., Toronto, have opened a branch office at 1 Rensbury Square, London, England.

The new east-bound Twentieth Century limited passenger train running on an 8-hour schedule between Chicago and New York, on the Lake Shore & Michigan Southern railroad, was wrecked at Mentor, Ohio, about 25 miles east of Cleveland, on the evening of Wednesday, June 21. There were nineteen fatalities and the accident brought death to a number of men prominent in iron and steel lines. The Wellman-Seaver-Morgan Co., of Cleveland, was heavily stricken. The dead include Charles H. Wellman, general manager; Thomas R. Morgan, second vice-president and works manager;

Archibald P. Head, of Jeremiah Head & Son, the London representative, who was also a managing director of the Otis Steel Co., of Cleveland. Both Mr. Wellman and Mr. Morgau were men of wide acquaintance and of prominence in their chosen fields of work. The company, with whom they were so prominently identified, will continue their work saddened by their bereavement and deeply feeling the loss of their personality. The organization, however, is so comprehensive and complete and so thoroughly perfected in all their details, that their various enterprises will be cared for and its work go forward in the accustomed channels and without hindrance or delay.

CANADIAN ELECTRICAL CONVENTION.

The fifteenth annual convention of the Canadian Electrical Association, held in Montreal June 21-23, was the most successful in the history of the Association, 326 members from all parts of Canada being in attendance. The headquarters were at the Windsor Hotel, and the sessions were held in the rooms of the Canadian Society of Civil Engineers.

During the convention papers were read as follows: "Effect of Frequency and Voltage on Transformers," by M. A. Sammett; "Transformers," by R. T. McKeen; "Selection and Maintenance of Service Motors," by Wm. Bradshaw; "Incandescent Lamps," by A. B. Lambe; "The Operation of Alternators in Parallel," by A. L. Mudge; "Induction Motors," by H. A. Bursou; "Heating

of Enclosed Motors," by Prof. R. B. Owens; "Notes on Steam Engines and Boilers," by Wm. McKay; and "Economy of Isolated Plants," by K. L. Aitken.

The local entertainment committee consisted of H. D. Bayne, chairman; R. S. Kelsch, F. W. Fairman, R. E. T. Pringle, C. F. Sise, Jr., E. F. Sise, W. A. Duff, Prof. R. B. Owens, H. J. Fuller, W. C. Johnson, W. F. Dean, Alfred Collyer.

This committee did everything possible to make the convention the success which it was. Among the special features provided was a luncheon at the works of Allis-Chalmers-Bullock, Limited, the company providing special cars to take the members to the plant. The Montreal Street Railway Co. gave an excursion to Electric Park, where a smoking concert was held on Thursday evening. The following Montreal firms arranged for the entertainment of the evening:

J. A. Dawson & Co., Munderloh & Co., John Forman, the R. E. T. Pringle Co., Dominion Wire Mfg. Co., Eugene F. Phillips Electric Works, Sunbeam Lamp Co., Canadian White Co., The Wire & Cable Co., Packard Electric Co., Canadian General Electric Co., Allis-Chalmers-Bullock, Limited, Canadian Westinghouse Co., Windsor Hotel.

The Canadian General Electric Co., Canadian Westinghouse Co., Packard Electric Co., and other electrical manufacturers maintained headquarters in the Windsor Hotel during the convention.

The next annual convention will be held at Niagara Falls. A. A. Wright, Renfrew, Ont., was elected president of

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the Association for the ensuing year ; R. G. Black, Toronto, first vice-president ; John Murphy, Ottawa, second vice-president, and C. H. Mortimer, Toronto, secretary-treasurer.

The B. F. Sturtevant Co., Boston, Mass., have secured the contract for furnishing five complete sets of heating and ventilating apparatus for the Allegheny county jail, Pittsburg, Pa., each set con-

sisting of a plenum fan and an exhaust fan, both driven by direct-connected engines and connected with heaters and tempering coils.



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CANADIAN NATIONAL EXHIBITION

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1905

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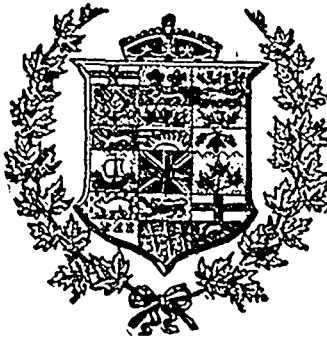
1905

Aug. 26th

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Processes of Manufacture are an Educational Feature of the Exhibition—demonstrating the progress of Canadian Manufactures. Special inducements are offered to Exhibitors for displays in this Department.

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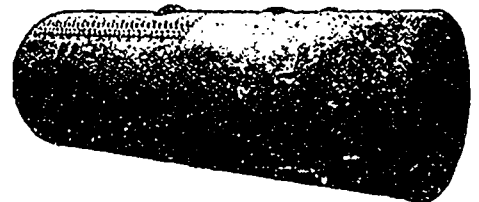
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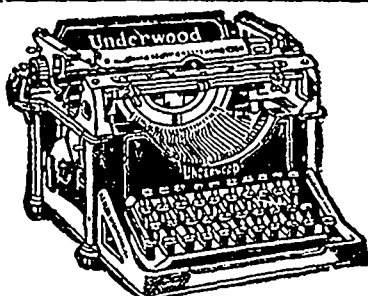
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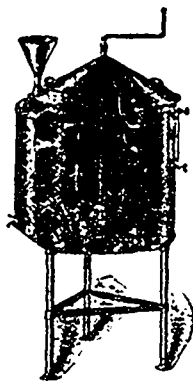
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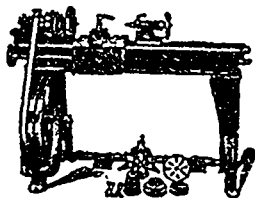


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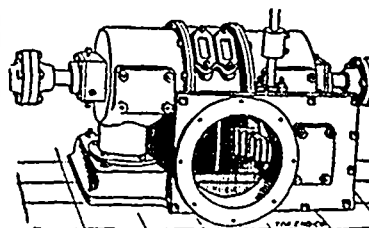


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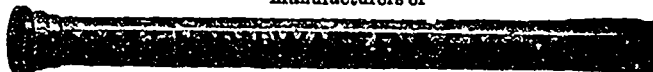
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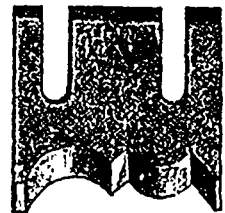
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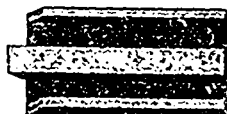
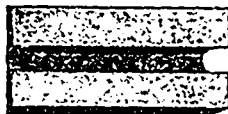
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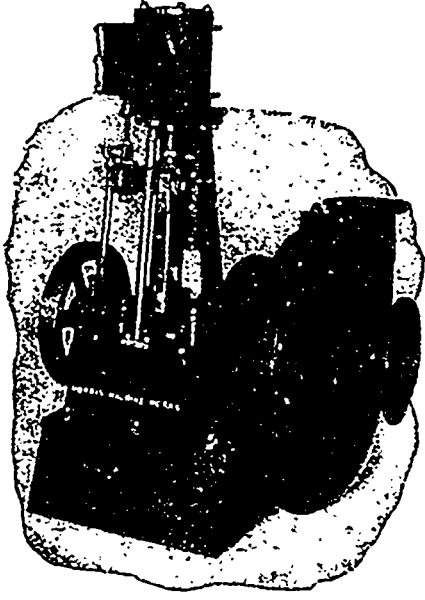
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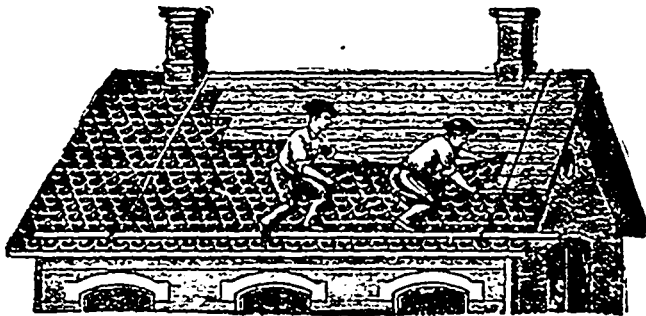
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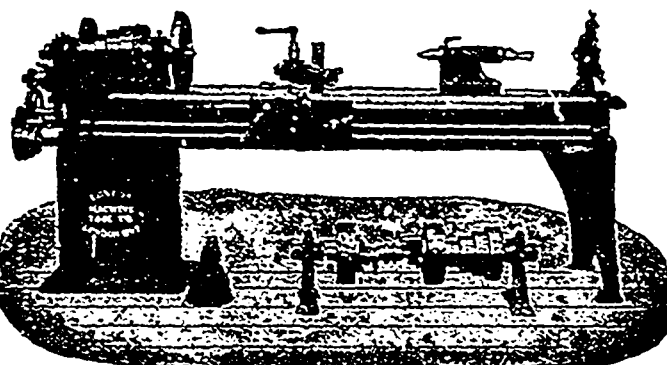


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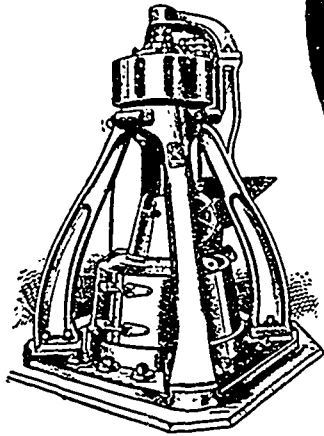
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The Griffin Mill pulverizes more cement than the combined output of all other machines used for this purpose. Thoroughly tested by continually successful and constantly increasing use during the past sixteen years.

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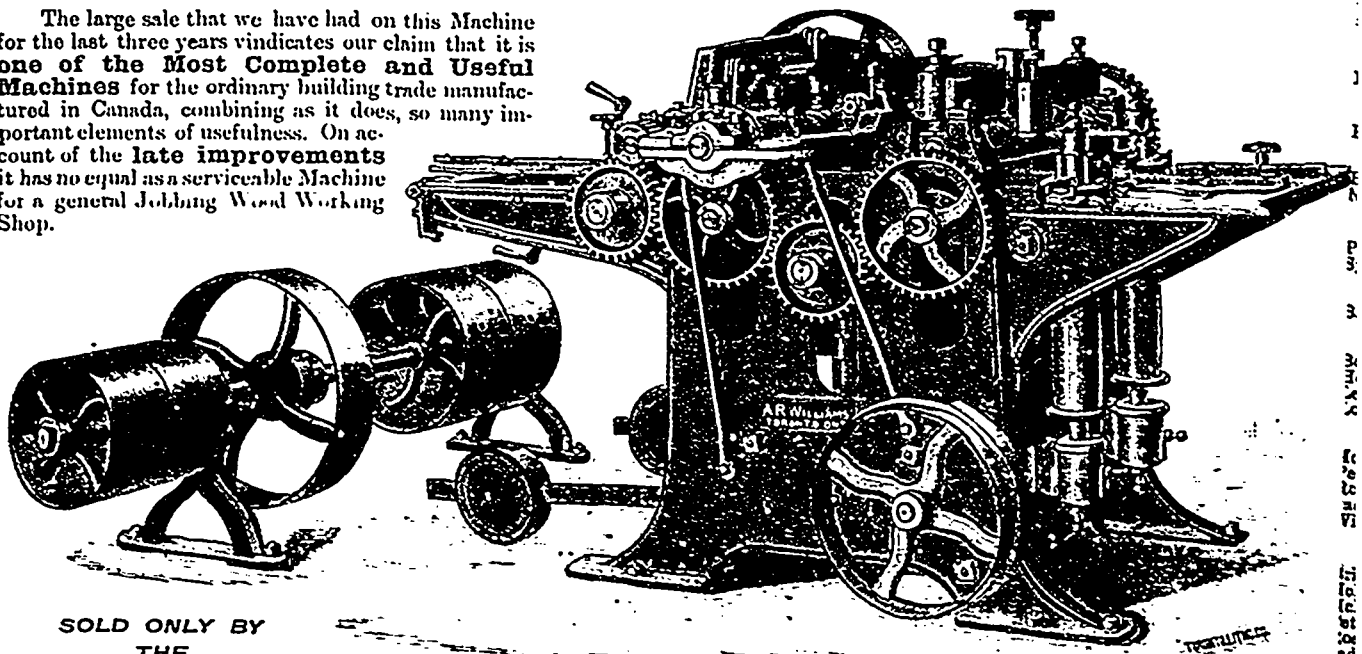
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Abrasives

Williams, A. R. Machinery Co., Toronto.

Acids

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

Air Compressors

Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek Mich.
Canada Foundry Co., Toronto.
Canadian Hand Drill Co., Sherbrooke, Que.
Corbett, R. B., Brooklyn, N.Y.
Darling Bros., Montreal.
Schutte & Koerting Co., Philadelphia, Pa.

Alum

Nichols Chemical Co. of Canada, Montreal.

Aluminum

Northern Aluminum Co., Pittsburg, Pa.
Syracuse Smelting Works, Montreal.

Angles, Beams and Girders

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Hopkins, F. H. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Aniline Colors and Dyewood Extracts

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

Annealing Muffles and Furnaces (Wire)

Ledie, A. C. & Co., Montreal.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Antimony

Syracuse Smelting Works, Montreal.

Anvils and Vises

Hopkins, F. H. & Co., Montreal.
Ledie, A. C. & Co., Montreal.

Architects

Edwards, R. J., Toronto.
Perko, R. J., Toronto.
Vogel, C. H., Ottawa.

Automatic Gear Cutting Machines

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

Automobiles

Ford Motor Co. of Canada, Walkerville, Ont.

Axles

Hopkins, F. H. & Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Babbitt Metal

Petrie, H. W., Toronto.
Syracuse Smelting Works, Montreal.

Banks

Bank of Hamilton, Hamilton, Ont.

Bar Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.
Hopkins, F. H. & Co., Montreal.
Ledie, A. C. & Co., Montreal.
London Rolling Mills, London, Ont.

Belt Dressing

McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Wooddale Belting Co., Toronto.
Wadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto.

Belt Fasteners

Wheeler Co., Waterbury, Conn.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Wooddale Belting Co., Toronto.
Wadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto.

Belting (Cotton)

Wooddale Belting Co., Hamilton, Ont.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Wadley, F. & Co., Manchester, England.
Wooddale Belting Co., Toronto.
Wadler & Haworth, Montreal and Toronto.

Belting (Leather)

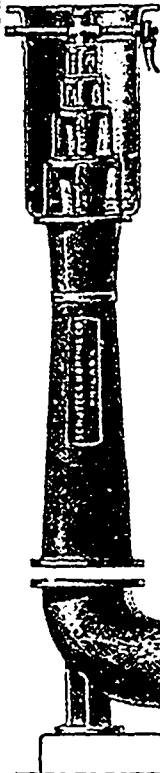
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Wadley, F. & Co., Manchester, England.
Wadler & Haworth, Montreal and Toronto.
Williams, A. R. Machinery Co., Toronto.

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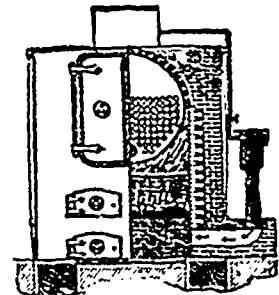


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AGENTS { WILLIAM MCKAY, 320 Ossington Ave., Toronto.
WATSON JACK & COMPANY, Bell Telephone Bldg., Montreal
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Biting (Rubber)

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

Belting and Supplies

Bristol Co., Waterbury, Conn.
Dominion Belting Co., Hamilton, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Jeffrey Mfg. Co., Columbus, Ohio.
McLaren, D. K., Montreal and Toronto.
McLaren, J. O., Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Reddaway, F. & Co., Manchester, England.
Rossendale Belting Co., Toronto.
Sadler & Haworth, Montreal and Toronto.
Williams A. R. Machinery Co., Toronto.

Blast Furnace Brick

Dover Fire Brick Co., Cleveland, Ohio.
Dunbar Fire Brick Co., Pittsburgh, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Pennsylvania Fire Brick Co., Lock Haven, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Reese-Hammond Fire Brick Co., Boliver, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Blowers

McEachren Heating & Ventilating Co., Galt, Ont.
Schutte & Koerting Co., Philadelphia, Pa.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Boiler Compounds

Canada Chemical Mfg. Co., London, Ont.

Boiler Inspection

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

BOILERS (See Engines and Boilers)

Bolts and Nuts

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

Brass Founders

Hamilton Brass Mfg. Co., Hamilton, Ont.
Penberthy Injector Co., Windsor, Ont.

Brick and Bricklaying Machinery

Allis-Chalmers-Bullock, Limited, Montreal.

Building and Paving Brick

Dover Fire Brick Co., Cleveland, Ohio.
Dunbar Fire Brick Co., Pittsburgh, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Pennsylvania Fire Brick Co., Lock Haven, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Reese-Hammond Fire Brick Co., Boliver, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Building Iron and Steel

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

Builders' Materials

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

Cables

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

Canada Plates

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

Canoes

Peterborough Canoe Co., Peterborough, Ont.

Caps

McCullough-Dalsell Crucible Co., Pittsburg, Pa.

Cord Clothing

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

Cast Iron Pipe

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

Castings (Grey Iron, Malleable Iron and Brass)
International Harvester Co., Hamilton, Ont.
Jencks Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
McDougal, John, Caledonian Iron Works Co., Montreal.

Cement Machinery

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

Centrifugal Pumping Machinery

Morris Machine Works, Baldwinville, N. Y.

Chain Making Machinery

(Welded Coil Chain)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Channels

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

Charcoal Pig Iron

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

Chemicals

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

Chemists

Archbold, Dr. Geo., Prescott, Ont.
Reys, Thomas & Son, Toronto.

Clay Working Machinery

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

Coal and Coke

Bourne-Fuller Co., Cleveland, Ohio.
Ferguson, J. D., Hamilton, Ont.
Milnes, James H. & Co., Toronto.
Myles' Thos. Sons, Hamilton, Ont.
Old Colony Coal & Coke Co., Pittsburgh, Pa.
Pittsburgh Coal Co., Pittsburgh, Pa.
Shawmut Coal & Coke Co., St. Mary's, Pa.
Sawyer, Edward T., Columbus, Ohio.
Skae, B. A., Detroit, Mich.
Wick, H. K. & Co., Buffalo, N. Y.
Wilson, H. T. Coal Co., Detroit, Mich.

Coal Cutting Machines

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

Coal Tipples

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

Coil Chains

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

Coke Oven Brick

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

Collection Agency

Petrie, H. D., Hamilton, Ont.

Concrete Mixers

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

Conduits (Interior).

Conduits Company, Limited, Toronto.

Contractors' Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Gartshore, John J., Toronto.
Hopkins, F. H. & Co., Montreal.
Jencks Machine Co., Sherbrooke, Que.
McDougal, John, Caledonian Iron Works Co., Montreal.
Schutte & Koerting Co., Philadelphia, Pa.

Contractor's Plants

Allis-Chalmers-Bullock, Limited, Montreal
Hopkins, F. H. & Co., Montreal.
Jencks Machine Co., Sherbrooke, Que.
Petrie, H. W., Toronto.
Von der Osten, E. & Co., Toronto
Williams, A. R. Machinery Co., Toronto.

Conveying Machinery

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

Copper Materials

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

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(CONTINUED).

Cotton Banding and Rope
Laron, J. C., Belting Co., Montreal.

Covers
Dullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Crayons
Well Crayon Co., Lowell, Mass.
Laron, J. C., Belting Co., Montreal.

Crucibles
Joseph, Crucible Co., Jersey City, N. Y.
Dullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.
Pittsburg Smelting Works, Montreal.

Crucible Caps
Dullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Crucible Covers
Dullough-Dalsell Crucible Co., Pittsburg, Pa.
Pittsburg Crucible Works, Pittsburg, Pa.

Cutter Grinding Machines
Brainard Milling Machine Co., Hyde Park, Mass.

Deep Well Engines
American Steam Pump Co., Battle Creek, Mich.

Detective Agency
Detective Agency, St. Louis, Mo.

Dies (Socket, Sewer Pipe and Tile)
Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Directories
Directories, Limited, Toronto.

Draw Benches (Wire)
Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Drilling & Fishing Tools
Tool Supply Co., Leamington, Ont.
Well Supply Co., Pittsburgh, Pa.

Drilling Machines (Portable)
Tool Supply Co., Leamington, Ont.
Well Supply Co., Pittsburgh, Pa.

Drills
Chalmers-Bullock, Limited, Montreal.
B. F. Co., Rockford, Ill.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Machine Tool Co., London, Ont.
H. W., Toronto.

Drills (Pneumatic and Rock)
Chalmers-Bullock, Limited, Montreal.
Hand Drill Co., Sherbrooke, Que.
Mfg. Co., Columbus, Ohio.

Drop Forgings
Machine & Stamping Co., Cleveland, Ohio.

Drop Forging Dies
Machine & Stamping Co., Cleveland, Ohio.

Dry Kiln Apparatus
Sheldon, Galt, Ont.
B. F. Co., Boston, Mass.

Dust and Shavings Separators
Sheldon, Galt, Ont.
B. F. Co., Boston, Mass.

Dye Stuffs and Chemicals
W. T. & Co., Montreal.
Mond & Co., Northwich, England.
Chemical Mfg. Co., London, Ont.
Color Co., New York City.
Aniline & Extract Co., New York City.
Cornelle & Co., Montreal.
Chemical Co. of Canada, Montreal.
Holland, Montreal.

DYNAMOS (See Motors and Dynamos)
Electric Meters and Transformers
Chalmers-Bullock, Limited, Montreal.
Electric Co., St. Catharines, Ont.

Electric Mine Locomotives
General Electric Co., Toronto.
Westinghouse Co., Ltd., Hamilton, Ont.
Mfg. Co., Columbus, Ohio.

Electrical Repairs
Engineering Co., Toronto.

Electrical Supplies
Allis-Chalmers-Bullock, Limited, Montreal.
Bristol Co., Waterbury, Conn.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto.
Packard Electric Co., St. Catharines, Ont.
Toronto & Hamilton Electric Co., Hamilton, Ont.
United Electric Co., Toronto.
Worth & Martin, Toronto.

Elevators and Conveyors
Allis-Chalmers-Bullock, Limited, Montreal.
Darling Bros., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.
Link Belt Engineering Co., Philadelphia, Pa.
Otis-Fensom Elevator Co., Toronto.

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

Emery and Emery Wheels
Forman, John, Montreal.
Petrie, H. W., Toronto.

Engineers (Chemical)
Heys, Thomas & Son, Toronto.
Hunt, Robert W. & Co., Chicago, Ill.

Engineers (Civil)
DeLano-Osborn Engineering Co., Toronto.
Parke, R. J., Toronto.
Vogel C. H., Ottawa.

Engineers (Consulting)
Aitken, K. L., Toronto.
DeLano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Hunt, Robert W. & Co., Chicago, Ill.
Keystone Engineering Co., Toronto, Ont.
Marion & Marion, Montreal.
Parke, R. J., Toronto.
Perrin, William H. & Co., Limited, Toronto.
Vogel, C. H., Ottawa.
Von der Osten, E. & Co., Toronto.

Engineers (Contracting)
Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
Keystone Engineering Co., Toronto, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.

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

Engineers (Mechanical)
Allis-Chalmers-Bullock, Limited, Montreal.
Armstrong, Herbert J., Toronto.
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
DeLano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
Fensom, C. J., Toronto.
McDougall, John, Caledonian Iron Works Co., Montreal.
Hunt, Robert W. & Co., Chicago, Ill.
Kerr Engine Co., Warkville, Ont.
Marion & Marion, Montreal.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon Galt, Ont.

Engineers (Mill and Hydraulic)
DeLano-Osborn Engineering Co., Toronto.
Fensom, C. J., Toronto.
Hawthorn, Alfred, Montreal.
Vogel, C. H., Ottawa.

Engineers (Mining)
Heys, Thomas & Son, Toronto.
Mills, S. D., Toronto.

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

Engineers and Contractors
Jeffrey Mfg. Co., Columbus, Ohio.
Jenckes Machine Co., Sherbrooke, Que.

Engines and Boilers
Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Bertram Engine Works Co., Toronto.
Canada Foundry Co., Toronto.
Corbitt, R. B., Brooklyn, N.Y.
Goldie & McCulloch Co., Galt, Ont.

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(CONTINUED).

Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jencks Machine Co., Sherbrooke, Que.
 Morris Machine Works, Baldwinsville, N. Y.
 McDougall, John, Caledonian Iron Works Co., Mont-
 real.
 McEachren Heating & Ventilating Co., Galt, Ont.
 National Supply Co., Leamington, Ont.
 Oil Well Supply Co., Pittsburgh, Pa.
 Petrie, H. W., Toronto.
 Robb Engineering Co., Amherst, N.S.
 Sheldon & Sheldon, Galt, Ont.
 Sturtevant, B. F. Co., Boston, Mass.
 Williams, A. R. Machinery Co., Toronto.

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

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

Exhaust Heads
 Darling Bros., Montreal.
 Sheldon & Sheldon, Galt, Ont.

Exhausters
 Schutte & Koerting Co., Philadelphia, Pa.

Explorer and Geologist
 Evans, Horace F. Ashcroft B.C.

Factory Sites
 (See Factory Locations, page 38).
 Board of Trade, Orillia, Ont.
 Central Ontario Power Co., Peterboro, Ont.
 Hutcheson, S. M., Paisley, Ont.

Feed Water Heaters
 Babcock & Wilcox, Limited, Montreal.
 Darling Bros., Montreal.
 McDougall, John, Caledonian Iron Works Co.,
 Montreal.
 Robb Engineering Co., Amherst, N.S.
 Schutte & Koerting Co., Philadelphia, Pa.

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

Fillet (Pattern)
 McLaren, J. C. Belting Co., Montreal.
 Sadler & Haworth, Montreal and Toronto

Filters (Oil)
 Babcock & Wilcox, Limited, Montreal.
 Darling Bros., Montreal.
 McDougall, John, Caledonian Iron Works Co., Mont-
 real.
 Perrin William R. & Co. Limited, Toronto.

Filters and Filtering Systems (Water)
 Babcock & Wilcox, Limited, Montreal.
 Jencks Machine Co., Sherbrooke, Que.
 McDougall, John, Caledonian Iron Works Co., Mont-
 real.

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

Fire Brick and Clay
 Dover Fire Brick Co., Cleveland, Ohio.
 Dunbar Fire Brick Co., Pittsburgh, Pa.
 Hamilton Facing Mill Co., Hamilton, Ont.
 Pennsylvania Fire Brick Co., Lock Haven.
 Queen's Run Fire Brick Co., Lock Haven, Pa.
 Reese-Hammond Fire Brick Co., Boliver, Pa.
 Stowe-Fuller Co., Cleveland, Ohio.

Fire Escapes
 Darling Bros., Montreal.

Flour Mill Machinery
 Goldie & McCulloch Co., Galt, Ont.

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

Founders
 Canada Foundry Co., Toronto.
 Goldie & McCulloch Co., Galt, Ont.
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Jencks Machine Co., Sherbrooke, Que.
 McDougall, John, Caledonian Iron Works Co., Mont-
 real.
 Robb Engineering Co., Amherst, N.S.

Foundry Facings and Supplies
 Hamilton Facing Mill Co., Hamilton, Ont.

Fuel Economisers
 Babcock & Wilcox, Limited, Montreal.
 Schutte & Koerting Co., Philadelphia, Pa.
 Sturtevant, B. F. Co., Hyde Park, Mass.

Furniture (Lodge, Opera and School)
 Canadian Office & School Furniture Co., Pres.
 Ontario Wind Engine & Pump Co., Toronto.

Galvanizing
 Galvanizing and Tinning Machinery &
 Furnaces (Wire)
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Gas and Gasoline Engines
 Goldie & McCulloch Co., Galt, Ont.
 Morrison, T. A. & Co., Montreal.

Gauges (Recording Pressure)
 Bristol Co., Waterbury, Conn.

Gauges (Steam)
 Penberthy Injector Co., Windsor, Ont.
 Petrie, H. W., Toronto.
 Williams, A. R. Machinery Co., Toronto.

Gauges (Water)
 Babcock & Wilcox, Limited, Montreal.
 Penberthy Injector Co., Windsor, Ont.

Generators
 Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian General Electric Co., Toronto.
 Canadian Westinghouse Co., Ltd., Hamilton,
 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,

Gloves, Mittens and Moccasins
 Storey, W. H. & Son, Acton, Ont.

Glue Heaters
 Advance Machinery Co., Toledo, Ohio.

Glue Boom Equipment
 Advance Machinery Co., Toledo, Ohio.

Government Notices
 Factory Inspectors.
 Minister of Agriculture.

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

Grease Cups
 Penberthy Injector Co., Windsor, Ont.

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

Heating and Ventilating Apparatus
 Darling Bros., Montreal.
 McEachren Heating & Ventilating Co., Galt.
 Sheldon & Sheldon, Galt, Ont.
 Sturtevant, B. F. Co., Boston, Mass.

Hoisting Engines
 Jencks Machine Co., Sherbrooke, Que.

Hoists (Chain and Pneumatic)
 Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian Rand Drill Co., Sherbrooke, Que.
 Hopkins, F. H. & Co., Montreal.

Hose (Fire and Pneumatic)
 Gutta Percha & Rubber Mfg. Co., Toronto.
 McLaren, J. C. Belting Co., Montreal and Tor.
 Sadler & Haworth, Montreal and Toronto.

Hotel
 Gallatin Hotel, New York City.

Hydrants
 Kerr Engine Co., Walkerville, Ont.
 Jencks Machine Co., Sherbrooke, Que.
 McDougall, John, Caledonian Iron Works Co.,
 real.

Hydraulic Accumulators
 Jencks Machine Co., Sherbrooke, Que.
 McDougall, John, Caledonian Iron Works Co.,
 real.

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

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

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

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Insulated Wires and Cables
 Allis-Chalmers, Limited, Montreal.
 Armstrong Mfg. Co., Bridgeport, Conn.
 Beckwith Cable Co., Montreal.

Iron and Steel Specialties
 Armstrong Mfg. Co., Bridgeport, Conn.
 Burne-Fuller Co., Cleveland, Ohio.
 Canada Foundry Co., Toronto.
 McE. A. O. & Co., Montreal.
 London Rolling Mill Co., London, Ont.
 Knight, John, Limited, Bristol, England and Montreal.
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.
 Erie, H. W., Toronto.

Injectors
 Canada Foundry Co., Toronto.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Penberthy Injector Co., Windsor, Ont.
 Tuttle & Koerting Co., Philadelphia, Pa.
 Williams, A. R. Machinery Co., Toronto.

Iron and Steel Inspection
 At, R. W. & Co., Chicago, Ill.

Lamps—Electric
 Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian General Electric Co., Toronto.
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.
 Knapp, John, Montreal.
 Kard Electric Co., St. Catharines, Ont.
 beam Incandescent Lamp Co., Toronto and St. Catharines, Ont.

Lathes
 B. F. Co., Rockford, Ill.
 London Machine Tool Co., London, Ont.
 Erie, H. W., Toronto.
 Williams, A. R. Machinery Co., Toronto.

Lathes (Wood-working)
 McCulloch Co., Galt, Ont.
 Erie, H. W., Toronto.
 Williams, A. R. Machinery Co., Toronto.

Loom Reeds
 Belting Co., Montreal.

Lubricators
 Penberthy Injector Co., Windsor, Ont.

Machinists
 McCulloch Co., Galt, Ont.
 London Machine Tool Co., London, Ont.
 Engineering Co., Amherst, N.S.
 H. & Martin, Toronto.

Machinists' Supplies
 Armstrong Mfg. Co., Bridgeport, Conn.
 Burnfield & Co., Rock Island, Que.
 McCulloch Co., Galt, Ont.
 Percha & Rubber Mfg. Co., Toronto.
 Inz F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 London Machine Tool Co., London, Ont.
 John, Machine Screw Co., Ingersoll, Ont.
 H. W., Toronto.
 H. & Martin, Toronto.

Machine Tools
 B. F. Co., Rockford, Ill.
 Brainard Milling Machine Co., Hyde Park, Mass.
 Darling Bros., Montreal.
 Garton, John J., Toronto.
 Goldie & McCulloch Co., Galt, Ont.
 Gutta Porcha & Rubber Mfg. Co., Toronto.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Hawksworth, Alfred, Montreal.
 Hay, Peter Knife Co., Galt, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jencks Machine Co., Sherbrooke, Que.
 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.
 McLaren, J. C., Belting Co., Montreal.
 Penberthy Injector Co., Windsor, Ont.
 Petrie, H. W., Toronto.
 Reddaway, F. & Co., Manchester, England.
 Robb Engineering Co., Amherst, N.S.
 Spence, R. & Co., Hamilton, Ont.
 Wilson, J. C. & Co., Glenora, Ont.

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

Marine and Stationary Engines and Boilers
 Allis-Chalmers, Limited, Montreal.
 Jencks Machine Co., Sherbrooke, Que.

Mechanical Draft
 Wilcox, Limited, Montreal.
 Heating & Ventilating Co., Galt, Ont.
 Sheldon, Galt, Ont.
 B. F. Co., Boston, Mass.

Metal Stamping
 Burne-Fuller Co., Cleveland, Ohio.
 Peelle, Oshawa, Ont.

Metallurgists
 Mills, S. D., Toronto.

Mill Machinery and Supplies
 Allis-Chalmers-Bullock, Limited, Montreal.
 Armstrong Mfg. Co., Bridgeport, Conn.
 Becker-Brainard Milling Machine Co., Hyde Park, Mass.
 Darling Bros., Montreal.
 Garton, John J., Toronto.
 Goldie & McCulloch Co., Galt, Ont.
 Gutta Porcha & Rubber Mfg. Co., Toronto.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Hawksworth, Alfred, Montreal.
 Hay, Peter Knife Co., Galt, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jencks Machine Co., Sherbrooke, Que.
 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.
 McLaren, J. C., Belting Co., Montreal.
 Penberthy Injector Co., Windsor, Ont.
 Petrie, H. W., Toronto.
 Reddaway, F. & Co., Manchester, England.
 Robb Engineering Co., Amherst, N.S.
 Spence, R. & Co., Hamilton, Ont.
 Wilson, J. C. & Co., Glenora, Ont.

Milling Cutters and Machines
 Becker-Brainard Milling Machine Co., Hyde Park, Mass.

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

Mining Machinery
 Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian Rand Drill Co., Sherbrooke, Que.
 Corbett, R. B., Brooklyn, N.Y.
 Garton, John J., Toronto.
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jencks Machine Co., Sherbrooke, Que.
 Link-Belt Engineering Co., Philadelphia, Pa.
 McDougall, John, Caledonian Iron Works Co., Montreal.
 Perrin, William R. & Co., Limited, Toronto.
 Petrie, H. W., Toronto.
 Schutte & Koerting Co., Philadelphia, Pa.
 Williams, A. R. Machinery Co., Toronto.

Motors and Dynamos
 Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian General Electric Co., Toronto.
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.
 Corbett, R. B., Brooklyn, N.Y.
 Electrical Construction Co., London, Ont.
 Forman, John, Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jones & Moore Electric Co., Toronto.
 Keystone Engineering Co., Toronto.
 Petrie, H. W., Toronto.
 Toronto & Hamilton Electric Co., Hamilton, Ont.
 United Electric Co., Toronto.

Moulding Sand
 Hamilton Facing Mills Co., Hamilton, Ont.

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

Novelty Manufacturers
 Worth & Martin, Toronto.

Nozzles
 McCullough-Dalsell Crucible Co., Pittsburg, Pa.
 Pittsburg Crucible Works, Pittsburg, Pa.

Office and Bank Fittings
 Canadian Office & School Furniture Co., Preston, Ont.

Oils and Lubricants
 Dixon, Jas. Crucible Co., Jersey City, N.J.
 Imperial Oil Co., Petrolia, Ont.
 Queen City Oil Co., Toronto.

Oil Cloth
 Dominion Oil Cloth Co., Montreal.

Oil Cups
 Penberthy Injector Co., Windsor, Ont.

Oil Well Supplies
 National Supply Co., Leamington, Ont.
 Oil Well Supply Co., Pittsburg, Pa.

Paints and Colors
 Berry Bros., Walkerville, Ont.
 Geigy, Aniline & Extract Co., New York City.
 McArthur, Cornelle & Co., Montreal.

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Paper Manufacturers

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

Patents

Budden, Hanbury, A., Montreal.
Fetherstonhaugh & Co., Toronto.
Marion & Marion, Montreal.

Perforated Metals

Globe Machine & Stamping Co., Cleveland, Ohio.
Greening, B. Wire Co., Hamilton, Ont.

Personal Accident

Canadian Casualty & Boiler Insurance Co., Toronto.

Phosphorizers

McCullough-Dalsell 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.
Syracuse Smelting Works, Montreal.

Pipe Line Supplies

National Supply Co., Leamington, Ont.
Oil Well Supply Co., Pittsburg, Pa.

Pipe (Riveted, Iron and Steel)

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

Pipe Threading Machines

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

Pipes and Tubes

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Montreal Pipe Foundry Co., Montreal.
National Supply Co., Leamington, Ont.
Oil Well Supply Co., Pittsburg, Pa.

Plaster

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

Plates

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

Plumbago

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

Pneumatic Tools

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.

Pointer Rolls (For Rods and Wire)

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

Power Plants—Equipments

Allis-Chalmers-Bullock, Limited, Montreal.
Armstrong, Herbert J., Toronto.
Babcock & Wilcox, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Corbett, R. B., Brooklyn, N.Y.
Darling Bros., Montreal.
DeLano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
Goldie & McCulloch, Galt, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Moore Electric Co., Toronto.
Keystone Engineering Co., Toronto, 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.
Robb Engineering Co., Amherst, N.S.
Sturtevant, B. F. Co., Boston, Mass.
Toronto & Hamilton Electric Co., Hamilton, Ont.
United Electric Co., Toronto.
Wilson, J. C. & Co., Glenora, Ont.

Presses (Tile, Sewer Pipe, Nozzles and Sleeves)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

Pulleys

Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
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.
Wilson, J. C. & Co., Glenora, Ont.

Pumps and Pumping Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Darling Bros., Montreal.
Downie Pump Co., Downsville, Pa.
Goldie & McCulloch Co., Galt, Ont.
Jenckes Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
Morris Machine Works, Bukkwinville, N.Y.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.
Petrie, H. W., Toronto.
Schutte & Koerting Co., Philadelphia, Pa.

Punches and Shears

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

Purifiers

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

Purifying and Softening Systems (Water)

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

Railroads

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

Railway Supplies

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

Reamers

Butterfield & Co., Rook Island, Que.

Rivets

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

Rook and Ore Crushers

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

Rolling Mill Engineers

Bourne-Fuller Co., Cleveland, Ohio.

Roofing

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

Rubber Goods

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Washing Tubs

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

Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

Safes and Vaults

Goldie & McCulloch Co., Galt, Ont.

Screws

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

Screw Plates

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

Shafting

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

Shapers and Carvers

Advance Machinery Co., Toledo, Ohio.

Shear Knives

Hay, Peter Knife Co., Galt, Ont.

Sheets (Iron and Steel)

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

Sheet Metal Goods

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

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Sheet Metal Stamping

lobe Machine & Stamping Co., Cleveland, Ohio.
edlar People, Oshawa, Ont.

Smoke Stacks

Hamilton, Wm. Mfg. Co., Peterborough, Ont.
eDougall, John, Caledonian Iron Works Co.,
Montreal.

obb Engineering Co., Amherst, N.S.

Solder

obe Machine & Stamping Co., Cleveland, Ohio.
racuse Smelting Co., Montreal.

Special Machinery

lie-Chalmers-Bullock, Limited, Montreal.
obe Machine & Stamping Co., Cleveland, Ohio.

Speed Recorders

ms (Wabistol) Co., Waterbury, Conn.

Sprinkler Insurance

orks Co. hadlan Casualty & Boiler Insurance Co., Toronto.

Stamps and Stencils

to & St obe Machine & Stamping Co., Cleveland, Ohio.

Steam Pumps

lie-Chalmers-Bullock, Limited, Montreal.
erican Steam Pump Co., Battle Creek, Mich.
ada Foundry Co., Toronto.
ling Bros., Montreal.
ldie & McCulloch Co., Galt, Ont.
Dougall, John, Caledonian Iron Works Co., Mont-
real.

Glascovrio, H. W., Toronto.
Montreal llams A. R. Machinery Co., Toronto.

Steam Separators

cock & Wilcox, Limited, Montreal.
ling Bros., Montreal.
Eachron Heating & Ventilating Co., Galt, Ont.
bb Engineering Co., Amherst, N.S.
ldon & Sheldon, Galt, Ont.

Steam Specialties

ling Bros., Montreal.
Eachron Heating & Ventilating Co., Galt, Ont.
barthy Injector Co., Windsor, Ont.
utts & Koerting Co., Philadelphia, Pa.
ldon & Sheldon, Galt, Ont.

Steam Valves

erican Steam Pump Co., Battle Creek, Mich.
cock & Wilcox, Limited, Montreal.
ling Bros., Montreal.
r Engine Co., Walkerville, Ont.
do, H. W., Toronto.
llams A. R. Machinery Co., Toronto.

Steel Balls

ma Steel Co., Sault Ste. Marie, Ont.
mond, McCall & Co., Montreal and Toronto.
lbert, John J., Toronto.
a Fabbina F. H. & Co., Montreal.

Steel Shafting

ing Bros., Montreal.
lie & McCulloch Co., Galt, Ont.
ilton, Wm. Mfg. Co., Peterborough, Ont.
ie, A. C. & Co., Montreal.
ougall, John, Caledonian Iron Works Co., Mont-
real.
ersoll & Sedra Steel & Coal Co., New Glasgow, N.S.
on, J. C. & Co., Glenora, Ont.

Stocks and Dies

strong Mfg. Co., Bridgeport, Conn.
arfield & Co., Rock Island, Que.
ie, H. W., Toronto.
th & Martin, Toronto.

Stoppers

ilough-Dakell Crucible Co., Pittsburg, Pa.
ks Osburn Crucible Works, Pittsburg, Pa.

Structural Steel

ne Fuller Co., Cleveland, Ohio.
da Foundry Co., Toronto.
ling F. H. & Co., Montreal.

Sulphate of Alumina

ols Chemical Co. of Canada, Montreal.

Sulphur Furnace

tte & Koerting Co., Philadelphia, Pa.

Suspension Furnaces

anal Iron Works Co., New York City.

Tanks (Oil and Water)

da Foundry Co., Toronto.
ie, B. B., Brooklyn, N.Y.
land & McCulloch Co., Galt, Ont.

Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Mont-
real.
Ontario Wind Engine & Pump Co., Toronto.

Taps and Dies

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

Tees

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

Textile Manufacturers

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

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NAMES.	Place.	Frequency.	Their Price.	Combination.
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American Federationist	Washington	Monthly	1 00	1 25
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Architectural Record	New York	Monthly	3 00	3 25
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Atlantic Monthly	Boston	Monthly	4 00	4 25
Boys' Own Paper	London	Weekly	1 75	2 00
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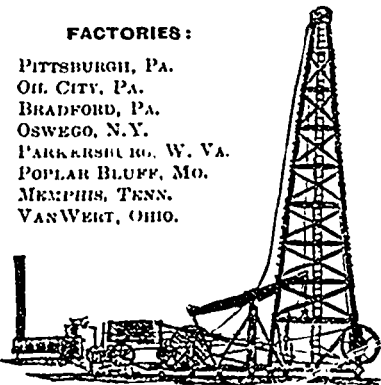
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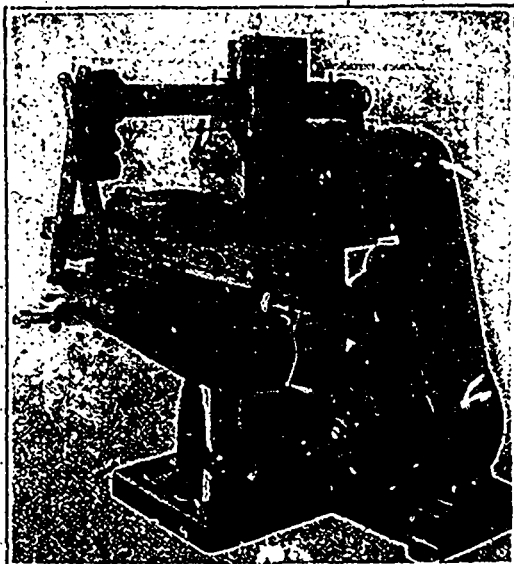
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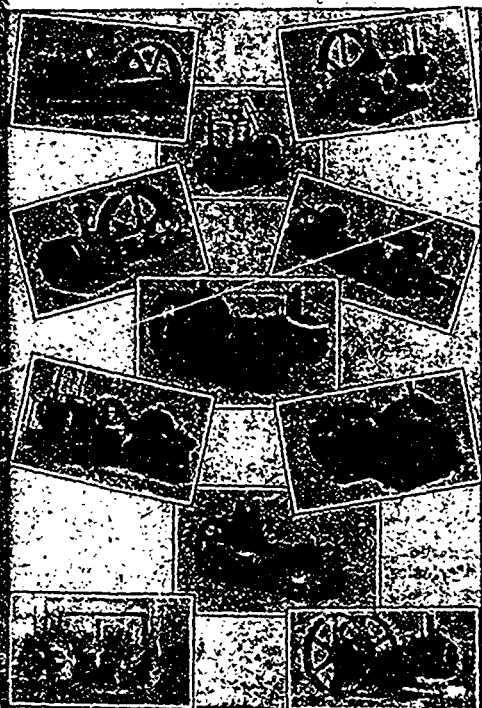
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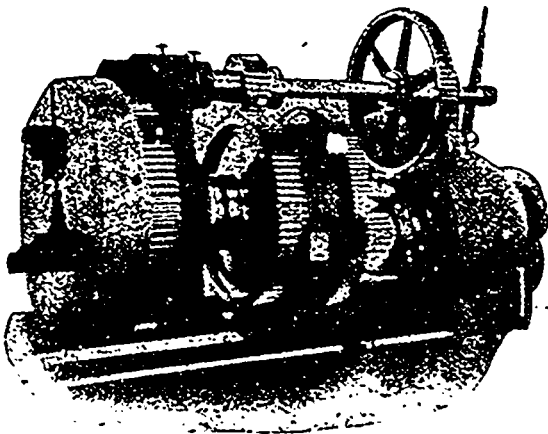
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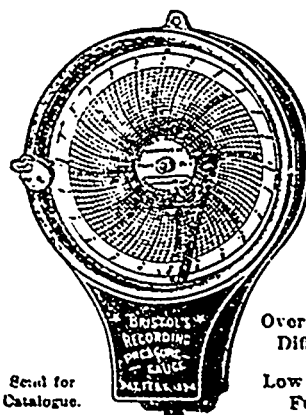
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