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. Vol. 49. TORONTO, DECEMBER 2, 1904. No. 11.

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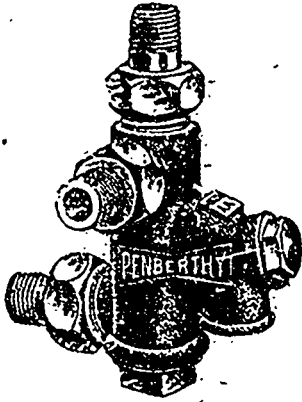
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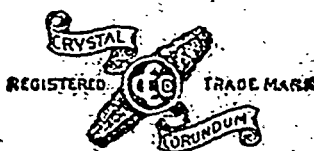
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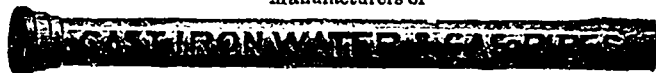
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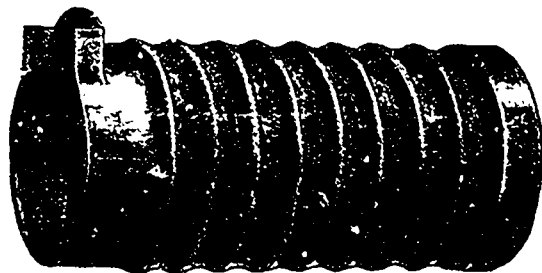
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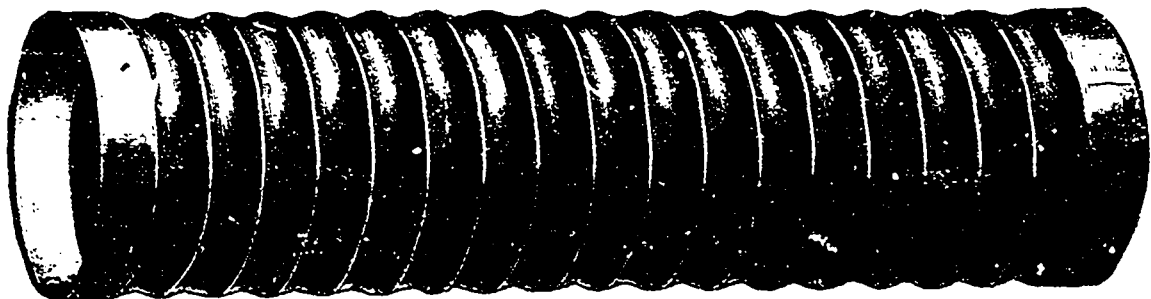


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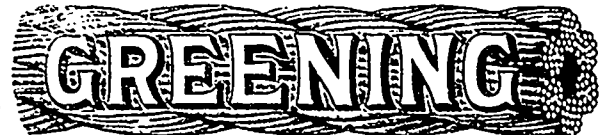
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Not subject to spontaneous combustion.
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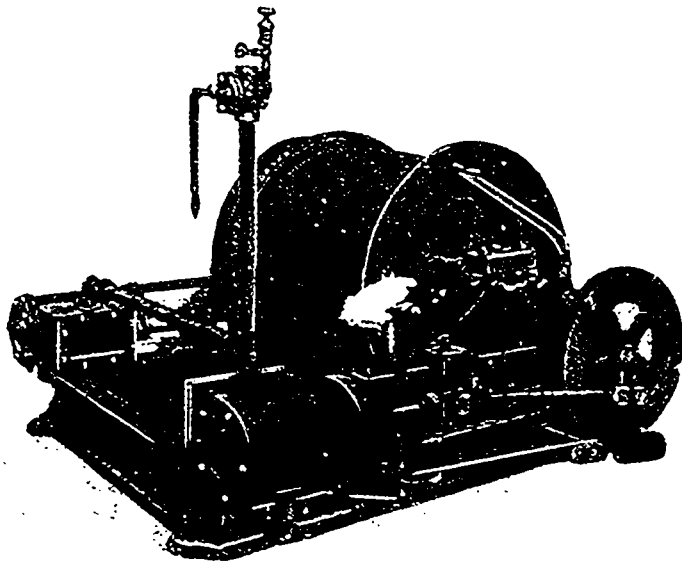
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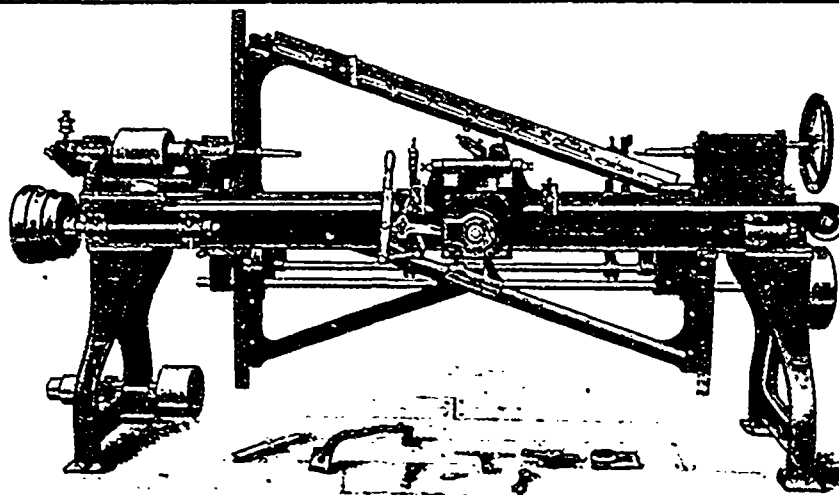
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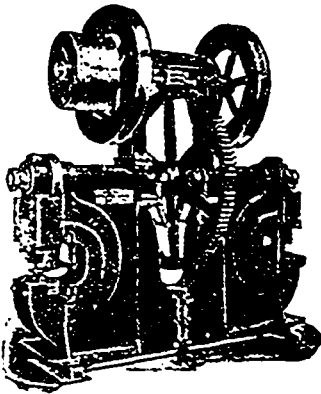
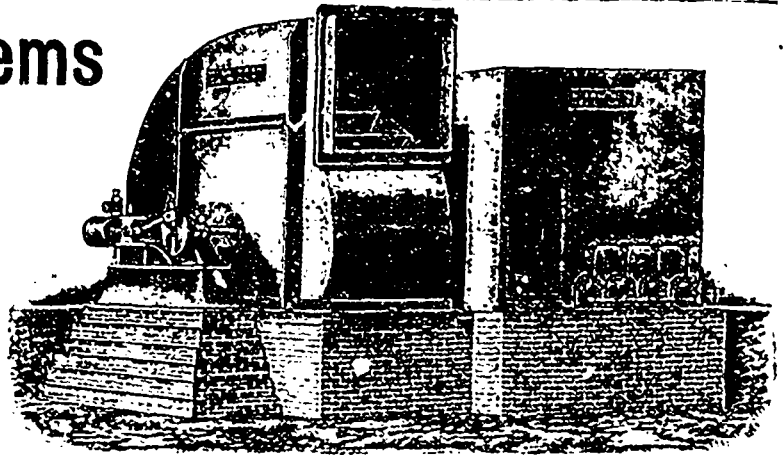
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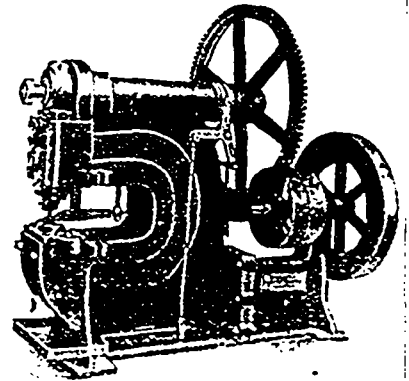
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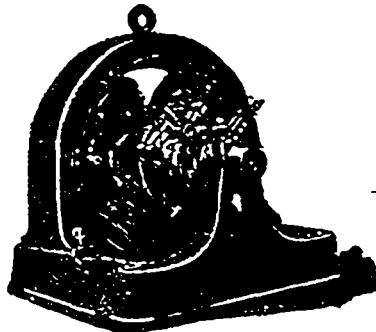
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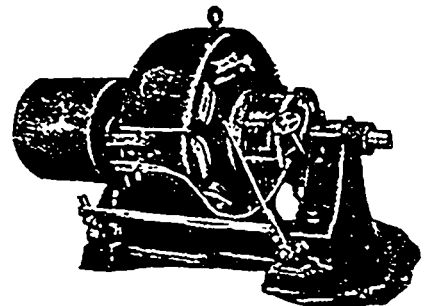
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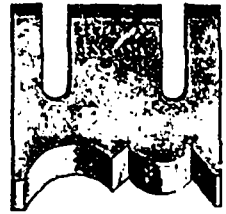
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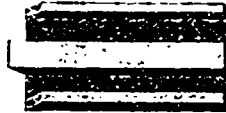
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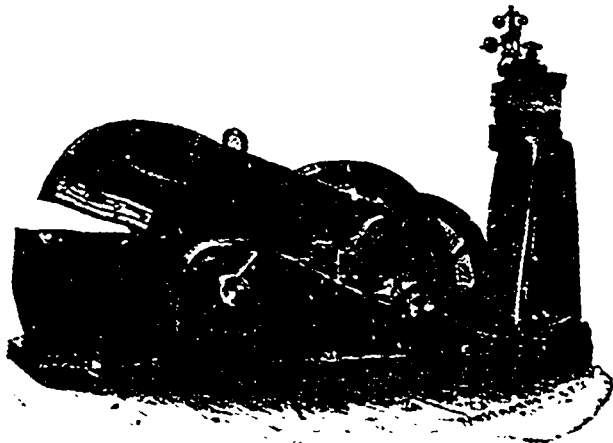
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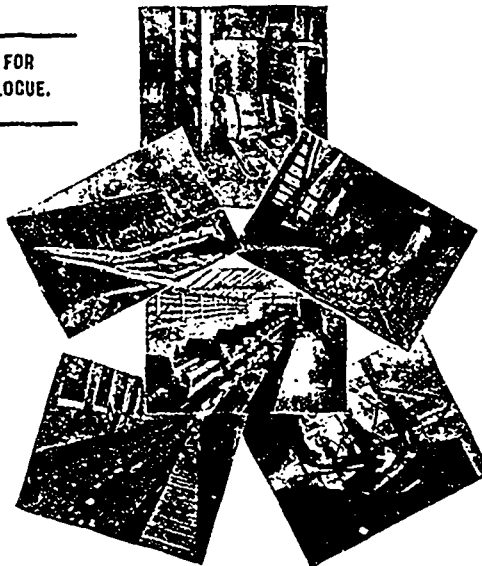
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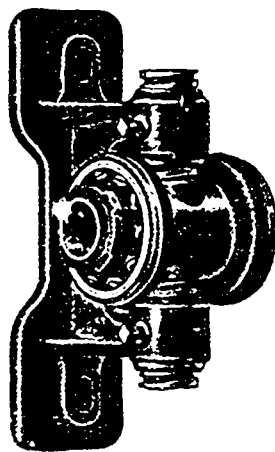
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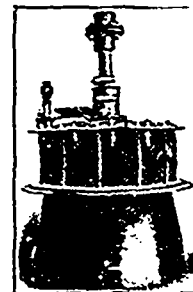
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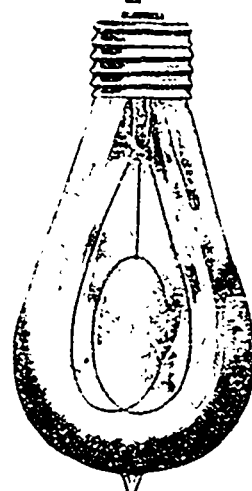
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One of the most important laws enacted by the Dominion Parliament in 1904, and now in operation with most gratifying success, was that establishing the Railway Commission. It is a court of record with headquarters at Ottawa, but with power to sit at any time in any place in Canada, for the greater convenience of the court, its officers and of interested parties.

Exceptional powers are given to this body. They may be defined as falling into three great groups:

1. Regulation of the property rights and duties of rail ways. Questions of right of way constantly arise. The dealings of railway corporations with each other, with other corporations, or with private persons, call for oversight. One railway wishes to cross another railway's line. A railway desires to expropriate a city's land, as in Toronto. A farmer has difficulty over his crossing. Over all these cases the Commission has jurisdiction. Some of its activity is compulsory, for as the railway tribunal of the country it is the repository of innumerable agreements between corporations. It is a court of record—a fact not to be forgotten.

2. Regulation of the service rendered by the railways to the community. Under this head will fall the great and complicated question of freight rates. It also includes numerous subjects such as the supply of cars in time of shortage, the provision of refrigerator cars and similar special types of rolling stock, etc.

3. The welfare of the public, by insisting on adequate protection of life and limb. Passengers and employes both need to be guarded against dangers which vigilance and the taking of precautions can avert. The Railway Commission is the authority which can compel the taking of these precautions.

When the Commission was organized on February 1 last, it found a considerable amount of business of the first class awaiting its advent. Work of this sort had been done after a fashion by the Railway Committee of the Privy Council. That body exhibited several grave disqualifica-

tions for its task. Most serious of all, it had no continuity of policy. Each case was settled by itself as it came up, according to the views of the particular Cabinet Ministers who happened to be sitting, and with scant regard to precedent. Partly because of this, partly because it was cumbrous, partly for other reasons, little confidence was felt in the Railway Committee, and speaking generally, it may be said that recourse was had to it only when fairly unavoidable.

The advent of the Railway Commission completely changed this frame of mind on the part of the public. A new tribunal appeared, endowed with the powers and the continuity of policy of a court, and with the convenience of a traveling commission. It has held sittings at the centre of the Dominion, and it has made visitations to the Far West. Some business was bound to come to it. If two railways execute an agreement concerning a crossing, they must ask the court to ratify it. Important matters such as the Esplanade settlement in Toronto come before it automatically. But in addition to these classes of compulsory business, the idea has got abroad with great rapidity that at last there is a fair tribunal before which a poor man might sue for redress for what might appear a small inconvenience. The result has been an extraordinary increase of business relating to property rights. From July 1, 1867, to February 1, 1904, the old Railway Committee of the Privy Council received rather less than 13,000 communications, an average of 3,050 in a year. During the ten months which have elapsed since the Railway Commission was formed the secretary has received about 3,000 letters. Subjects of variance, small and local in themselves, yet capable of inflicting real hardship and injustice upon individuals and communities, have come up in great numbers. This was especially the case in the Western tour. Thanks to it, many grievances have been redressed which could not have been carried to Ottawa. It is in this division of its work and powers that the Railway Commission has obtained its reputation and popularity. It involved a good deal of judicial work, in which the chairman made a good impression.

The oversight of freight rates is a labor of great difficulty and almost infinite complexity. It is easy to compile a list of tolls which present extraordinary inequalities. It may be perfectly true that goods can be sent from Vancouver to New York for the same price as from Vancouver to Calgary. It may be true that wool can be brought from Liverpool to Toronto more cheaply than from Hamilton to Toronto. When, however, it comes to fixing a new rate, instead of criticizing the old one, all manner of considerations arise. In many cases the railways can present cogent reasons for demanding tolls that may involve the infliction of an inequality. In other cases, one change will cause a series of other changes in directions that are bewilderingly numerous. The Railway Commission so far is feeling its way cautiously, and has abstained from committing itself to a general dealing with rates. For the moment it is content to accumulate evidence, to study the situation, and to content itself with the correction of obvious abuses. A general classification presented by the railways has been provisionally accepted, and the several lines are being urged to standardize the details of their business methods. Despite this general maintenance of a cautious and conservative attitude, definite action has been taken in a number of cases where substantial injustice appeared to exist.

The list of these instances is interesting as showing on how many sides of our industrial, commercial and agricultural life the Railway Commission touches. In all, about ten complaints have been the subject of formal orders. Nine of these orders effected reductions of tolls, and one confirmed a rate against which there was protest. One railway, which had been charging discriminatory rates, was obliged to carry cedar lumber for certain special purposes at the same rate as ordinary lumber. The Sydenham Glass Company secured a heavy reduction on the rates charged on bottles in carloads from Wallaceburg to various points in Western Ontario, to Toronto and to Montreal. The Sutherland-Innes Company and the Wallaceburg Cooperage Co. were given lower rates on cooperage stock to Montreal, both for export and for local delivery. The Ontario Fruit Growers' Association was granted concessions in the classification of fruit so substantial that the drop in freight rates on fruit between Eastern Canada and the West amounted in many cases to \$75 a carload. Another boon to fruit-growers was a reduction of the charge for ice for refrigerator cars. Another association which made complaint was that of the pea millers. Under the influence of a favorable freight rate, a trade in split peas was built up between Canada and Great Britain. The railways increased the rate, and the trade vanished. The Commission instructed the railways to reduce their tolls so as not to exceed those on flour for export. The Almonte Knitting Co. procured a reduction on coal from the Niagara frontier, and the Grand Trunk was forbidden to carry coal for manufacturers in Cobourg at rates cheaper than those charged to the general consumer. A Toronto manufacturer of oiled clothing was given a reduction in rates to Halifax, Winnipeg and Calgary. Very recently the British Columbia Lumber and Shingle Manufacturers' Association

succeeded in breaking up an agreement between the Canadian Pacific and some American railways, whereby British Columbia cedar was virtually kept out of Manitoba. The rate on cedar had been rather more than \$2 a thousand in excess of that on pine, fir, spruce and other lumber.

The one case in which the applicant lost was that of the United Factories, situated in Newmarket, Ont. The Grand Trunk had charged three cents on lumber hauled for them, and it advanced the rate to four cents. The authorized freight classification permitted a charge as high as nine cents, and the Commission declined to force the railway to continue to charge one-third of the legal rate. These cases, and others in which informal negotiations resulted in reductions of tolls, constitute simply a nibbling at the fringe of the great subject. It is a great boon, however, to have a tribunal to which such cases can be carried.

There remains the third possible field of activity—that of protecting the public from accident. This offers exceedingly wide opportunities, and doubtless in time the Commission will make ample use of them. So far it has moved slowly. Its most noteworthy step has been to appoint an Inspector of Accidents. When disasters occur the railways know that the inspector, a competent and zealous railway man, will subject the circumstances to an impartial scrutiny. Many of his findings are communicated to the railways directly, and are not made public, the Commission not caring to assist persons who may have actions against the railway to secure verdicts. This is a line of activity which is capable of almost indefinite extension. Sooner or later, for example, an inspection of engines, rolling stock, switches and other apparatus will be instituted. A good deal of preventive work has been done quietly. Railways, for instance, have been influenced to guard level crossings by installing electric gongs, providing watchmen or erecting gates. A great deal of money has been spent by the railways at the instance of the Commission, in installing such devices as the interlocking derailing switches, which guard crossings of railway tracks.

These improvements mean the incurring of heavy expense by the railways, and they must be made gradually.

Another feature of the influence of the Railway Commission must be noticed. This advent has wrought an extraordinary change in the attitude of the railways towards the public. In addition to the eight or ten specific cases where the Commissioners adjudicated upon rates, many changes favorable to the public have been made by the railways, for which the Commission is indirectly responsible. This aspect of the situation came out strikingly in the western tour taken by Mr. Blair and Dr. Mills. The railway companies sent prominent officials with, and sometimes in advance of the Commission. Every complaint was investigated by the railway men. An astonishingly large proportion of cases were settled out of court. Cases occurred where the course taken by the railway was justifiable, and where an open and candid explanation of the circumstances caused the complainants to waive their objections. In other cases the railways made concessions. The general result of the establishment of the tribunal, and especially of its western visit, is a remarkable increase

in good feeling between the railways and the people. The latter understand the former better, and perhaps the railway men are the better for their new-found solicitude for public opinion.

Such are the broad outlines of the work of the Railway Commission, and of the lines along which it has moved. It is only at the threshold of its usefulness, and at present it is in a condition of some embarrassment. But its record of public service already is excellent, and its future promise is of the highest.

CANADA'S COMMERCIAL AGENCIES.

The aspirations of Canadian manufacturers and others who are interested in exporting their products are most seriously handicapped by lack of sufficient and accurate knowledge regarding the commercial conditions prevailing in other countries. It is true the Department of Trade and Commerce issue a weekly publication in which is given synopses of the reports received from the commercial agents in Great Britain and a few other countries, and these as a general thing possess much value. But these agencies are far too few in number, a great many commercial centres not being served at all—centres in which both Canadian exporters, and importers also, have much commercial interest. The Weekly Reports very properly contain the names and addresses of these Canadian commercial agents, about a couple of dozen in number.

It might appear to some that the Canadian Government might have some arrangement with the British Government under which the British Consular system might be made of service to Canada, but it should be remembered that the reports of British Consuls and commercial agents are not available even to British merchants except in the way of blue books which have no gratuitous distribution. The reports, too, of these Consuls and commercial agents are generally of a perfunctory character, and possess but very little information that would be of value in Canada. Of course there are exceptions to this rule, as shown in a letter recently received at the Department of Trade and Commerce from British Consul-General Alexander Finn, at Chicago, who said:

I take this opportunity of pointing out to you that this consulate is always ready to do anything in its power to assist the commerce of any portion of the British Empire, but that few Canadians ask us for information, while we are flooded with enquiries from exporters of the United States. As you are superintendent of Canadian commercial agencies, I should suggest that you regard this consulate as one of your agencies, and make all possible use of my staff and their knowledge of the trade and capabilities of this consular district.

This is a generous proposition which Canada should appreciate; and it is to be hoped that there are many other British Consuls in different parts of the world who are thus willing to serve this country; but such service should not be requested without adequate remuneration therefor.

As we have suggested, the British Consular service is not at all adapted to Canadian requirements. This is in evidence from a report made by Mr. J. D. Allan, vice-president of the Toronto Board of Trade, recently returned from a business tour through European countries. He

gave a list of unpronounceable names of British consuls he had encountered, and stated that not only are more than 40 per cent. of Great Britain's agents of commerce aliens, from whom a loyal and devoted service to a strange land cannot be expected, especially when paid such niggardly salaries as £19 per annum, but they are, for the most part, men with no business training and of surprising indifference to their responsibilities. Many of these whom Mr. Allan met regard their post as such a sinecure that they haven't even regular business hours. Last year a firm in England wrote to a British Consul in South America and received this characteristic reply: "It would appear from your letter, that you have need of an agent to look after your trade interests in this place, but this Consulate is unable to act in that capacity." Mr. Allan pointed out the disposition of Britain's commercial attaches throughout Europe, which is more inconsistent than unique. One commercial attache for Austria, Hungary, Greece and Italy is a sample of Great Britain's policy in this respect, while there is but one for France, Belgium and Switzerland put together, who, "because of so much spare time," Mr. Allan interjected, is also one of the British administrators of the Suez Canal. One commercial attache is also considered sufficient for Germany, Holland, Denmark, Sweden and Norway. In travelling through that wonderful manufacturing region between Spa and Aix la Chapelle, where tall chimneys bound the view and industry throbs, Mr. Allan searched in vain for a single British Consular agent. In busy Westphalia, with its great centres, such as Essen, Dusseldorf, Crefeld, Elberfeld, Solingen and Mulheim, Britain has but one Consul at a salary of £250, and a Vice-Consul without salary.

"If Great Britain," said Mr. Allan, "as a nation of shopkeepers would have shopkeepers, figuratively speaking, among her Consuls she need have no fear of other nations underselling her abroad."

The letter of Consul-General Finn, at Chicago, was written in acknowledgment of a copy of the Canadian Industrial Blue Book, containing a list of names of some ten thousand Canadian manufacturers and exporters of Canadian products, a large number of which have been purchased by the Department of Trade and Commerce and sent to British Consuls in the United States and other countries. The book is the product of private Canadian enterprise, the value of which is appreciated by the Department.

The Consular service of the United States is, without doubt, the best and most comprehensive in the world, and to this fact is to be attributed to great extent the large and rapidly growing export trade in manufactured products of that country, and it is to be hoped that, not neglecting any good thing that may be obtained through the British service, that of the United States be adopted by Canada as far as possible. Whatever commercial future there may be for Canada will be measured according to the strength or weakness of her Department of Trade and Commerce, and the matter of large and intelligent representation in the commercial centres of the world should have immediate attention.

A VALUABLE PUBLIC SERVANT.

Whatever it may have cost to erect and equip a Canadian Building at the St. Louis Exposition, and whatever expense may have been incurred in that connection, including the maintaining of the office of the Canadian Commissioner, has been and is being repaid many times over by the advertisement that this country has received, particularly that done by Mr. William Hutchinson, our Commissioner. A few days ago Mr. Hutchinson was interviewed by Frank G. Carpenter, one of the best descriptive writers in the United States, a report of which is published in the St. Louis Republic, the subject of the interview being the great and growing importance of the Dominion as a whole, and those portions of it that are attracting so many thousands of American farmers who are becoming domiciled there. We quote some of the facts given by Mr. Hutchinson.

Our Western country is what Kansas and Nebraska were forty or fifty years ago. The land is chiefly owned by the Government and the railroads. The Canadian Pacific Railway Co., which built their line from Quebec to Vancouver, had the right to take a certain number of alternate sections. They picked them out in the richest parts of their territory, and these lands are now for sale. The Hudson Bay Company also had large grants of land which are now in the market. The balance of the unoccupied soil belongs to the Government, and we are allotting it to actual settlers in 160-acre tracts. All that the settler needs do is to take out his papers, at a cost of \$10, and live on and cultivate the land for three years, when the Government will give him a title.

What are lands worth? In the territory where they are being taken up, from \$7 to \$12 per acre, according to the character of the soil and its nearness to the railroad. Speculators have picked up here and there some large tracts. One company at St. Paul recently bought 1,000,000 acres at \$3 per acre. They raised the price at once to \$6 per acre, and the people who would not touch it a few years ago, when it was a drug on the market at \$3, fairly fell over each other in their eagerness to take it at \$6.

Just where is the new wheat region? There is some east of Manitoba, but the great wheat country of to-day is in Manitoba, and in Assiniboia and Saskatchewan, which lie west and north-west of it, and also in Alberta beyond. These districts have vast prairies with wheat lands of about 230,000,000 acres. That is equal to ten states the size of Ohio, and it is estimated that 100,000,000 acres of this are now offered to homesteaders. Just north of that region lies Athabasca, a vast territory, which will raise wheat, but which has not yet been opened up to settlement. Athabasca contains more than 150,000,000 acres. It is more than three times as large as your State of New York. Altogether we have now 173,000,000 acres in the North-West which have been surveyed, but not yet taken up; and three-fourths of this is wheat land.

The wheat belt is a tract about 1,000 miles long and 400 miles wide. In the eastern part of Canada there are vast pulpwood farms, the trees of which are worth about \$40 per acre. This is also wheat land when cleared.

About 87 per cent. of the farmers of Canada own their own farms. The threshing is done by threshing gangs who go with their immense machines from farm to farm. Ten thousand Americans came into Canada last year to help us harvest our wheat crop.

The harvests are too big to put into barns, and great elevators have been built at the railway stations, so that

the wheat goes direct from the thresher to the elevator without a long haul. We have now more than 1,000 elevators west of Lake Superior, which will hold over 40,000,000 bushels of wheat at one time. We have one elevator at Fort William, on Lake Superior, which has a capacity of 3,200,000 bushels. We are building more elevators right along and more railroads.

NORTHERN ONTARIO.

The clay belt of Northern Ontario is proving beyond a doubt a reality. Messrs. J. G. McMillan and A. Henderson, who were sent out by the Bureau of Mines last spring in charge of a small expedition to explore the country lying directly west of Lake Abitibi, have returned. They report having examined an area equivalent to about 25 townships or, say 550,000 acres, most of which was at the same time being laid off by surveyors into farm lots under the instructions of the Crown Lands Department. The territory consists of two tiers of townships extending directly west of lower Lake Abitibi, a distance of about 55 miles, and includes part of the valleys of the Abitibi and Frederick House Rivers. West of the Frederick House they discovered a large river originating in the townships of Wark and Gowan, and running northward, and probably joining the Frederick House at some distance to the north.

The land within the area examined Messrs. McMillan and Henderson report to be of first-class agricultural quality. There are a few expanses of sand and some muskegs, but much of the apparently wet land can easily be drained, and will undoubtedly become dryer when cleared of the timber. The soil is clay and clay loam. A peculiarity is that the muskegs appear to be situated on the water sheds between the river valleys, and, therefore, on the highest land. This will materially assist the drainage. Base and meridian lines were also run to the north of this area by Surveyors Speight, Galbraith and Patten farther down the valleys of the Abitibi and Frederick House. These gentlemen report practically the same conditions prevailing in the area through which their lines were run.

The net result of the season's explorations by the Department of Crown Lands and the Bureau of Mines proves conclusively that a territory of at least 1,110,000 or 1,200,000 acres exists in this part of the clay belt of valuable farming country, and undoubtedly the clay belt extends far to the north and west of this region, which practically comprises only the southeast corner of it. The timber consists mainly of poplar and spruce, with considerable birch, and very much of it is suitable for pulpwood, of which there will be immense quantities. The overlying rock formations are mainly Huronian, with areas of Laurentian. Rock exposures are few, however, owing to the general covering of soil.

The extension of the Temiskaming & Northern Ontario Railway will probably run down the valley of the Black River, where the lands have already been explored, and are known to be of good agricultural quality, and to the point of junction with the National Transcontinental Railway. In two or three years at the most this region may be expected to be accessible by rail, and will un-

doubtedly afford homes for many thousands of people. The climate is similar to that of the Temiskaming region south of the height of land, but is believed to be, if anything, less severe. It may be pointed out that nearly the whole of this area lies south of the 49th parallel, and, therefore, south of the latitude not only of the wheat areas on the Saskatchewan River and the prairies of the North-West, but even of Manitoba itself.

EDITORIAL NOTES.

The Dominion Parliament is called to meet on Wednesday, January 11, 1905. The first day will be devoted to the swearing in of the new members and the election of a Speaker. The formal opening will take place on Thursday, January 12, when the new Governor-General will explain his reasons for calling Parliament together. Being the first appearance of Earl Grey in his gubernatorial capacity. The session it is understood, will be a short one. The Government has not an extensive bill-of-fare, and it is the general impression that Parliament will have concluded its labors by the first week in May.

Especially interesting was the paper delivered before the recent International Engineering Congress held at St. Louis by Mr. G. P. North, showing the importance of cheap freight rates as an economical factor in American industry. In supporting his argument Mr. North showed that the average freight rate of transportation per ton per mile in the United Kingdom is 2.8 cents, in Russia 2.4 cents, in France 2.2 cents, in Germany 1.64 cents and in the United States .8 cents. The American rate in 1885 was 1.057. It is now .764. Mr. North pointed out that if the rates in the United States had remained as in 1885 there would have been paid in 1903, \$3,500,000,000 more for transporting freight than was paid, and if the freight rates had been equal to those of England, and granting as large a business possible at such rates, the cost would have been nearly \$33,000,000,000 greater. Of course no such volume of business could have been transacted at such rates. It is the extraordinary cheapness of transportation which has created the enormous volume of business that is now being transacted by the people of the United States.

Speaking of the Trent Valley Canal, the Toronto Star says:

Two possible routes for the connection of the Trent Valley Canal with Lake Ontario are at the present moment seriously engaging the attention of the interested localities. One of the proposed routes is via Trenton and the Bay of Quinte; the other from the westerly end of Rice Lake to Lake Ontario at or near the town of Port Hope. The local public are each strongly contending in favor of their own route and advancing such arguments as the circumstances appear to warrant. But the question does not seem to us to be a purely local one; on the contrary, it materially concerns the general public outside of those locally interested. If the route selected should be by the Bay of Quinte, it is urged that the canal will serve no interests east of the County of Hastings, whilst on the other hand, if the canal be connected with Lake Ontario at or near Port Hope, the Trent Valley Canal system will not only

confer a much greater benefit upon the country served by the canal, but will also benefit Western Ontario. There is a very considerable interchange of trade between Toronto, Hamilton, and other trade centers and Western Ontario on the one hand, and on the other Peterboro, Lindsay and the districts connected with the Trent Valley Canal waters. At present the transportation trade between these two districts is conducted wholly by rail. If the canal connects Lake Ontario at Port Hope, the advocates of this route argue that during the period of navigation trade will have the advantage of a competitive water route, with a most beneficial effect on regulating railway rates, whereas if it should happen that the canal outlet is made at the Bay of Quinte, then the whole trade of that district will be with the East. It is contended by Port Hope that their route is the cheaper and the better one. If so, it should, in the general public interest, be adopted. In the meantime there should be a most thorough investigation by competent and disinterested persons as to the merits of the two routes, or any other possible routes that may be suggested, so that no mistake be made. A large sum of public money has already been expended in the construction of the Trent Valley Canal, and a considerable sum must yet be expended to bring it to the front. We submit, therefore, that the interests of the general public should be paramount to local considerations, and if the Port Hope route is feasible and reasonably cheap, and at the same time most useful, it should in the interests of the general public be selected.

In retiring from the presidential chair of the Canadian Manufacturers' Association, Mr. George E. Drummond must carry with him the hearty thanks of his fellow-members, for no presiding officer could have placed at their service greater zeal and energy, nor shown a deeper interest in public questions affecting their welfare. From some of Mr. Drummond's views on these questions we have found it necessary to dissent, as he has displayed a fondness for high tariffs not consistent, in our opinion, with the interests of Canada as a whole, and his arguments in favor of preferential trade arrangements with Great Britain have tended to ignore either the interests of the Canadian consumer or the demand of the British exporter for an enlarged market. But he has brought to his discussion of these problems the fruits of much study, and has always been ready to fight for his opinions in the open. He has certainly done his duty as he saw it.—Montreal Herald.

At a recent meeting of the Engineering Department of the British Association held in Cambridge, England, Mr. A. Campbell Swinton, the famous consulting engineer, read a paper on electricity from waterpower. "The hydraulic electricity works of different countries," he said, "showed the following total horsepower: United States, 527,467; Canada, 228,225; France, 161,343; Germany, 81,087; Italy, 210,000; Britain, 11,906. The amount of waterpower actually used in electrical production throughout the world at the present time would exceed 2,000,000 h.p., about double the total steam power devoted in Britain and Ireland to the same purpose. The longest transmission commercially effected was 232 miles by a California electric corporation." The Canadian Niagara Falls Power Co. and the Ontario Power Co. plants were mentioned as employing the very high pressure of 80,000 volts.

THE STURTEVANT PORTABLE FORGES.

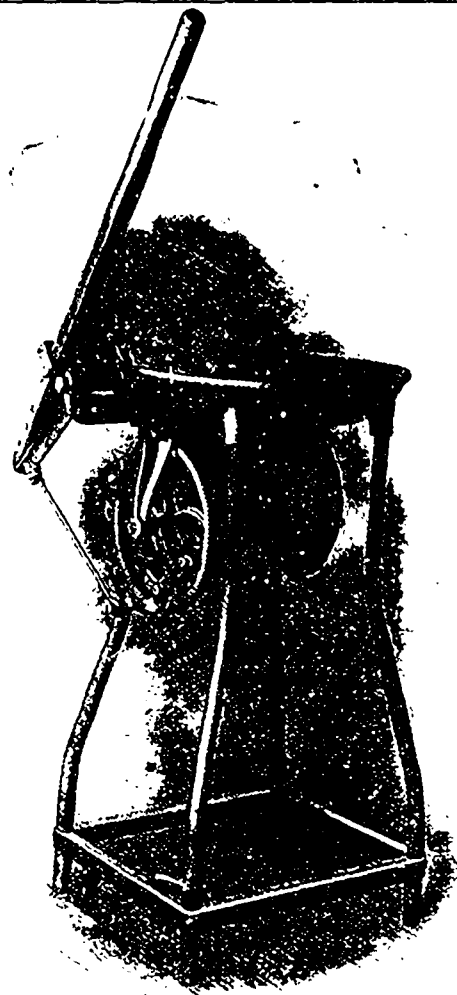
The adaptability of the Sturtevant Portable Forges to all light forge work, their endurance and ease of running, have for many years given them the preference with blacksmiths, wagon and carriage smiths, tool makers, locksmiths, tin-smiths, jewellers, prospectors and miners, bridge and tank builders, sheet iron workers and rivotters in general. In shops and mills, on ship-board, in manual training schools and mechanical laboratories of technical schools, they meet alike the requirements of a small and medium sized forge for heating and tempering and for small repairs.

These forges have stood the test for years, not only in this country but abroad. From time to time new sizes have been added to the list to meet new applications and conditions, and now, with no less than thirty-one sizes, the applications may be widely variable. Not only have new sizes been made but the designs have been perfected in every little detail. The sheet metal work is of heavy steel plate, the running gear is heavy, strong and easy of operation. The tuyeres are made extra strong to resist the action of the fire, and the fire pan is of a double metal plate with asbestos between to prevent the heat from cracking the main pan or affecting the running gear. The blower is of the well known Sturtevant

steel pressure type, has babbitted journal boxes and has been re-designed to give increased capacity.

There are seven distinct types represented respectively by the A, B, C, D, E, F, and G forges. Types A, B, and C are alike except in the means of producing the blast. The blast for the type A forges is provided by an attached blower driven by hand power. The B forges are arranged for pipe connection and receive blast from an independent blower, which may also supply a number of forges. Forges of the C type are fitted with a blower driven by a pulley on the forge, belt connected to a line shaft or other drive.

The A forge is built in five sizes adaptable to all light work, and is extensively used by wagon and carriage smiths, tool makers and blacksmiths. On the farm and plantation, in the shop and mill, on ship board and in manual training schools, or wherever small repairs are necessary, this forge is much demanded. Sizes A-1, A-2 and A-3 differ



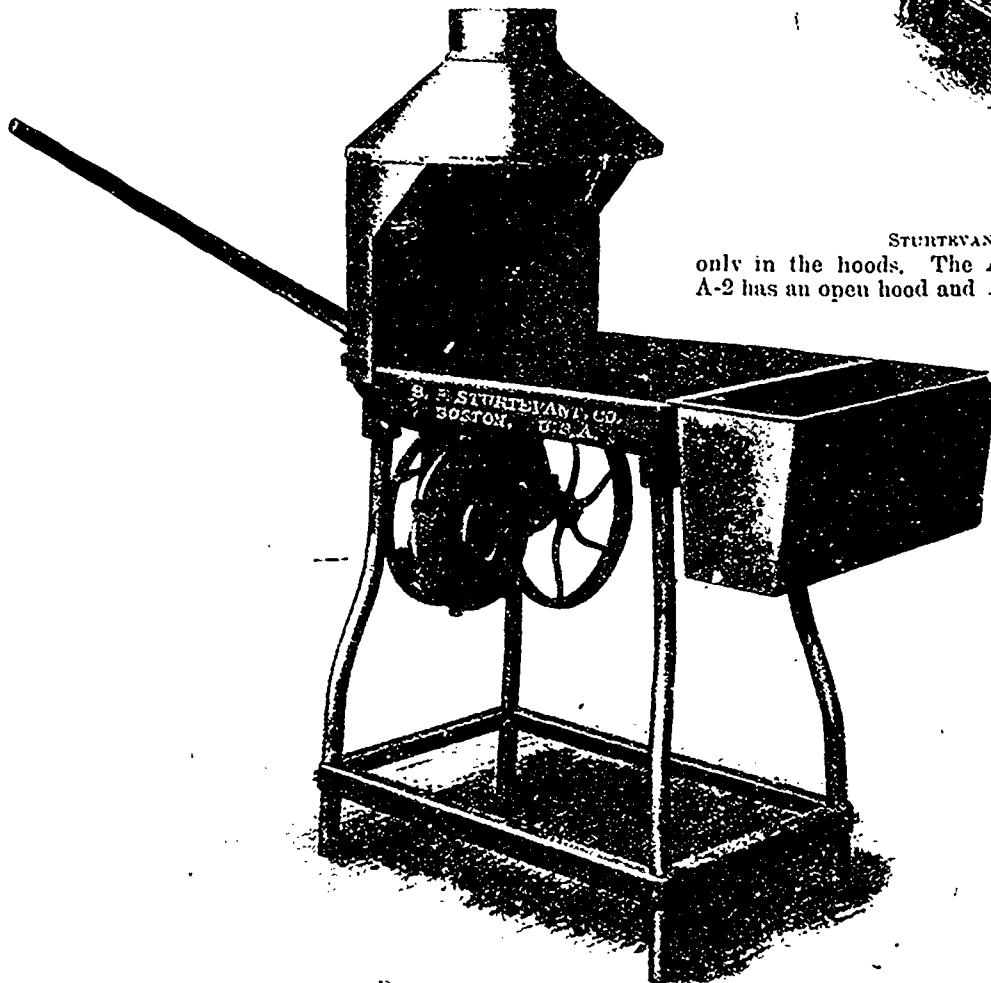
STURTEVANT PORTABLE FORGE, No. A-1.

only in the hoods. The A-1 is provided with a wind-guard, A-2 has an open hood and A-3 a closed hood. Sizes A-4, A-5, A-6 and A-7 have larger pans and are provided with a water tank. A-8 is heavier in construction, has a Sturtevant hand blower attached for supplying the blast and is used extensively for stationary work.

The B type forge is made in eight sizes particularly adaptable to mechanical laboratories of technical schools. As before stated, they are similar to the corresponding numbers of the A forges except in the manner of producing the blast.

The C forges are made in four sizes, C-4, C-5, C-6 and C-7 corresponding to forges A-4, A-5, A-6 and A-7 and are fitted with a tight and loose pulley for belt connection; a continuous blast may thus be provided which can readily be regulated by means of a blast gate underneath the fire pan.

For the lightest forge work, forges D-1, D-2, D-3, E-1, E-2 and E-3 are peculiarly suitable. Sizes D-1, D-2 and D-3 are like A-1, A-2 and A-3 but have shorter legs for bench work, and are arranged for blast connection to an independent blower. The pan, tuyere and blower of the E-1, E-2 and E-3



STURTEVANT PORTABLE FORGE, No. A-7.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

forges are exactly similar to but smaller than those on the A-1, A-2 and A-3 forges, but the hand power attachment is arranged for bench work. With these forges a strong wooden box is furnished sufficiently large to hold a complement of tools together with the forge itself. This equipment is, therefore, extensively used by repair and set-up men on account of its ease and convenience of transportation. As in the A forges, the three sizes differ only in the hoods. E-1, like A-1, is provided with a wind-guard only, E-2 has an open front hood and E-3 a closed hood. For the light work of jewellers, locksmiths, tinsmiths, and farmers and for all small repairs this type of forge is best adapted.

The F forge is made in three sizes, F-1, F-2 and F-3, exactly like the A-1, A-2 and A-3 forges except that they have much shorter legs; in fact, they are short enough to give the correct height for operation when the forge sets on the box. This type meets the requirements of the prospector and miner, but is not as readily portable as style E.

The G. forge, built in two types, with hand or stationary blast, is extensively used for stationary work on account of its durability. The body is of heavy steel plate rigidly braced and provided with wind-guard. It is extensively used by bridge and tank builders, sheet iron workers and riveters in general.

These forges are manufactured by the B. F. Sturtevant Co., Hyde Park, Mass., who furnish complete forge equipments, including portable and stationary forges, blowers and hand blowers for producing the blast, exhaust fans for the removal of the smoke, blast and exhaust piping systems, hoods and blast gates.

JEFFREY HAMMER PULVERIZER.

The manufacture of this type of pulverizer has recently been taken up by the Jeffrey Mfg. Co., Columbus, Ohio, being made under the Schoellhorn-Allbrecht patent acquired by them.

One illustration shows the pulverizer with its interior or crushing parts; the others show the sectional screen frame

which is one of the special features in this machine.

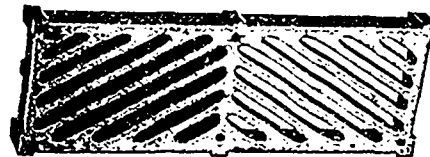
It is designed for crushing and pulverizing material such as coal, clay, shale, rock and many other materials. The manufacturers claim it to be one of the simplest machines of its kind made. Strong features are its simple beater hammer, its "V" shape bar screening surface, its simple adjustment of the beater arms to accommodate wear, its substantial adjustable dust proof pillow blocks, its top feed hopper insuring large capacity and permitting material to be



SECTIONAL SCREEN FRAME.

partly crushed while in suspension; all of which go to make this machine as nearly perfect as can be made.

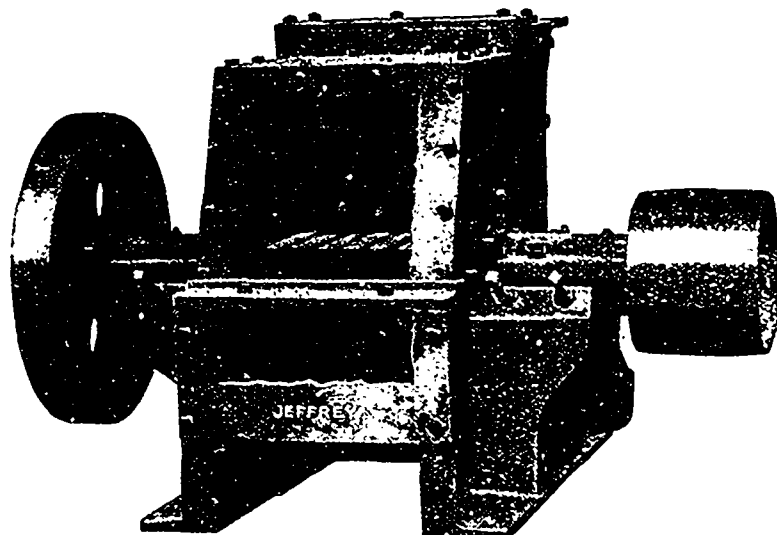
The accessibility of its inner parts is also one of its strong features. Taking off the rear plate and the hand hole plates on the side of the machine make it possible to change the beater arms as well as the screening surface when necessary.



SECTIONAL SCREEN FRAME.

The screening surface is made up in sections, so that it is the work of but a few moments to take out or change from one size to another.

Many of these machines are in use so there is no experimental period to be gone through with. It is made in many sizes to suit various requirements; for instance in coal the capacity varies anywhere from



JEFFREY HAMMER PULVERIZER.

fifty to one hundred tons of coal per hour depending entirely upon the degree of fineness. In pulverizing material such as rock its capacity is anywhere from ten to twenty-five tons per hour.

The "Jeffrey" Company make free crushing tests for interested parties, thus demonstrating before sale what the machine is capable of doing. Complete catalogue on this subject can be had by addressing the manufacturers.

THE METALLIC ROOFING COMPANY'S CATALOGUE "A."

We have much pleasure in acknowledging the receipt of a copy of their new Catalogue "A" just published by the Metallic Roofing Co. of Canada, through the courtesy of Mr. J. O. Thorn, general manager. This important industrial concern are manufacturers of architectural sheet metal building materials of every description, whose head office and works are at King and Dufferin Streets, Toronto.

The book cannot but be of the greatest interest to every one who owns or ever expects to own a roof to cover his head, and that means everybody. Beginning at the bottom of a building and extending up not only to the ridge-pole of the roof, but to the vane above, it tells of what is essential in the equipment of the building, both inside and out, explaining how the work should be done in the best and most artistic manner; and this is accurately described in several hundred illustrations. Some of the full-page illustrations shown include a bird's-eye view of the company's works, reproductions of some of the diplomas, certificates, etc., won at exhibitions at Paris, Glasgow, Japan, Wolverhampton, Toronto, London, Sherbrooke and other places, all for meritorious and unique exhibits; and many of the illustrations are views of grain elevators, mills and other industrial structures, public buildings, private residences, etc., in the construction of which the metallic roofing, siding, ceiling, windows and doors and their frames, etc., made by this concern are prominent features.

We feel quite justified in stating that the book is one of the most elaborate and accurate productions ever issued by any industrial concern, particularly in the line indicated, either in this or any other country. It is of Canadian material and workmanship throughout; and bears testimony to the excellence of the products of Canadian skill and enterprise. Mr. Thorn informs us that the edition of this book weighs about twenty-five tons, cost more than ten thousand dollars, and that the cost of distribution by mail for postage alone will be between three and four thousand dollars. The sheet metal building materials "Made in Canada" by this concern, like their catalogue are, the very best and most up-to-date of their kind.

The first factory in Canada for the manufacture of sheet metal building materials was established in Toronto by The Metallic Roofing Co. in 1884; and by reference to the files of THE CANADIAN MANUFACTURER we find that the company began advertising their business in it at that time, have continued to do so ever since.

CAPTAINS OF INDUSTRY.

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

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

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

The Globe Paint & Varnish Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture paints, varnishes, etc. The provisional directors include J. D. Hawkins, A. Preston and H. Coventry, Toronto.

Messrs. H. H. Warner & Co., an English incorporation, have been licensed to manufacture drugs, patent medicines, etc., in Ontario, with a capital of \$40,000. E. H. Woolley, Toronto, is their attorney.

The Please Mfg. Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture soap, washing compounds, etc. The provisional directors include W. C. Kingsbury, C. A. Millar and F. Perry, Toronto.

The Arizona Camp Bay Gold Mining Co., Rat Portage, Ont., have been licensed to carry on a mining business and to manufacture miners' supplies, etc., in Ontario, with a capital of \$100,000. Chas. Brent, Rat Portage, is their attorney.

The F. E. Karn Co., Ltd., Toronto, have been incorporated with a capital of \$40,000, to manufacture medical and surgical supplies, etc., and to acquire the business of the F. E. Karn Co. The provisional directors include F. E. Karn, M. Karn and E. M. Sheppard, Toronto.

The East Toronto Brick Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture bricks, tiles, cement, etc. The provisional directors include Wm. Williamson, T. H. Cooper and E. Coatsworth, Toronto.

The Erie Basket Co., Leamington, Ont., have been incorporated with a capital of \$20,000, to manufacture sashes, doors, blinds, etc. The provisional directors include E. Smith, W. T. Easton, and E. M. Easton, Leamington.

Garton Mills, Limited, Toronto, have been incorporated with a capital of \$40,000, to acquire the business of The Garton Mill Co. The provisional directors include A. R. Boswell, J. F. Edgar and A. M. McGlashen, Toronto.

The Maple Leaf Flour Mills Co., Ottawa, have been incorporated with a capital of \$1,000,000 to carry on a grain milling business, to manufacture lumber, wood, pulp, etc. The provisional directors include D. C. Cameron, Winnipeg, Man., A. Carmichael, Rat Portage, Ont., and H. S. Dowd, Quyon, Que.

The Bell Building Syndicate Co., Guelph, Ont., have been incorporated with a capital of \$40,000, to carry on a land and building business. The provisional directors include, G. B. Clark, Fryer, England, J. Brown, and A. M. Brown, Guelph.

The British Type Founders' Agency, Toronto, have been incorporated with a capital of \$25,000, to manufacture type, presses, type-setting machines, etc. The provisional directors include T. H. Sears, A. L. Malone and A. Mearns, Toronto.

The American Dyewood Co., a United States incorporation, have been licensed to manufacture dyestuffs, anilines, etc., in Ontario, with a capital of \$40,000. A. W. Leitch, Hamilton, Ont., is their attorney.

The Coupe Mfg. Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture knitted goods, etc. The provisional directors include R. H. Coupe, A. Bicknell and L. C. Todd, Toronto.

The Hamilton Storage Co., Hamilton, Ont., have been incorporated with a capital of \$25,000, to carry on a warehousing and storage business, etc. The provisional directors include G. E. Bristol, A. Turner and J. Somerville, Hamilton.

The Kemptville Milling Co., Kemptville, Ont., have increased their capital from \$30,000 to \$80,000.

Messrs. A. McKillop & Sons, West Lorne, Ont., have been incorporated with a capital of \$100,000 to manufacture woodwork, implements, builders supplies, etc. The provisional directors include A. McKillop, J. A. McKillop and D. McKillop, West Lorne.

Messrs. Beatty, Kerr & Verner, Toronto, have been incorporated with a capital of \$100,000, to manufacture dry goods, hosiery, gloves, etc. The provisional directors include C. W. Beatty, J. M. Kerr and T. H. Verner, Toronto.

The ratepayers of Kingston, Ont., will vote on a by-law to raise \$150,000, to improve the gas and electric light plants.

Messrs. Sheldon & Sheldon, Galt, Ont., have recently sold their steel pressure blowers to the following firms—The Goldie & McCulloch Co., Messrs. Cowan & Co. and the R. McDougall Co., Galt, Ont., the Canadian Westinghouse Co. and the International Harvester Co.,

Hamilton, Ont., the Canada Iron & Foundry Co., St. Thomas, Ont., and the Canada Radiator Co., Port Hope, Ont. and to many others.

Messrs. Nagle & Mills, Ingersoll, Ont., have been awarded the contract for the new armories at Stratford, Ont., at a cost of \$47,973.

The Imperial Land Co., Ottawa, have been incorporated with a capital of \$45,000, to erect and operate flour mills, etc. The provisional directors include S. A. McLeod, Sussex, N.B., G. W. Parker, St. John, N.B., and A. R. Pennoyer, Montreal.

The Grand Trunk Railway Co., are considering the laying of a third track from Toronto to Hamilton, Ont.

Tenders are invited for a \$200,000 lock at Kirkfield, Ont., on the Trent Canal. The location will be between Lake Simcoe and Balsam Lake, or about one hundred miles from the Peterboro lock. The Kirkfield lock will be about ten feet shorter than the one at Peterboro, and the lift will be 55 feet, or ten less than at Peterboro. The towers at Peterboro are of concrete; at Kirkfield they will be of steel.

The Berlin Felt Boot Co., Berlin, Ont., have completed their new factory, which replaces the one destroyed by fire several months ago, and have now resumed operations.

Wilson Irwin, Toronto, will install a peat plant at Fort Francis, Ont., with a capacity of 150 tons of peat daily.

Messrs. Penfold Bros., hardware manufacturers, Guelph, Ont., will erect a three story addition to their factory.

J. O'Leary, contractor, Ottawa, has been awarded the contract for repairing Galops canal at a cost of \$40,000.

The Southwestern Traction Co., London, Ont., have awarded the contract for the erection of their power house to John Nutkins, London.

The Leamington Oil Co., Leamington, Ont., have shot well No. 14. The well had reached a depth of 1,046 feet, and within an hour showed 900 feet of oil. Eight more wells will be sunk.

The Grand Trunk Railway Co., will probably erect a new Central station at Ottawa.

Inspector W. E. H. Carter of the Bureau of Mines, Ottawa, who has returned from an investigation of working mines, states that in the lower levels of the Williams iron mine, on the Algoma Central railway, north of the Soo, new bodies or bands of high-grade hematite ore have been struck. These show a total of 23 feet of clean ore, with an additional 10 feet or so of second grade ore, in a total width of 60 feet.

The Water Commissioners at Peterborough, Ont., are considering the construction of a new concrete waterworks dam at a cost of about \$50,000.

Messrs. Dunn and Landford, St. Paul, Minn., are negotiating with the Algoma Iron Works Co., at Sault Ste. Marie, Ont., for the manufacture of the Dunn Patent Safety Switch for the supply of the Canadian market.

The Steamer Alert was destroyed by fire at Lakesfield, Ont., November 14. Loss about \$5,000.

The schooner William Crosthwaite, was destroyed by fire at Whitefish Point, Ont., November 13.

The Union Stock Yards Co., will erect a show building at Toronto Junction, Ont., at a cost of about \$100,000.

Geo. Goodwin, contractor, Ottawa, has been awarded the contract for the erection of the new Victoria Museum in that city, at a cost of over \$1,000,000.

The Central Canada Coal Co.'s sheds and a portion of the James Smart Mfg. Co.'s works at Brockville, Ont., were destroyed by fire November 16. Loss about \$30,000.

Mr. W. G. Field's pump works at Guelph, Ont., were destroyed by fire November 17. Loss about \$1,500.

The Parry Sound, Ont., Hospital, was damaged by fire November 14.

The steamer Ocean owned by the Wentworth Navigation Co., Toronto, was destroyed by fire at Port Dalhousie, Ont., November 18. Loss about \$25,000.

The old corundum mill at Craigmount, Ont., which was being fitted up for an electric light plant was destroyed by fire recently.

The Canadian Pacific Railway Atlantic Steamship line and that railway have closed a contract for the transportation of thousands of tons of speigel from Liverpool, England, to Sault Ste. Marie, Ont., which is the first contract of its kind made by a Canadian company. The contract was brought about by the Algoma Steel Co. purchasing 10,000 tons of English speigel to be used in the manufacture of pig iron at the steel rail mill. All the rail mills in the United States use a certain amount of English speigel and as the Lake Superior Corporation had opened up their coke blast furnaces they also secured some. The first shipment of 5,000 tons was brought over on the steamers Lake Erie and Lake Manitoba, and shipped to the Soo over the Canadian Pacific Railway main line. The transportation of the ore from England for the Soo works and the carriage of ore from the silver lead mines in British Columbia to the English refineries were among the largest new contracts made by the Canadian Pacific Railway Atlantic Steamship line this season.

The Toronto General hospital will be enlarged at a cost of \$50,000.

The Canada Furniture Manufacturers are concentrating their works by the removal of their Berlin machinery and equipment to the Waterloo, Ont., plant.

The wooden propeller Pease, owned by C. H. Gilchrist & Co., Cleveland, Ohio, was destroyed by fire at Collingwood, Ont., November 24th.

Messrs. MacLaren, Glasgow, Scotland, have been awarded the contract for supplying 40,000 lineal feet of ten inch tubing at a cost of \$1.32 per foot for the pneumatic postal tube systems in Toronto and Montreal. Mr. J. Galt, C. E., Toronto, will be in charge of the construction work.

The following improvements were decided upon at a joint meeting of the Toronto Board of Control and the Fire & Light Committee and for which a by-law will be submitted to the ratepayers of Toronto to raise \$700,000:—Three 750-gallon steam fire engines for high level district, \$16,500; five steam heaters for engines, \$1,500; Central office fire alarm telegraph system, \$35,000; renewing and changing present alarm boxes to succession boxes, \$10,000; site and building station on Wellington street, \$100,000; site and building station in the neighborhood of Bathurst and Bloor streets, \$25,000; addition to Rose avenue fire hall, \$10,000; cost of mains, valves, hydrants and connections for auxiliary high pressure system, \$261,000; engines and pumps, \$145,000; building, including foundations and suction supply, \$60,000; and engineering and contingencies, \$36,000.

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

The Canadian Skewer Co., Hespeler, Ont., are making extensive improvements to their plant.

Messrs. John Harrison & Sons, Owen Sound, Ont., will install a hand saw in their lumber mill.

The M. F. Beach Co., Winchester, Ont., are erecting a new boiler and engine room and making other extensive improvements to their wood-working factory.

The Belmore Bay Gold Mining Co., Rat Portage, Ont., will erect a stamp mill at their mines with a capacity of crushing 20 to 30 tons of ore every 24 hours.

The Sao Paulo Tramway Light & Power Co., will increase their capital from \$7,000,000 to \$7,500,000.

The Lucknow Elevator Co., Lucknow, Ont., will increase their capital from \$2,000 to \$4,000.

The Magann Air Brake Co., Toronto, have been incorporated with a capital of \$400,000 to manufacture air brakes, machinery, etc. The provisional directors include F. C. Annesley, F. J. Buller and A. J. Mitchell, Toronto.

The Boswell House at London, Ont. was partially destroyed by fire November 28. Loss about \$2,000.

The John MacKay Co.'s grain mills near Bowmanville, Ont., were destroyed by fire November 28. Loss about \$20,000.

The public school building at Burgessville, Ont., was destroyed by fire November 28. Loss about \$3,000.

A syndicate from Wales will erect a tinplate factory at Morrisburg, Ont., at a cost of \$100,000.

The Grand Trunk Railway Co. will pay \$180,000 cash for the old parliament building site, Toronto, and with the money the Ontario Government will erect a new physics building at the university.

The Department of Public Works, Ottawa, are inviting tenders for the construction of two breakwaters and dredging at Rondeau, Ont., and also at Port Stanley, Ont.

The rabbit metal factory of the Canada Metal Co., Toronto, was damaged by fire November 26. Loss about \$2,000.

The provisional directors of the Peterboro Shovel & Tool Co., Peterboro, Ont., have appointed F. Forsythe of Hamilton, Ont., late of Berkeley Springs, West Virginia, as factory superintendent. Preparations are being made for the purchase of a complete plant for the factory.

The Canadian Pacific Railway Co. will build an elevator with a capacity of 2,000,000 bushels at Fort William, Ont.

Hon. Sydney Fisher, Ottawa, will purchase a site for the Canadian pavilion which is to be erected at the Liege Exposition, Belgium. Liege is a great iron centre in Belgium, and any display which Canada makes there will be brought prominently before the notice of an immense consuming population. The cost of the Canadian building, including the site, may be about \$45,000, but it will be a good investment for this country to make the best possible showing in the presence of the industrious and thrifty Belgians, to say nothing of the people who will be attracted from other parts of Europe.

Messrs. McCranor Bros., Fort William, Ont., will enlarge their hotel.

Messrs. Gallagher, Holman, LaFrance & Co. will erect a large abattoir at Rat Portage, Ont.

The Imperial Wire & Nail Co., Collingwood, Ont., have about completed their extensive works. There is a large boiler house with space for a battery of 6 or 8 boilers, one of which is already installed supplies sufficient steam for present requirements. The engine room has installed a 150 h.p. engine, dynamo, automatic pumps and foundations for a 450 h.p. engine. The wire drawing room is equipped with the necessary machinery for making all thicknesses of wire and all machines are attached to line shafts ready for operation. The wire and nail departments have seventeen machines. A very complete machine shop is fully equipped with the latest improved machinery, in the shape of lathes, planers, borers, shapers, etc. There is also a large blacksmith shop in connection. The cleaning room is a building about 100 feet square, with solid concrete floor and concrete vats. The rods are handled with a revolving crane and treated with acid and brine. From these the rods travel to an oven and subjected to intense heat before they enter the drawing room. The company now have an order for twenty-five thousand barrels of nails.

On completion of the Canadian Niagara Power Co.'s plant at Niagara Falls, Ont., work will be commenced upon the construction of several large manufacturing plants, which are to be built with capital supplied by the United States corporations and served as Canadian branches of these houses.

The Imperial Paper Mills at Sturgeon Falls, Ont., will erect a sulphite mill and enlarge their ground wood mill.

In the Canada Gazette rules are promulgated for the protection of passenger vessels propelled by gas, naphtha, electrici-

city or other motive power. The tank in which the fluid or gas is stored must be made in the best possible manner and be of sufficient thickness to allow for corrosion and avoid leakage. The machinery must be so constructed as to permit of the effective operation of the power in the handling of the boat. The requirements of the steamboat inspection act in regard to the hull and equipments for passenger steamers must be complied with.

The Bell Foundry Co., Seaforth, Ont., have been awarded the contract for supplying the machinery for Messrs. Ross & Taylor's new saw-mill at Exeter, Ont.

The Goldie & McCulloch Co., Galt, Ont., have completed the building of their new boiler works and will now install the machinery.

The Canada Car Co., Montreal, have awarded the contract for the erection of their power house to the Forest City Paving Co., London, Ont.

The Orange Association at Hamilton, Ont., will erect a new hall building at a cost of about \$15,000.

The Barcalo Mfg. Co., Buffalo, N.Y., have purchased the plant formerly occupied by the Frost Wire Fence Co. at Welland, Ont., and are equipping it for the manufacture of metal beds, springs and bedding. The plant will be ready for operation January 1, and will be in charge of Mr. H. L. Hatt.

Sir Wm. Macdonald, Montreal, will establish an agricultural college in Ste. Anne, Que., at a cost of about \$1,000,000.

The L. E. Waterman Co., of Canada, Montreal, have been incorporated with a capital of \$10,000, to manufacture pens, pencils, stationery, etc. The provisional directors include, F. D. Waterman, Brooklyn, N.Y., W. F. Mullen and P. Davidson, Montreal.

Messrs. John P. Black & Co., Limited, Montreal, have been incorporated with a capital of \$250,000, to acquire the business of John P. Black & Co., and to manufacture haberdashers supplies, clothing, etc. The provisional directors include J. P. Black, T. J. Rodger and J. F. Fetherston, Montreal.

The La Presse Publishing Co., Montreal, have been incorporated with a capital of \$1,250,000, to carry on a printing and publishing business. The provisional directors include Hon. T. Berthiaume, H. Godin and L. G. Gratton, Montreal.

Messrs. Martin Freres & Co.'s saw and planing mills, Montreal, were partially destroyed by fire November 20. Loss about \$50,000.

The warehouses of Messrs. W. D. Barry & Co. and J. D. Barry & Co., Montreal, were destroyed by fire November 20. Loss about \$50,000.

The coal elevator of the Montreal Gas Co., Montreal, was partially destroyed by fire November 19.

The congregation of the Church of Messiah at Montreal, will erect a new church building.

A new morgue will be erected in Montreal at a cost of about \$15,000.

The steel bridge over the Etchemin

river, constructed by the Dominion Bridge Co., Montreal, for the Levis Electric Railway, has been completed.

Messrs. Lewis Bros., Montreal, will erect a storage warehouse six stories high at a cost of \$100,000.

The Hamilton Powder Co.'s factory at Windsor Mills, Que., was destroyed by an explosion November 17.

Mr. Jas. M. Edgar, Birmingham, England, manufacturing jeweler, was in Montreal recently in connection with the establishment of a Canadian factory there.

Mr. P. McKenzie, of the firm of Langue doc & McKenzie, and head of the McKenzie Trading Co., Montreal, announced that as a result of the discoveries of mineral deposits made in the northern part of the province of Quebec, a company had been formed with a capital of \$100,000 to go ahead with the development of the properties. The new company have absorbed the McKenzie Trading Co. and if the expedition into the district north of Lake St. John is attended with success, it is intended that a \$4,000,000 company should be formed to build a railway into the district and operate the different mines.

Hon. Raymond Prefontaine, Minister of Marine and Fisheries, and Mr. F. L. Wanklyn, general manager of the Dominion Coal Co., will make an experiment about the first week of December in keeping the river St. Lawrence open for navigation after the end of the usual season by means of the government ice-breaker Champlain. A loaded collier will leave Sydney in time to reach Quebec during the first week of December and the breaker will meet her about 25 miles below Quebec and accompany her up the river to Montreal. After discharging the coal here the collier will clear on the return trip for Sydney and the ice-breaker will accompany her down the river and remain until her captain is satisfied of no further danger from ice. It may happen that no ice will be encountered, but the object is to show that by means of ice-breakers, whether ice is present or not, the season of navigation between Montreal and Quebec can be kept open for from three weeks to a month later than usual.

The Canadian Turbine Propulsion Power & Light Co., Montreal, have been incorporated with a capital of \$500,000, to produce power, etc., and to manufacture motors, engines, etc. The provisional directors include W. Rowbotham, H. Levetus, Toronto, and M. Auerbach, Montreal.

The following are the patents recently secured through the agency of Messrs. Marion & Marion, patent attorneys, Montreal and Washington, D.C.:—J. Savage, Lorne, Que., floor clamps; I. Laurin, Montreal, improvements in hydrants; W. Dickie, Campbellton, N.B., shaft holder; E. Bowman, Elmwood, Ont., snow plow; A. Langlais, Montreal, steam engine.

The Dominion Cigar Co., St. Hyacinthe, Quebec, have been incorporated with a capital of \$15,000 to manufacture cigars, etc. The provisional directors include

G. Beaupre, J. L. Lamer and J. N. P. Fournier, St. Hyacinthe.

Messrs. Babcock & Wilcox, Montreal, have been awarded the contract for supplying the boilers for heating apparatus in the new Canadian Pacific Railway hotel at Winnipeg, Man., at a cost of about \$9,000.

C. J. B. Simmons has been awarded the contract for erecting a new drill hall at Fredericton, N.B., at a cost of about \$13,000.

Messrs. B. Loomis & Son, Montreal, have been awarded the contract for the erection of a post-office building in St. John, N.B., at a cost of about \$600,000.

Messrs. Rhodes, Curry & Co., Amherst, N.S., have received the contracts for erecting railway stations at Antigonish, N.S., at a cost of \$12,000, and at Pictou, N.S., at a cost of \$40,000.

The Adams, Burns Co., Limited, Bathurst, N.B., have been incorporated with a capital of \$175,000, to acquire the business of Adams, Burns & Co., and to manufacture lumber, pulp, paper, etc. The provisional directors include S. Adams, New York City, T. D. Adams and P. J. Burns, Bathurst, N.B.

The New Brunswick Iron Co., Le-preaux, N.B., have been incorporated with a capital of \$1,000,000, to carry on a manufacturing, mining and smelting business. The provisional directors include J. S. McLennan, Sydney, N.S., C. W. Young, St. Stephen, N.B., and L. B. Knight, St. John, N.B.

The steel mills of the Dominion Iron & Steel Co., Sydney, N.S., will shortly be put on a double shift owing to the large number of orders coming in for wire rods, etc. Satisfactory progress is being made with the rail mill and it is expected this will be ready for operation on April 1. The company will shortly begin the installation of a plate mill.

The Dominion Cotton Mills Co., Windsor, Ont., have completed the repairs and improvements to their mills and will reopen same.

The St. John Auer Light Co., St. John, N.B., have been incorporated with a capital of \$10,000 to manufacture the Auer incandescent lamps and the Gremo Hyper-incandescent lamps, etc. The provisional directors include W. H. Thorne, S. Hayward and R. K. Jones, St. John.

Messrs. Rhodes, Curry & Co., Amherst, N.S., will construct a 100 h.p. engine to be installed in the Acadia Sugar Refining Co.'s barrel factory at Moncton, N.B.

The Kent County Oil Co., Moncton, N.B., have struck a good flowing oil well at a depth of 450 feet, near the Adamsville coal mines.

The East Brookfield Mining Co., Brookfield, N.S., have been organized to operate the East mine at North Brookfield. The company will spend \$50,000 in putting the plant of the Philadelphia mill in working condition.

The Department of Public Works, Fredericton, N.B., are inviting tenders for rebuilding Brigg's mill bridge in Wakefield, N.B.

A by-law has been passed at Lethbridge, N.W.T., granting \$11,000 for the erection of a school building.

The Miramichi Pulp Mill Paper Co. have acquired the property of the Sulphite Co., at Chatham, N.B., and will erect a large factory thereon for the manufacture of paper, etc.

G. D. Campbell & Co., lumbermen of Weymouth, N.S., have purchased the two mills and extensive timber limits of the Sissiboo Pulp Co., at Sissiboo, near Weymouth, N.S. The new owners will immediately put the works in operation.

The Sherbrooke Lumber Co., Sherbrooke, Que., will erect a sawmill at Barachois, N.B.

The Peat Co., Limited, Yarmouth, N.S., has been organized and will commence the manufacture of fuel. The following are the officers of the company:—President, R. Caie; vice-president, J. R. Wyman; secretary, Malcolm Booth; treasurer, E. F. Parker.

T. L. Orchard, Brandon, Man., will erect a building 120x80 feet, two stories high, at a cost of \$20,000.

H. Cater will erect a new pump factory in Brandon, Man.

The Rat Portage Lumber Co. are erecting a large addition to their mill in Norwood, a suburb of Winnipeg, Man.

The German club house at Winnipeg, Man., will be 86x46 feet, two stories high, and will cost about \$18,000.

The Eau Claire Light & Power Co., Calgary, N.W.T., will install an arc plant for lighting the streets of that town.

Messrs. A. & W. Melville, architects, are preparing plans for additions and alterations to the Brunswick hotel, Winnipeg, to cost about \$40,000.

John McRae, Winnipeg, Man., will erect a six story warehouse, 100x79 feet, at a cost of \$40,000.

Inspector Howe, of the Canadian Underwriters' Association, recommends for Winnipeg, Man., the immediate construction of a high pressure system of water mains for fire purposes only, with a complete system of new pumps and high pressure engines, the pumping station to be located on the Red river.

A water works system will be installed at Piucher Creek, N.W.T.

The Ames-Holden Co., Winnipeg, Man., will enlarge their warehouse by a two story addition.

The Manitoba Gypsum Co. will increase the capacity of their mill at Gypsumville, Man., to 20,000 tons annually.

A new St. John's College will be erected in Winnipeg, Man., at a cost of \$100,000.

The contract for the erection of the Provincial Agricultural building in Winnipeg, Man., has been awarded to Snyder Bros., Portage la Prairie, Man., at a cost of about \$100,000.

The City of Winnipeg will invite tenders for supply of the following pipe, etc.: 18 inch pipe, 16,000 feet; 15 inch pipe, 4,300 feet; 12 inch pipe, 18,000 feet; 9 inch pipe, 4,000 feet; 360 junctions,

18 in. by 9 in.; 300 junctions, 12 in. by 6 in., 300 single wall 6 in. slants; 300 double wall 6 in. slants.

J. A. Cameron, Glencoe, Ont., will erect a grist mill at Gainsboro, N.W.T.

R. A. Magee will erect a business block at Wolseley, N.W.T.

Three public school buildings will be erected at Kildonan, Man.

T. J. S. Skinner, Calgary, N.W.T., is inviting tenders for the erection of a six story building.

The Northwest Machinery & Iron Co.'s factory at Louise Bridge, Man., was destroyed by fire recently. Loss about \$12,000.

The Stewart, Nelson Co., Winnipeg, Man., have been incorporated with a capital of \$100,000 to manufacture agricultural implements, machinery, etc. The provisional directors include A. M. Stewart, I. C. Nelson and A. Andison, Winnipeg.

Messrs. Christie & Co., Winnipeg, Man., have been incorporated with a capital of \$40,000 to manufacture lumber, etc. The provisional directors include J. A. Christie, J. Dick and A. E. Howie, Winnipeg.

The Royal Grain Co., Winnipeg, Man., have been incorporated with a capital of \$50,000, to carry on a grain milling and elevator business. The provisional directors include S. W. Henderson, J. Henderson and G. H. Monkhouse, Winnipeg.

The city of Calgary, N.W.T., will install a street electric lighting plant at a cost of \$60,000.

The Dominion Elevator Co.'s grain elevator at Poplar Point, Man., was destroyed by fire November 22.

A by-law will be voted on at Winnipeg, Man., to raise \$100,000 for a new central police station.

The Mandeville Hotel and S. Marshall's implement warehouse at Elgin, Man., were destroyed by fire November 14.

The Children's Aid Society, Winnipeg, Man., will erect a new shelter at a cost of about \$17,000.

Building Inspector Rogers, Winnipeg, Man., stated that the building permits for the year had totalled over \$9,100,000, and that permits already were being taken out for buildings that will be erected in the early spring. The present year has been the most successful in the annals of the city and he looked forward to an even greater advance in 1905.

The Rat Portage Lumber Co.'s sash and door warehouse at Brandon, Man., was destroyed by fire November 15. Loss about \$20,000.

Messrs. Tees & Persee, Winnipeg, Man., will erect a new warehouse 240x66 feet at a cost of \$109,000.

The Colonial Elevator Co., Winnipeg, Man., will erect a grain elevator at Laug, Ont.

The Brandon Binder Twine Co., Brandon, Man., will increase their capital to \$200,000.

A by-law has been passed at Winnipeg, Man., granting \$400,000 for a municipal gas plant.

W. C. Schultz, was in Vancouver recently making preparations for the construction at Clayouquot Sound, B.C., of a lumber mill with a capacity of 200,000 feet daily.

F. T. Sherbourne, Vancouver, B.C., has been awarded the contract for the erection of warehouses on the new Canadian Pacific Railway wharves at Victoria, B.C., at a cost of about \$7,000.

Geo. Cody, Fernie, B.C., has been awarded the contract for the construction of the Morrissey bridge over Elk river, B.C.

F. M. Rattenbury, Victoria, B.C., has prepared plans for the erection of a two story office building 80x40 feet for the Canadian Pacific Railway Co.

The city of Rossland, B.C., will improve their water works system at a cost of \$50,000.

The Elk Lumber & Mfg. Co. will build another large saw-mill at Fernie, B.C. The mill proper will be 222x40 feet, and the planing mill 60x40 feet, with separate power house. An electric light plant will be installed in the mill. O. A. Robertson and F. B. Lynch, St. Paul, Minn., are president and secretary respectively of the company.

Messrs. P. Burns & Co., Vancouver, B.C., will erect an abattoir, cold storage pork-packing plant in that city at a cost of \$150,000.

Colonel Jas. McNaught, New York City, has under consideration the construction of a railway from Grand Forks, B.C., up the north fork of the Kettle river for a distance of fifty miles.

The Victoria Power Co., will take water from the Shawinigan lake near Vancouver, B.C. and the Koksilah river and will carry it by means of pipes to Mill Bay, B.C., where they will build a power house for the generation of electricity.

F. M. Rattenbury, architect, is inviting tenders for the erection of a three story hotel building at Oak Bay, B.C., at a cost of \$13,000.

D. E. Drew will install an electric lighting plant at Camborne, B.C.

The Ontario-Slocan Lumber Co., will erect a sawmill at Slocan, B.C.

The Horseshoe Power Co. have been organized at Phoenix, B.C., to develop power from the Kettle river above Canyon City.

The Edison Display Co. will erect a theatre building in Vancouver, B.C. at a cost of about \$70,000.

The Windermere Lumber Co. have been incorporated at Victoria, B.C., with a capital of \$20,000, to manufacture lumber, timber, etc.

The Barclay Sound Cedar Co., have been incorporated at Victoria, B.C., with a capital of \$50,000, to manufacture lumber, etc.

Messrs. Pilkington Brothers, Limited, St. Helens, England, incorporated with a capital of £500,000, have been licensed to

manufacture plate and sheet glass, bricks, tiles, etc., in British Columbia. A. G. Thynno, Vancouver, B.C., is their attorney.

O. Staples, Stillwater, Minn., will erect a lumber mill at Staples, near Cranbrook, B.C., at a cost of \$400,000.

A Nelson, B.C., engineering firm have secured the contract and begun the work of erecting a tramway for the Sullivan Group Mining Co. in East Kootenay. The tramway will have a total length of 6,000 feet and will extend from the mill to the smelter which the company are now erecting at Marysville, B.C. The capacity of the tram will be 500 tons of ore per day. The Sullivan Group Mining Co. was recently acquired by the Federal Mining Co. which have ample funds with which to place the mine and smelter on a paying footing. As soon as the tram is completed the smelter will be blown in and bullion turned out. There are, it is said, ample reserves of ore in the mine already blocked out sufficient to keep the smelter supplied with ore for a number of years.

The Kamloops Lumber Co., Kamloops, B.C., have commenced the construction of a new sawmill to replace the one destroyed by fire recently. The plant will cost about \$75,000 and will have an output of 20,000,000 feet of lumber per annum.

The waterworks system at Nanaimo, B.C., will be improved at a cost of \$25,000.

The Royal City Planing Mills Co., New Westminster, B.C., are erecting a new boiler house.

The Capilano Lumber Co., will rebuild their sawmill, which was recently destroyed by fire, seven miles from the mouth of the Capilano river near Vancouver, B.C.

Mr. J. Hanbury, manager of the Hanbury Mfg. Co., Brandon, Man., and the North Star Lumber Co., Cranbrook, B.C., will erect a large planing mill at Elko, B.C.

The Eva Gold Mines, Limited, Cambridge, B.C., will install a compressor to facilitate work on the Eva.

The total gold output of the Atlin, B.C. district this summer is estimated to be \$10,000 in excess of that of last year. It amounts to about \$600,000.

The Canadian Pacific Railway Co. will construct a line of railway from Golden, B.C., up the Columbia valley to Fort Steele Junction on the Crow's Nest Pass line.

The Brackman-Ker Milling Co., Westminster, B.C., will make extensive improvements to their plant and install new machinery.

When the "jump" spark is used for gas or gasoline engines, the arrangement for producing it consists of two electrodes insulated from each other. These are placed in the end of the cylinder at a small distance from each other. The secondary circuit of an induction coil is connected to these electrodes. In series with the battery and primary circuit of the induction coil is placed a contact operated by the engine, which makes circuit and breaks it at the moment ignition

takes place. The spark "jumps" across the gap between the two electrodes and causes the gas to ignite. This is known as the "jump spark." In the "make and break" spark igniter, one electrode is fixed and the other moves so as to come into contact with it at the proper time. A battery and spark coil are connected in series with the two electrodes. This kind of a spark is known as the "make and brake" spark.

In his report to the Mayor, C. H. Jones, chief smoke inspector of St. Louis, says that there has been a decrease of from 75 to 80 per cent. in the emission of dense smoke from plants using boilers. There are at present in the city 24 plants using smoke-consuming devices or else burning so-called smokeless coal. Suits have been instituted against 136 violators of the smoke-abatement law, most of which have resulted in fines being imposed. The inspector recommends that a law be passed requiring all firemen, many of whom are ignorant of the proper method of stoking and the use of smoke-consumers, to pass an examination similar to that to which engineers are subjected before receiving licenses.

ELECTRICITY.

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

The Westinghouse Electric & Mfg. Co., have secured an order for a 1,000 k.w. generator from the British Columbia Electric Railway Co., which is now being installed at the Goldstream power house which supplies Victoria with light and power.

The Canadian Niagara Power Co., Niagara Falls, Ont., will be the first of the three power companies now under construction on the Canadian side to generate electric power. The past week has seen the water of the Niagara river filling into their large receiving basin or forebay, and it is expected the electric machinery will be in readiness to allow the gates to be opened on one of the six large ten-thousand h.p. turbines during the first week of December.

The work of remodelling the electric light and power plant of the Alexandra Palace, Toronto has been placed in the hands of the Electrical Supervision Society, Toronto. A new generator will probably be installed and other material changes made. Manufacturers of supplies, lamps, switchboards, etc., are asked to communicate with the engineers.

The Tampico Electric Light Co., Tampico, Mexico, will probably arrange for the installation of a plant to supply water or purify present water for furnishing their electric light plant with the necessary supply.

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

The Kamloops Lumber Co., Kamloops, B.C., will install an electric lighting

plant to enable them to operate their mill day and night.

The Mount McKay & Kakabeka Falls Railway Co., have asked the council of Fort William, Ont., for a franchise for the operation of an electric street railway.

With a view to preventing a recurrence of the recent tragedy in the Sarnia tunnel, Chief Engineer Mountain of the railway commission, Ottawa, has been inspecting the Baltimore and Ohio tunnel and the New York subway. The former has a length of 7,000 feet, a thousand longer than the Sarnia tunnel, and a continuous grade of eight-tenths of 1 per cent. Engines operated by electricity, each weighing 160 tons, are used for drawing the traffic through the tunnel, so that there is no risk to human life from the escape of gas.

The Dominion Government will discuss with the Washington authorities the advisability of appointing an International Commission to consider the effect upon the level of waters along the boundary of power development works and other enterprises. There are said to be at least three instances where Canada has cause of complaint on this score by reason of works constructed in the United States. One of these is on the St. John River, N.B., the second is at the Soo, and the third is in the State of Minnesota. The construction of the Chicago Canal was perhaps a case where Canada might have intervened, in view of the possible serious diminution of the lake level. However, there is every prospect that if the two countries take up the question in a practical manner and appoint expert engineers to make a careful investigation, scientific data will be obtained upon which to base future action. The United States is believed to be favorable to this course, and the view here is that the Canadian Government will also be found willing when the proper time arrives.

The town of Darjeeling, British India, will introduce electric lighting.

Civil Engineer A. Dini, Cremona, Italy, will furnish particulars concerning the erection of large electric works at Casano. It is also proposed to build an electric railway between Cremona and Milan.

An electric cable railroad will be built from Sinaya to Biful-cu-dor, Roumania.

The Licenciado Benjamin Barrios, city of Mexico, have received a concession for building an electric tramway between the capital and the city of Puebla.

The electric street car system in the city of Salzburg, Austria, will be extended.

The agents of the city of Shanghai, China, 63 Leadenhall Street, London, England, will furnish particulars concerning the building at Shanghai of an electric tramway line 24 miles in length.

The construction of the following railway lines are projected in Japan: From Okayama to Uno Bay, 18 miles in length, from Gifu to Nagasa, 43 miles. Electric and elevated railroads are also being built in Japan.

The Southern Mahratta Railroad Co., East India, will receive at their office, Westminster 46, Queen Ann's Gate,

London, S.W., proposals for supplying 20 locomotives with tenders.

The municipality of Almendralejo, province of Badajoz, Spain, will introduce electric lighting.

The towns of Beaumaris, Wales, and Andover, England, will erect electric-lighting plants.

The town of Guirgiu, Roumania, will construct waterworks, and the town of Botoschina an electric lighting plant.

The Antofagasta and Bolivia Railway Co., will build a branch line into the mines of Collahuasi in Chile.

A telephone system is being installed at Crystal City, Man.

An electric lighting plant will be installed at Killarney, Man.

The new Carnegie Library building in Winnipeg, Man., will be lighted with 350 16-candle power electric lights.

FUEL.

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

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

The Burton, Beidler & Phillips Co., Cleveland, Ohio and Detroit, Mich., have been shipping considerable quantities of bituminous coal into Canada. They are selling agents for the Ridgway-Burton Co., the Eastern Ohio Coal Co., the Kenyon Coal & Mining Co., the Panhandle Coal Co., the Ohio Valley Coal Mining Co., and the Phillips Coal & Coke Co., all well-known American concerns. They are now operating eight thoroughly equipped mines with the best railway facilities and connections, and have a daily output of 2,500 tons of the best domestic and steam coal and coke for manufacturing purposes. The concerns are well equipped for handling Canadian orders. Mr. J. P. Burton is president of the company; T. F. Beidler vice-president; and J. J. Phillips, treasurer and general manager. Mr. A. J. Nebe, connected with the Detroit office of the company, is travelling representative for Canada.

A few years ago it was thought that the lignite coal, of which there are extensive deposits in the Souris district of Manitoba, would never come into general use, but this supposition, like many others regarding untried things, turned out a fallacy. There is great activity in the district this year, and the industry promises to be one of the most important in the country. At the present time about 350 men are employed in the four mines that are being worked. Of these the Souris Coal Mining Co., who own all the original properties opened up some years ago, employ 210 men. The Souris coal has been proved to be most serviceable for domestic purposes and also for steaming, and the demand for it is rapidly increasing throughout the whole country. On account of its cheapness and the many good qualities it possesses, when people understand how to use it, the sales in Winnipeg

have increased an hundredfold during the past two years.

The British Columbia Mining Record reports that a member of the Pittsburg firm of coal mining engineers, who are installing a plant for the International Coal & Coke Co., at Coleman, N.W.T., stated:—"The bituminous coal measures of the International Coal & Coke Co., are the largest I have ever seen. In Pennsylvania the largest seam in the famous Connellsville mine is nine feet thick, while one of the seams at Coleman is fully eighteen feet in thickness. The Coleman coal is free from slate and other foreign substances. The output of the International Co. will be limited only by the number of plants the company builds. The measures at Coleman are especially adapted for cheap mining for several generations. Unlike the Pennsylvania coal, it can be mined and extracted by gravity. As the mines will be self-draining no pumping plant need be maintained."

The manager of the Canadian Pacific Railway coal mines and smelter at Banff, N.W.T., makes his first report of operations in the anthracite mines as follows:—"We are shipping more than two hundred tons daily of Banff hard coal. The demand has been so much greater than expected that we shall send only a small tonnage to Manitoba, the bulk going to the Territories. The expenditures by the Canadian Pacific Railway at Banff have already reached several hundred thousand dollars, and the total capital invested will probably be in the neighborhood of \$1,000,000. Changes are being made in the way of larger grate areas and stronger draughts, so that in another year a large part of the small coal which is now being wasted will be utilized for steam purposes. This will enable the company to reduce the prices on the domestic sizes."

The Klondike coal output for the year just ended will aggregate 6,000 tons, more than double that of any previous year. Over \$50,000 have been expended this season at the mines in the way of permanent improvements.

The Pittsburgh Coal Co., Pittsburgh, Pa., were much gratified when apprised that they had been awarded a grand prize for the most attractive coal exhibit at the Louisiana Purchase Exposition, and also a gold medal for the best coal, regarded from the view point of chemical constituents and steaming and gas-making qualities.

During the year ending June 30 last, the total amount of soft coal imported into the Dominion was 4,053,900 tons, of which 3,930,665 tons came from the United States and the balance of 123,235 tons from Great Britain. In the same period 2,275,018 tons of hard coal came into Canada, of which 2,261,601 tons were from the United States and the remainder of 13,417 tons from Great Britain. Thus with soft and hard coal combined the total imports for the year under notice were 6,328,918 tons, of which 6,192,266 tons were received from the United States, and the balance of 136,652 tons from Great Britain. In the corresponding period ending June 30th.

1903, 3,511,412 tons of soft coal were imported into Canada, of which 3,421,850 tons came from the United States and 89,562 tons from Great Britain. The hard coal imported totalled 1,456,713 tons, 1,394,675 tons being from the United States and 62,038 tons from Great Britain. The complete imports for the year were 4,968,125 tons, of which 4,816,525 tons were sent from the United States and the balance of 151,600 tons from Great Britain. It will thus be seen that there was the large increase of 1,360,793 tons in 1904 as compared with 1903, of which 1,224,141 tons affects the United States.

The operations of the Nova Scotia Collieries, Limited, during the past summer at St. Rose, N.S., have resulted most satisfactorily. With the No. 1 Calyx government drill, the company were successful in proving two valuable seams of coal. At a depth of 87 feet 1 inch, the drill struck, and bored through a seam of bright bituminous coal 4 feet 1 inch thick. At 545 feet 8 inches, a second seam 8 feet 7 inches thick was struck. The general manager, J. A. Sands, has gone to England on matters connected with the future development of the property.

Coal briquettes form 10 per cent. of the fuel used on the Paris, Lyons, and Mediterranean Railway, being made of slack and dust from the Company's mines. Steam can be raised more quickly with the briquettes than with other fuel.

COAL MINING IN BRITISH COLUMBIA.

We extract the following from the recent reports of the British Columbia Minister of Mines:

Starting at the Rocky Mountains, the eastern boundary of the Province, this range from the United States boundary northward, has been for miles proven to be coal-bearing, and enormous areas of the known coal fields have already been sufficiently developed to establish their value. While a large part of the known and more accessible portions of this area are now held by the Crow's Nest Pass Coal Co., there remain portions of it still unprospected and undeveloped, and there is every reason to believe that future prospecting will prove the possibly productive area to be practically of unlimited extent. That the coal in the Rockies extends still further northward, for a considerable distance, is evidenced by the now producing mines near Banff, N.W.T., on the Canadian Pacific Railway, though these are on the eastern slope, and consequently not in this province.

Seams of "good bright coal," varying in thickness from six inches to two feet, were observed by Dr. Selwyn at various points in the Peace River basin, near the eastern boundary of Cariboo District, more especially at the head of the canyon on Peace River, Hudson's Hope, and on Pine River, near Table Mountain. Concerning these observations Dr. Selwyn says:—"Only one of these can be considered of any economic value, but it is quite likely that there are others in the region which were not observed by us."

Continuing still farther northward, and to the west, coal is again met with in the

Omineca District, but so far from a market as to be at present of little commercial value. F. W. Valleau, Gold Commissioner for this district, states that coal has been found some eight or ten miles south of the Omineca River, where it flows into the Peace River; and, to quote from his description, "it breaks with a conchoidal fracture; I have lighted a piece of it in the flame of a candle, and it continued to burn with smoky flame, leaving little ash." This would indicate a cannel coal or some other of the hydrocarbons high in volatile matter.

Mr. Valleau also states that workable seams of coal occur in the Bulkley and Babine River valleys and intervening country, several of which seams he has personally seen. Some practical coal miners prospecting in this region took some of the coal found there down to Nanaimo, where it was reported as having good coking properties.

Proceeding westward, coal has been found in the valley of the Skeena River in various places, and is said to have been found in workable seams. But little development has been done, and the accounts are not very definite as to the results obtained.

Discoveries of coal have been made in the valley of the Fraser River, but the seams so far reported have been too small for profitable working, though sufficient to stimulate prospecting.

There are known coal deposits in the vicinity of Princeton, Similkameen. The Vermilion Forks Mining Co. have partly opened up two seams here, these being about eleven feet and fourteen feet, respectively, in thickness. On the west side of the Tulameen River, opposite Princeton, coal is found in the bank. This shows that the valleys of the Similkameen and Tulameen had at one time been a coal basin. Development of coal beds at Ashnola, four or five miles above Princeton, proves that the basin extends up the Similkameen River. The active search for coal in this district did not begin until 1901. Since then, however, much prospecting has been done with the diamond drill and in other ways, and coal is reported as occurring over a large area of the district. Coal has also been found at Collins Gulch, a small stream entering the Tulameen about twenty miles above the junction of that river with the Similkameen. There are known to be coal deposits in the Nicola Valley, underlying the greater part of the low flat near Nicola. Again, at Kamloops, coal occurs, and there are other sections of the Lower Mainland in which there are indications of the presence of coal.

Prior to the commencement of production in 1898 at the Crow's Nest collieries, the Vancouver Island collieries were the only producers in the Province. They are still the largest shippers, the Crow's Nest collieries not yet producing nearly one-half of the total output of the Province. The output of the Vancouver Island collieries was less last year than for several years, owing partly to labor troubles and partly to their large market for the sale of coal in California having been invaded by local fuel in the form of oil, which has, at least temporarily, lessened the de-

mand for coal. The effect is shown in the reduced exports to California, whence 673,524 long tons of Vancouver Island coal were shipped in 1902, and only 400,713 in 1903. The total output of these collieries in 1903 was 860,775 tons, as against 1,247,665 tons in 1902. A feature of last year's developments was the discovery of a seam of anthracite coal at Comox, production from which has since been commenced.

On the north-west coast near Quatsino Sound coal has for years been known to exist, this area having been reported on by the Geological Survey in 1868, and again by Dr. George M. Dawson in the Survey Report for 1886. Seams of coal four feet in thickness were then reported and some little development work was done. In 1897 the West Vancouver Commercial Coal Co. began development of certain areas in the district, and was reported to have met with considerable success.

On Graham Island, one of the Queen Charlotte group, anthracite as well as bituminous coal, has for many years been known to occur in considerable quantity, which deposits have been the subject of reports by the Geological Survey, in 1872-3 by Mr. Richardson, and in 1878-9 by Dr. G. M. Dawson.

The Queen Charlotte Coal Mining Co. spent a large sum of money in the development of their property near Skidgate Inlet, but abandoned the enterprise in 1872. According to the best information obtainable the coal when first opened up was from two to three feet thick, of good clean Anthracite, and as the tunnel progressed the seam widened to six feet, but further it decreased again until it was one foot six inches at the face, at which point work was stopped.

OPPORTUNITIES.

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

A concession has been granted to the Empresa del Ferrocarril Oesta de Buenos Aires to extend two of their lines of railway about 50 miles each. All material, etc., to building and equipping these new roads will be admitted into the Argentine Republic free of duty.

The Government of Cape Colony, South Africa, contemplate the erection of cold storage depots in all the ports and in the principal trade centres in that part of the world and the purchase of a large number of refrigerator cars for their railroad lines.

The project of the Compania de Ferrocarril Frances of Buenos Ayres, Argentine Republic, to build a number of narrow gauge railroad lines in the provinces of

Buenos Ayres and Sante Fe, has been approved by the Argentine Senate.

Messrs. Lion & Co., San Paulo and Santos, Brazil, are interested in importing hardware, agricultural implements and sanitary goods.

The La Anglo-Mexicana, S. A., represented by Lic. Carlos Aguirre, Jimulco, Coahuila, will build an additional plant for manufacturing rubber from the guayule plant at a cost of \$200,000.

Juan Boarrie, city of Mexico architect is preparing plans and specifications for National Theater building which the government propose erecting at a cost of \$3,000,000.

The Compania Proveedora de Articulos Extranjeros, S.A., City of Mexico, have been organized with a capital of \$30,000, to act as manufacturers' agents. Mr. Lomeli, is president and M. Vazquez, manager.

The K. K. General Direction der Tabaks-Regie, Vienna, Austria, will receive tenders for the delivery of 69,000 packages of wire tacks, also of 80,000 reams of brown wrapping paper.

The Association des Industriels de France, No. 3 Rue de Lutec, Paris, have offered a prize of \$1,500 for the best electric current meter which is submitted to them by December 31 next.

The city of Bloemfontein, Orange River Colony, South Africa, has voted \$500,000 for the construction of a bridge.

The Government of Chile projects the building of a large rolling mill. Address the Ministerio de Industria y Obras, Publicas, Santiago, Chile, for further information.

Eleven electric cranes are to be contracted for by the city of Ghent, Belgium.

Proposals will be received at the Bourse in Brussels for supplying the Belgian railroads with 64 passenger cars and 320 freight cars.

The following named firms in Buenos Aires, have received concessions for constructing new lines of rail in Argentina. Rafael Arranda, Christophle y Compania, Compania de Ferrocarril Frances.

The Canadian Westinghouse Co., Hamilton, Ont., have sold to the Hamilton Cataract, Power, Light & Traction Co., for use in their Victoria substation at Hamilton, Ont., two motor-generator sets, each consisting of a synchronous motor and a direct current generator. The motor-generator sets will be of two bearing type, the generators delivering direct current at 550 volts to the railway system, and each being rated at 750 k.w. The synchronous will take two-phase current at 8,000 alternations and 2,400 volts, and will be rated at 1,350 h.p. The excess of capacity in the motors is provided so that they may be used for raising the power factor of the transmission system. Power is taken through lowering transformers from the high tension transmission line from the De Cew Falls station of the company. These motor-generator sets will be built at the works of the Westinghouse Electric & Mfg. Co., East Pittsburg, Pa.

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.

Chas. J. Boguc, 213 Centre St., New York City, manufacturer of photo-engraving lamps, has issued a neat folder containing customers' opinions of same, which serve to illustrate the excellent service obtained from them.

Messrs. Sheldon & Sheldon, Galt, Ont., have sent us their new illustrated catalogue relating to steel pressure blowers, which contains some very fine engravings of the different parts of these blowers and their different uses. The company have installed a large number of this special type of blowers and would be pleased to send their catalogue to any others interested. They also manufacture cupola blowers, exhausters, forges, heating and ventilating appliances, etc.

The Canadian General Electric Co., Toronto, have sent us Section 1 of their new electrical supply catalogue relating to annunciators, bells, house supplies, etc. Views of the company's head office at Toronto, their Peterboro works and Davenport works are shown on the cover, which is an excellent work of art.

The Broderick & Bascom Rope Co., St. Louis, Mo., have sent us a neat folder entitled "A Unique Exhibit at World's Fair" which contains a fine engraving of their steel rope exhibit.

The I. P. Morris Co., Port Richmond Iron Works, Philadelphia, Pa., have sent us Bulletin No 1 relating to turbines and centrifugal pumps, which contains some excellent views of their works and machinery. Different views are shown of one of the 10,000 h.p. turbine units for the Canadian Niagara Falls Power Co., and the 10,500 h.p. turbine installed for the Shawinigan Water & Power Co., Shawinigan Falls, Que. Those interested should write for a copy of this handsome bulletin.

The Sackett Wall Board Co., 116 Nassau St., New York City, represented by R. E. H. Buckner, C. M. E. Toronto, have issued a neat folder relating to Sackett plaster board and which also contains views of their mills at Grand Rapids, Mich., and Garbutt, N. Y.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have sent us a copy of their booklet entitled, "Westinghouse Lightning Arresters," which contains valuable information regarding same.

The Pittsburg Coal Co., Pittsburg, Pa., have one of the handsomest souvenirs of the thousands that are being distributed at the Louisiana Purchase Exposition. It is a beautiful booklet with dark grey covers, printed in black and green and red, and containing a brief sketch of coal and coal mining, statistics relating to the industry, and many superb half-tone plates. Plans and models of the mines, tipples, the homes of the miners, miners at work, views about the mines, loaded

trains of coal, full-page views of the docks at Chicago and other western points, together with valuable statistics of coal production and points of interest connected with the mining of coal make up a souvenir that many visitors to the Pittsburg Co.'s model mine in the Mines and Metallurgy Building take away as a lasting souvenir of their visit. Magnificently printed on superb paper, it is a unique reminder of the exhibit it is designed to commemorate.

Modern Practice of Air Compression is the title of a new catalogue issued by the Sullivan Machinery Co., Chicago, Ill. It is beautifully printed and illustrated, showing the application of compressed air to all kinds of machinery, and containing detailed diagram descriptions of different types of compressors, and many valuable tables and other useful information in relation to compressed air practice.

PERSONALS.

Mr. Willard N. Sawyer, Pittsburg, Pa., has been chosen the new general manager of the Lake Superior Corporation at Sault Ste. Marie, Ont., to fill the vacancy left by the death of Mr. Cornelius Shields. Mr. Sawyer is a member of the firm of Wellman, Seaver & Morgan, one of the largest engineering concerns in the United States. He is a steel expert and contractor of international repute, and is known to many Canadians interested in the steel trade. His firm have branches in many American cities, and large works at Pittsburg and Cleveland, Ohio.

On Saturday evening, November 19, the International Correspondence Schools gave their monthly lecture and entertainment in the Temple Building, Toronto, for the benefit of their students and friends. It has heretofore been the policy to make these evenings "smokers," but for this occasion the smoke was cut out, and ladies were invited. The change proved to be worth while, as the large hall on the sixth floor was completely filled with both ladies and gentlemen. The principal feature on the programme was an illustrated talk on "The Toronto-Niagara Power Development" given by Mr. K. L. Aitken, Chief Engineer of the Electrical Supervision Society, Toronto. The December evening will, no doubt, be found as enjoyable as the one just presented.

J. W. Duntley, president of the Chicago Pneumatic Tool Co., Chicago, Ill., has gone on a business trip to Europe, the object being to open the company's new plant in Scotland. Mr. Duntley announced that the company had made a contract to supply pneumatic tools to the largest shipbuilding yard on the Clyde and a three years' contract with the German Government to supply its shipyards with tools.

The convention of the National Founders' Association, held at Cincinnati, Ohio, November 17, adopted a resolution, announcing their continued belief in the principle of arbitration and disapproval

of strikes and lockouts, and instructing officers and the administrative council to favor arbitration with employees, either singly or collectively. There was general concurrence in the statement of President Frank of Pittsburg, that the "Iron Molders Union of North America that for 14 years had been conservative and fair, is beginning to be controlled by a radical element," so that questions of agreement and arbitration are of paramount importance. The following officers were elected: President, A. C. Pessano, Detroit, Mich.; vice-president, C. Berningham, Kingston, Ont.; secretary, F. W. Hutchins, Detroit; commissioner, O. P. Briggs, Detroit. The administrative council includes James McNaughton, Dunkirk, N. Y.; John M. Taylor, Guelph, Ont., and G. W. Watts, Toronto.

Mr. O. L. Remington, representing Messrs. Wm. McLean & Co., manufacturers' agents at Melbourne, Australia, who has been visiting the St. Louis Exposition, has proceeded to England and the continent, and will return to Astor House, New York City, about the middle of December, when he will be pleased to negotiate with any manufacturers desiring an Australian connection.

Mr. H. M. Whitney, of Boston, Mass., president of the Newfoundland Timber Co. and Mr. B. F. Pearson, Halifax, N. S., have been to Newfoundland to complete the transfer to Sir Alfred Harmsworth, London, England, of a property purchased on that island. The Harmsworths, publishers, will erect pulp mills there at a cost of \$500,000.

Two interesting papers on "Boiler Waters and Boiler Compounds" were read before the meeting of the society of Chemical Industry, held in Toronto last week by Prof. J. H. Bowman, London, Ont., and Mr. A. M. Wickens, Toronto. Prof. Bowman dealt with the chemistry of boiler waters, and showed that the scale-forming constituents could be removed in various ways. Mr. Wickens said that boilers were not regarded in the proper light and engineers were not consulted as to the most advantageous method of installation. Quack remedies were too common and the underlying principles of the evaporation of water were not properly understood. Neither were the accumulation of scale and foreign matter resulting in considerable waste in fuel. The heating and the purification of feed water had not received attention enough and the evils resulting from this caused much trouble and expense. Among the gentlemen who took part in the discussion were Mr. A. P. Taylor, Prof. Lang, Mr. Vanderlinde, F. B. Allan, J. M. Sparrow, Dr. Kenrick, Dr. Ellis.

The Port Hope Board of Trade, which has been dormant for some time, was revived last week at a meeting attended by practically every business man of that town. The Port Hope Board of Trade was at one time a particularly efficient body, which performed most valuable service for the town, and the speakers at last week's meeting expressed a determination to render the reorganized board more useful than ever. A. B. Barker, manager of the Bank of Toronto

there, was the organizer of the movement; and R. Gray, the secretary. Officers were elected as follows: Hon. presidents, H. A. Ward, M.P., Dr. I. B. Powers and G. M. Furby; president, A. B. Barker; vice-president, R. A. Mulholland; secretary, R. Gray; treasurer, D. M. Muir. Speeches were delivered by the newly elected president, Mr. Barker, by H. T. Bush, manager of the Standard Ideal Sanitary Mfg. Co.; by F. J. Travers, manager of the Canada Radiator Co.; E. M. Thurber, manager of the Nicholson File Works, R. A. Mulholland, H. Barrett and others.

Mr. John Bertram, president of the Bertram Engine Works, Toronto, and one of the best known men in Ontario, died November 28. The late Mr. Bertram was born 67 years ago in Scotland, and came to Canada when a young man. Locating in Peterborough, he engaged in the hardware business, and 18 years ago removed to Toronto, where he conducted a similar business. Subsequently he bought out the Doty Engine Co., and reorganized it under the name of the Bertram Engine Works. He later became prominently identified with the lumbering business, and was president of the Collis Inlet Lumber Co. He took a deep interest in scientific questions, and was a regular attendant at the meetings of the Canadian Institute. He was also an ardent forester, and is the author of several interesting pamphlets on the forestry question. He had also for years made a careful study of the transportation problem, and at the time of his death was chairman of the Dominion Transportation Commission.

It is probable that Mr. Justice Killam of the Supreme Court of Canada, at Ottawa, will be appointed chairman of the Railway Commission.

Messrs. Wright & Dallyn, Hamilton, Ont., inform us that hereafter their business will be conducted under the name of Dallyn, Jardine & Co. This company are the Canadian representatives of Messrs. A. Klipstein & Co., manufacturers of anilines, dye-stuffs, etc., New York City.

It is reported that the Hon. A. G. Blair, will accept the position of president and manager of the Toronto Roller Bearing Co. The present officers of this

company are W. B. McMurrich, K. C., president; A. E. Henderson, secretary; A. Ogden, treasurer and R. I. Henderson, manager.

The French Consular report states that Canada imports 220,540 tons of cement of which one-half comes from the United States, while England, Belgium, Germany and France supply the other half. About one-third of the imports go to British Columbia.

THE CANADA CAR CO.'S PLANT.

The car manufacturing plant now being erected by the Canada Car Co., recently organized with a capital of \$3,000,000, is situated at St. Henri, near Montreal, between the Grand Trunk Railway and the Lachine Canal, and is in close proximity to the Canadian Pacific and the Intercolonial railways. The site covers 50 acres, of which there will be about 7 acres of buildings, so grouped that extensions to each and every department may be economically made in the future. The buildings, which will be of steel, with outside walls of concrete or brick, covered with gravel roofs, are arranged in two groups, with the power house, storehouse and office building separate from the main structures. One group consists of the machine shop, brass foundry, forge and smith shop, gray iron foundry and wheel foundry, while the second group embraces the planing mill, matching room, cabinet, pattern and carpenter shops, trimmers' and upholsterers', freight car erection, passenger car erection and wheel, axle, truck and bolster shops. Contiguous to this group will be the passenger and freight car paint shops. Ground has already been broken and foundations are well under way. The floor area of the various shops is as follows:

	Feet.
Machine shop.....	129x 70
Brass foundry.....	86x 70
Forge and smith shop.....	301x 70
Gray iron foundry.....	215x 70
Wheel foundry.....	215x184
Planing mill.....	387x 70
Matching room.....	236x 70
Cabinet, pattern shop and carpenters' department....	236x 70
Trimmers' and upholsterers' shop.....	172x 70
Freight car erection shop.....	301x 70
Passenger car erection shop....	301x 70

Wheel and axle and truck and bolster shops.....	301x 70
Passenger car paint shop.....	301x 70
Freight car paint shop.....	322x 70
Store house.....	120x 80

Most of the shops will be served by electric overhead cranes, and tracks will be laid throughout such shops as require them, and throughout the yard, so as to entail the minimum amount of movement. Electric power will be used wherever practicable, many of the machines being driven by separate motors. Large machines will be driven by separate steam engines, while the smaller machines in groups will be driven from shafting. Compressed air will be piped throughout the plant to operate riveters, reamers, rivet furnaces, etc.

The plant, which will be entirely self contained, will manufacture everything from the raw material, lumber and steel. The initial capacity of the shops will be about ten passenger cars per month and 20 freight cars per day, with their corresponding trucks. While wooden cars will be the first product, provision is being made by the company to manufacture composite, wood and steel, and all steel cars, pressed steel or structural shapes, street cars and special types of trucks and bolsters, and other specialties used in car building. The methods of manufacture of the Pressed Steel Car Co., will be closely followed, and their patents will be used by the Canada Car Co.

The situation of the plant on railroads and canal will enable shipments to be made and received with great facility, and especially will the plant be able to take care of foreign work, as vessels can load up at the Car Co.'s docks and deliver to foreign ports without breaking bulk.

The president and general manager of the company, W. P. Coleman, has offices at 529 Board of Trade Building, Montreal. He is assisted by N. S. Reeder.

THE BRITISH COLUMBIA LEAD INDUSTRY.

The lead industry of the Kootenays has been working along under a heavy burden of difficulties for some time past, but the inauguration of a bonus on lead mined and refined in Canada, and on lead mined in Canada and refined in foreign countries has



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 Emery Wheels**
 and
**Grinding
 Machinery**

CANADIAN CORUNDUM WHEEL CO., - Hamilton, Ont.

DRILLS AND LATHES

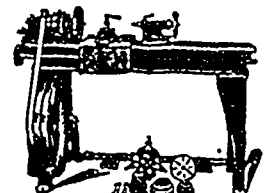


11" DRILL.

We build a full line of Upright Drills from 12 inch to 31 inch.

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given it an impetus. The stimulus, though not all that was hoped for, has caused the reopening of many of the mines, more particularly the St. Eugene mine, the greatest lead-producing property in Canada, and the further development of a great many others the owners of which had become disheartened at the state of things, and has caused the hardy prospector to locate and begin development on many prospects which in the near future may prove to be good mines.

The most of the lead mines that are now producing in the Kootenays are shipping to the smelter at Trail, B.C., with the exception of the St. Eugene, which is shipping some of its product in bond through the United States to Germany.

The smelter at Trail disposes of its products in various ways. Some of the lead bullion is shipped to San Francisco to the Selby Smelting & Lead Refining Co., its pure silver bullion is shipped to New York and Shanghai, China; and its gold bullion is shipped to Seattle, Wash., and New York.

One item of importance to the smelting works is the manufacture of lead pipe. Additional interest is added to the lead pipe branch of the smelter by reason of the fact that the product is the first pipe made in Canada from Canadian lead.

There are a number of smelters, notably those at Pilot Bay, Golden, and Marysville, which are not working, although the Marysville smelter is expected to be in working shape late this fall, to handle the product of the Sullivan, another large mine, in which it is stated 300,000 tons of ore are already blocked out and in sight.

CALIFORNIA.

The Chicago & North Western Railway has issued a new publication entitled "California." It contains a beautiful colored map of the state, a list of hotels at California tourist resorts with their capacity and rates; and a most interesting series of pictures showing California's resources and attractions. The prospective visitor and settler should be in possession of a copy of this profusely illustrated folder. Sent to any address on receipt of two cents in stamps. Low rates from all points. B. H. Bennett, 2 East King St., Toronto, Ont.

IN "DARKEST AFRICA."

The captain of a steamer on the Upper Congo, who has for seven years been engaged as foreign explorer, traveler and scientist, writing to a friend in the Dixon Co., has the following to say about Dixon's Graphite Products for the foreign trade:

"I believe that if your company would make a push for the African trade they would find a great market here in cannibalistic Congo for many of their graphite products.

"We have some fifty to one hundred millions here who would be very glad to make use of Dixon's stove polish and paint for personal adornment, very much as the ladies in England and the United States use rose chalk and various other cosmetics. There would be a further advantage here in Darkest Africa, because the native would use the materials from crown to toe, and the custom here demands that this personal adornment shall be made daily. Fashions

rule here the same as in foreign countries.

"At the present time pulverized charcoal mixed with palm oil is largely used. This, however, finishes up the native in what painters call 'flat finish' and, if one of the belles here should start the fashion of a plumbago finish, it would certainly be all the rage. If your people would like my aid in this line, a surprise may be awaiting you."—Graphite.

WESTINGHOUSE ELECTRICAL MACHINERY.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have recently accepted a number of important orders for electrical machinery, including the following:

J. E. Henry & Sons, Lincoln, N.H., two large induction motors for use in their pulp mill. The larger motor is a type F, rated at 600 h.p., and will be supplied with three-phase current at 400 volts and 3,000 alternations. The motor will be direct connected to two 3-pocket pulp grinders and will run at a speed of 230 revolutions per minute. The smaller motor is of the type C constant speed and is rated at 300 h.p. It will also be connected to a pulp grinder and will run at a speed of 205 revolutions per minute. These motors are ordered in addition to a large number of machines which have been purchased from the Westinghouse Co. for this paper mill. Twenty-four induction motors and four 350 k.w. alternators, with exciters, switch-boards, transformers and detail apparatus have been ordered, and the greater part of these have been delivered. The Henry & Sons' mills

TO THE VARNISH BUYER

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

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

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

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

have a capacity of about 60 tons per day. They manufacture news, high grade bag and manila paper, and their mills are models of the most progressive equipment and methods. This is one of a large number of paper and pulp mill equipments which have been installed by the Westinghouse Electric & Mfg. Co., whose experts have made a special study of this class of work and have been extremely successful.

The Westinghouse Co. have also sold to the Pennsylvania Railroad Co., double motor equipments for 122 cars, with Westinghouse multiple unit control for these cars and for 61 trailers. These equipments will be used by the Pennsylvania Co. for their Long Island suburban traffic, and will be put into operation next spring. The motors will be of the latest Westinghouse type, with a rating of 200 h.p. each. They will embody the most modern ideas in both electrical and mechanical design, and will possess an extremely liberal over-load capacity. The Westinghouse Co. have been very successful in the design of railway motors, and in the design of this equipment will undoubtedly maintain their very enviable reputation.

The machinery for the Long Island power plant which is now being installed, is supplied

by the Westinghouse Co., and will include three turbo-generators, each having a capacity of 5,500 k.w., as a notable part of the plant. Westinghouse, Church, Kerr & Co., consulting engineers, are in charge of this installation.

The Westinghouse Co. have also sold to the Transit Development Co., Brooklyn, N.Y., a large amount of electrical apparatus, including the complete equipment of transformers, switchboards, and rotary converters for ten sub-stations which will be installed by the Brooklyn Co. on their suburban lines. The order includes thirteen three-phase rotary converters, each being of 1,000 k.w. capacity with direct current voltage of 550; 33 transformers of 400 k.w. capacity and 12 of 200 k.w. capacity. These transformers will be of the air-blast type, taking current at 6,300 volts and delivering it at about 290 volts. Complete switch-board installations will also be furnished by the Westinghouse Co. in all these sub-stations.

Power from generators of the Brooklyn Heights Railroad Co. will be delivered to the sub-stations at 6,300 volts, 3,000 alternations, three-phase. The contract specifies that shipment shall begin February 1, 1905, and shall be complete one year later.

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

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Fort William, Ont.

Hamilton, Ont.

Lindsay, Ont.

Orillia, Ont.

Peterborough, Ont.

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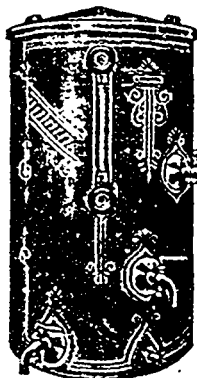
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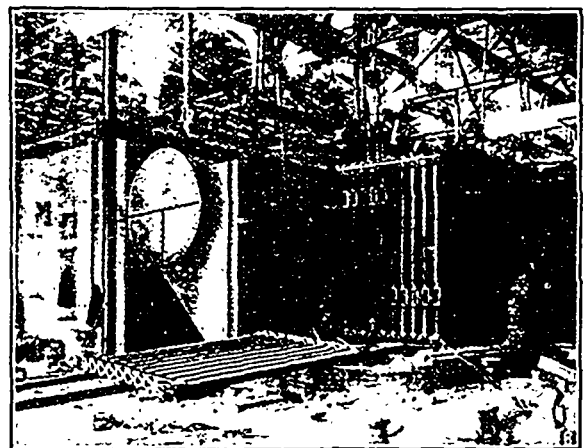
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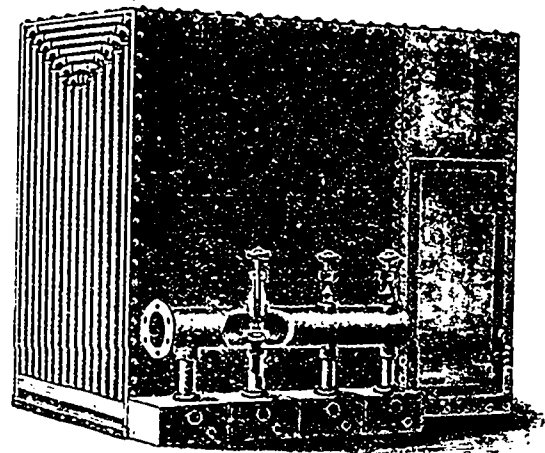
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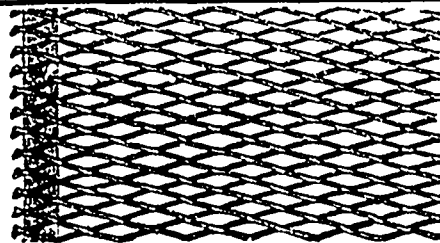
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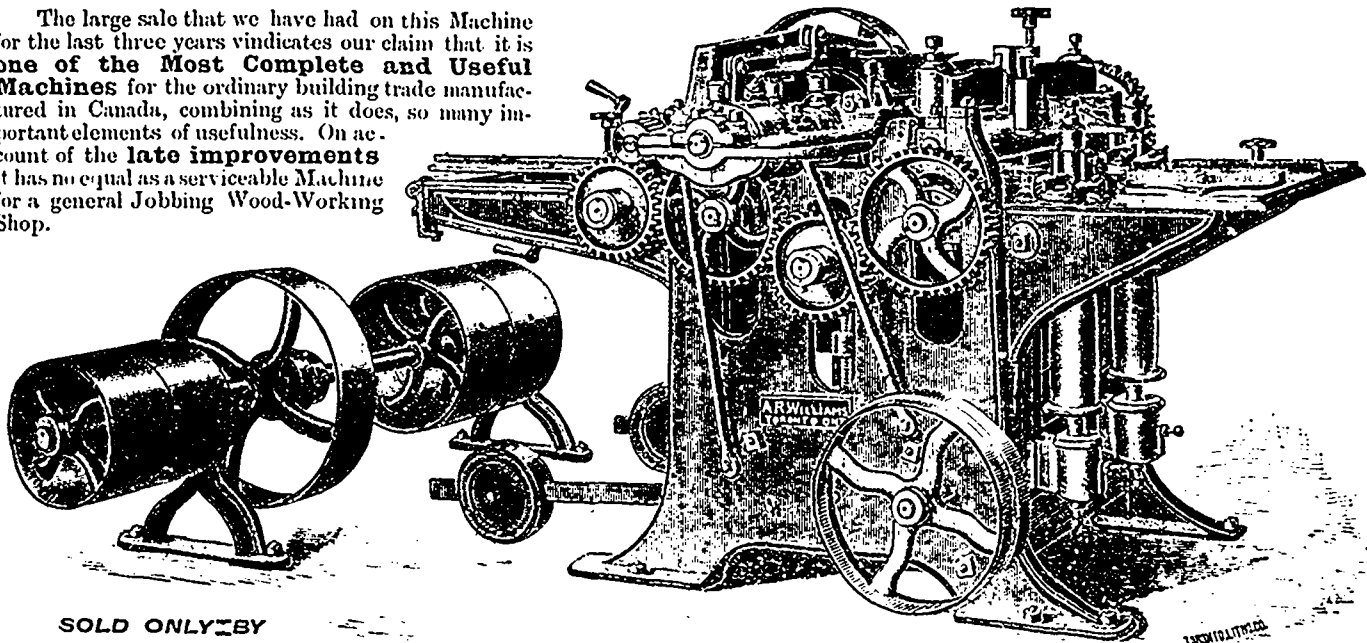
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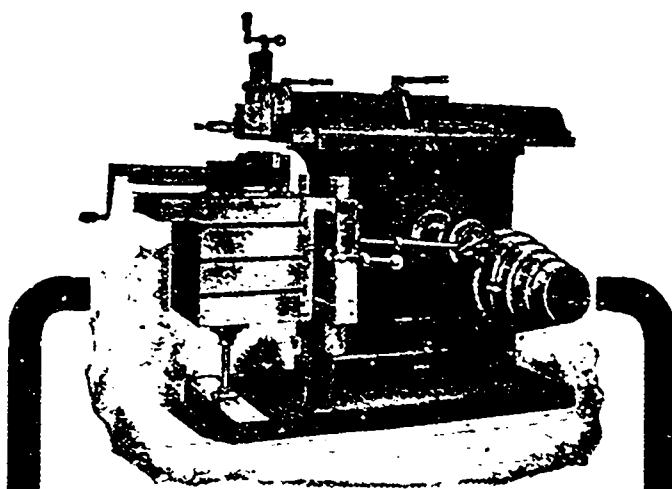
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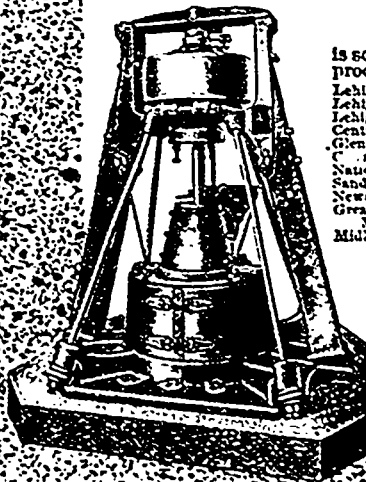
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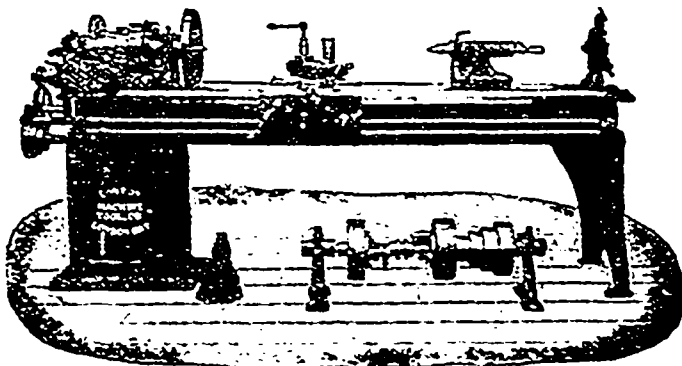
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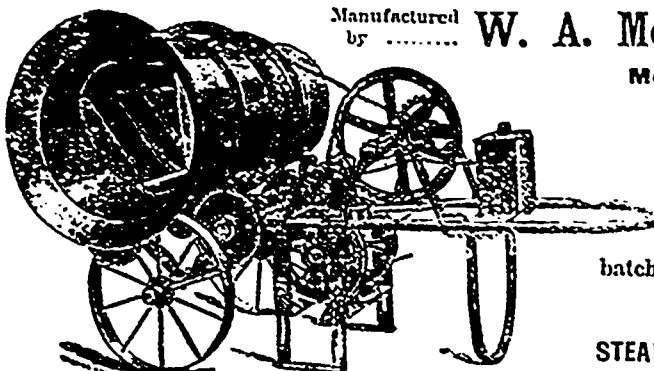


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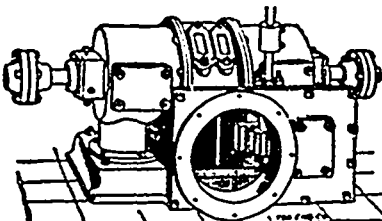
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Ask for particulars of the I.C.S. new Mechanical Drawing or Draftsman's Course. Just prepared.



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 has helped to solve the most difficult problems in lubrication. Write for a free copy of
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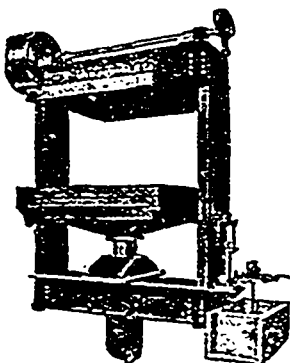


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Water Wheel Governors, Machine Dressed Gearing, Pulleys, Shafting and Bearings.
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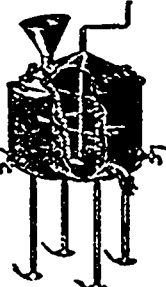


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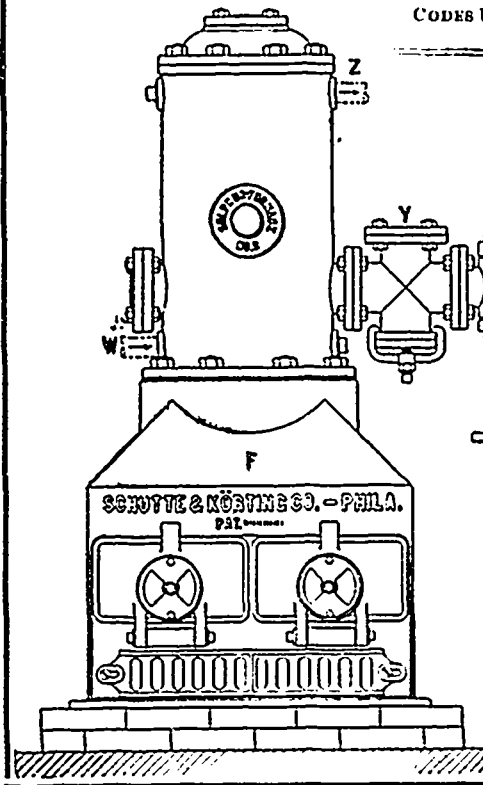
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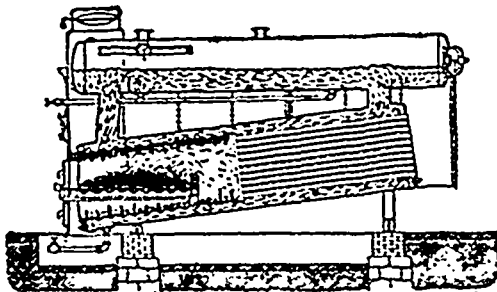
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Williams, A. R. Machinery Co., Toronto.

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

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

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

Aniline Colors and Dyewood Extracts

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Benson, W. T. & Co., Montreal.
Brunner, Mond & Co., Northwich, England.
Cassella Color Co., New York City.
Goigy Aniline & Extract Co., New York City.
McArthur, Cornelia & Co., Montreal.
Winn & Holland, Montreal.

Annealing Muffles and Furnaces (Wire)

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

Antimony

Syracuse Smelting Works, Montreal.

Anvils and Vises

Hopkins, F. H. & Co., Montreal.
Leslie, A. C. & Co., Montreal.
Rice Lewis & Son, Toronto.

Architects

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

Axles

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

Babbitt Metal

Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Syracuse Smelting Works, Montreal.

Banks

Bank of Hamilton, Hamilton, Ont.

Bar Iron and Steel

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

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

Belt Fasteners

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

Belting (Cotton)

Dominion Belting Co., Hamilton, Ont.
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Greay, Wm. & J. G., Toronto.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Rossendale Belting Co., Toronto.
Wilby, P. H., Toronto, Ont.

Belting (Leather)

Fleming, W. A. & Co., Montreal.
Greay, Wm. & J. G., Toronto.
McLaren, D. K., Montreal and Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Rice Lewis & Son, Toronto.
Wilby, P. H., Toronto, Ont.
Williams, A. R. Machinery Co., Toronto.

Belting (Rubber)

Greay, Wm. & J. G., Toronto.
Gutta Percha & Rubber Mfg. Co., Toronto.
McLaren, D. K., Montreal and Toronto.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.

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Belting and Supplies

Bristol Co., Waterbury, Conn.
 Dominion Belting Co., Hamilton, Ont.
 Fleming, W. A. & Co., Montreal.
 Greer, Wm. & J. G., Toronto.
 Gutta Percha & Rubber Mfg. Co., Toronto.
 Jeffrey Mfg. Co., Columbus, Ohio.
 McLaren, D. K., Montreal and Toronto.
 McLaren, J. C. Belting Co., Montreal and Toronto.
 Petrie, H. W., Toronto.
 Pittsburgh Shafting Co., Detroit, Mich.
 Rice Lewis & Son, Toronto.
 Rossendale Belting Co., Toronto.
 Wilby, P. H., 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.
 Harbison-Walker Refractories Co., Pittsburgh, Pa.
 Pennsylvania Fire Brick Co., Lock Haven, Pa.
 Pittsburgh & Buffalo Co., Buffalo, N.Y.
 Reese-Hammond Fire Brick Co., Boliver, Pa.
 Stowe-Fuller Co., Cleveland, Ohio.
 Wynn W. H. & Co., West Decatur, Pa.

Blowers

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

Boiler Compounds

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

Boiler Inspection

Canadian Casualty & Boiler Insurance Co., Toronto.

BOILERS (See Engines and Boilers)

Brass Founders

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

Brick and Bricklaying Machinery

Allis-Chalmers-Bullock, Limited, Montreal.

Building Iron and Steel

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

Builders' Materials

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

Cables

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

Canada Plates

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

Canoes

Peterborough Canoe Co., Peterborough, Ont.

Caps

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

Card Clothing

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

Cast Iron Pipe

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

Castings (Iron and Brass)

Buhl Malleable Co., Detroit, Mich.
 Greer, Wm. & J. G., Toronto.
 Kerr Engine Co., Walkerville, Ont.
 McDougall, John, Caledonian Iron Works Co., Montreal.

Cement Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
 Bradley Pulverizer Co., Boston, Mass.
 Greer, Wm. & J. G., Toronto.
 McDougall, John, Caledonian Iron Works Co., Montreal.

Chain Making Machinery (Welded Coil Chain)

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

Channels

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

Charcoal Pig Iron

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

Chemists

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

Clay Working Machinery

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

Coal and Coke

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

Jeffrey Mfg. Co., Columbus, Ohio.

Gill Chains

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

Coke Oven Brick

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

Collection Agency

Petrie, H. D., Hamilton, Ont.

Concrete Mixers

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

Contractors' Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
 Carlin's, Thomas Sons Co., Allegheny, Pa.
 Gartschore, John J., Toronto.
 Hopkins, F. H. & Co., Montreal.
 McDougall, John, Caledonian Iron Works Co., Montreal.

Contractor's Plants

Allis-Chalmers-Bullock, Limited, Montreal.
 Hopkins, F. H. & Co., Montreal.
 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.
 Borden & Selleck Co., Chicago, Ill.
 Buhl Malleable Co., Detroit, Mich.
 Canada Foundry Co., Toronto.
 Greer, Wm. & J. G., Toronto.
 Jeffrey Mfg. Co., Columbus, Ohio.
 McDougall, John, Caledonian Iron Works Co., Montreal.
 Perrin, William R. & Co., Limited, Toronto.
 Pittsburg Shafting Co., Detroit, Mich.
 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.

Correspondence Schools

International Correspondence Schools, Scranton, Pa., and Toronto.

Corundum

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

Covers

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

Crayons

Lowell Crayon Co., Lowell, Mass.

Crucibles

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

Crucible Caps

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



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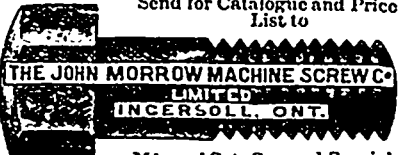
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(CONTINUED).

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

Dies (Socket, Sewer Pipe and Tile)

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

Directories

Kelly's Directories, Limited, Toronto.

Draw Benches (Wire)

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

Drills

Allis-Chalmers-Bullock, Limited, Montreal.
Barnes, B. F. Co., Rockford, Ill.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
London Machine Tool Co., London, Ont.
Petrie, H. W., Toronto
Pittsburgh Shafting Co., Detroit, Mich.

Drills (Pneumatic and Rock)

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

Drills (Twist)

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

Drop Forgings

Globe Machine & Stamping Co., Cleveland, Ohio.

Drop Forging Dies

Globe Machine & Stamping Co., Cleveland, Ohio.

Dry Kiln Apparatus

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

Dust and Shavings Separators

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

Dye Stuffs and Chemicals

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

DYNAMOS (See Motors and Dynamometers)**Electric Meters and Transformers**

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

Electric Mine Locomotives

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

Electrical Repairs

Volta Electric Repair Works, 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.
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.
Buhl Malleable Co., Detroit, Mich.
Canadian Otis Elevator Co., Toronto.
Greig, Wm. & J. G., Toronto.
Darling Bros., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.

Elevator Insurance

Canadian Casualty & Boiler Insurance Co., Toronto.

Emery and Emery Wheels

Canadian Corundum Wheel Co., Hamilton, Ont.
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)

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

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

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

Robb Engineering Co., Amherst, N.S.

Engineers (Electrical)

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Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Crocker-Wheeler Co., St. Catharines, Ont.
Delano-Osborn Engineering Co., Toronto.
Electrical Engineering & Supply Co., Montreal.
Electrical Construction Co., London, Ont.
Electrical Supervision Society, Toronto.
Jones & Moore Electric Co., Toronto.
Marion & Marion, Montreal.
Toronto & Hamilton Electric Co., Hamilton, Ont.
United Electric Co., Toronto.
Volta Electric Repair Works, Toronto.
Worth & Martin, Toronto.

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Allis-Chalmers-Bullock, Limited, Montreal.
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Delano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
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McDougall, John, Caledonian Iron Works Co., Montreal.
Hunt, Robert W. & Co., Chicago, Ill.
Kerr Engine Co., Warkerville, Ont.
Marion & Marion, Montreal.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.

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Delano-Osborn Engineering Co., Toronto.
Vogel, C. H., Ottawa.

Engineers (Mining)

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

Engineers (Municipal)

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

Engineers and Contractors

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

Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.
Babecock & Wilcox, Limited, Montreal.
Bertram Engine Works Co., Toronto.
Canada Foundry Co., Toronto.
Canadian Heino Safety Boiler Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Hopkins, F. H. & Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
McEnchren Heating & Ventilating Co., Galt, Ont.
Petrie, H. W., Toronto.
Petroleum Iron Works Co., Washington, Pa.
Pittsburgh Shafting Co., Detroit, Mich.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.
Williams, A. R. Machinery Co., Toronto.

Engravers

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

Exhaust Fans

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

Exhaust Heads

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

Factory Sites

Central Ontario Power Co., Peterboro, Ont.

Feed Water Heaters

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

Files

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

Financial

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

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Filters (Oil)

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

Filters and Filtering Systems (Water)

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

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

Fire Escapes

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

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

Forges and Blowers

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

Founders

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

Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

Fuel Economizers

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

Furniture (Lodge, Opera and School)

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

Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

Galvanizing and Tinning Machinery and Furnaces (Wire)

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

Gas and Gasoline Engines

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

Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

Gauges (Steam)

American Steam Pump Co., Battle Creek, Mich.
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, Ont.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Moore Electric Co., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Toronto & Hamilton Electric Co., Hamilton, Ont.
Volta Electric Repair Works, Toronto.

Gloves, Mittens and Moccasins

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

Glue Heaters

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

Glue Room Equipment

Advance Machinery Co., Toledo, Ohio.

Government Notices

Factory Inspectors.
Minister of Agriculture.

Graphite

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

Grease Cups

Penberthy Injector Co., Windsor, Ont.

Grinding Machinery

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

Grinding Pans

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

Hardware

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

Heating and Ventilating Apparatus

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

Hoisting Engines

Bertram Engine Works Co., Toronto.

Holsts (Chain and Pneumatic)

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

Hose (Fire and Pneumatic)

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

Hydrants

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

Hydraulic Accumulators

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

Hydraulic Machinery

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

Industrial Plants

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

Insulated Wires and Cables

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

Iron and Steel Specialties

Abbott, William, Montreal.
Armstrong Mfg. Co., Bridgeport, Conn.
Bailey-Underwood Co., New Glasgow, N.S.
Bourne-Fuller Co., Cleveland, Ohio.
Brown & Co., Paris, Ont.
Buhl Malleable Co., Detroit, Mich.
Canada Foundry Co., Toronto.
Cleveland Twist Drill Co., Cleveland, Ohio.
Leslie, A. C. & Co., Montreal.
London Rolling Mill Co., London, Ont.
Lysaght, John, Limited, Bristol, England and Montreal.
Meadows, Geo. B., Wire Iron & Brass Works Co., Toronto.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Petrie, H. W., Toronto.
Petroleum Iron Works Co., Washington, Pa.
Pittsburgh Shafting Co., Detroit, Mich.
Rice Lewis & Son, Toronto.
Ryall Machine Screw Co., Montreal.

Injectors

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

Iron and Steel Inspection

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

Lamps—Electric

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

Lathes

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

Lathes (Wood-working)

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

Lubricators

Penberthy Injector Co., Windsor, Ont.

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JAMES KNAPP REEVE, Proprietor,
Deposit, N.Y.

CLASSIFIED INDEX.

(CONTINUED).

Machinists

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

Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.
Buhl Malleable Co., Detroit, Mich.
Butterfield & Co., Rock Island, Que.
Cleveland Twist Drill Co., Cleveland, Ohio.
Goldie & McCulloch Co., Galt, Ont.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hopkins, F. H. & Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
London Machine Tool Co., London, Ont.
Morrow, John, Machine Screw Co., Ingersoll, Ont.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Ryall Machine Screw Co., Montreal.
Worth & Martin, Toronto.

Machine Tools

Abbott, William, Montreal.
Cleveland Twist Drill Co., Cleveland, Ohio.
Cowdry, C. H. Machine Works, Fitchburg, Mass.
Darling Bros., Montreal.
London Machine Tool Co., London, Ont.
Petrie, H. W., Toronto.

Machinery Repairs

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

Malleable Iron Castings

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

Marine and Stationary Engines and Boilers

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

Mechanical Draft

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

Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.

Metallurgists

Mills, S. D., Toronto.

Mill Machinery and Supplies

Allis-Chalmers-Bullock, Limited, Montreal.
Armstrong Mfg. Co., Bridgeport, Conn.
Buhl Malleable Co., Detroit, Mich.
Cleveland Twist Drill Co., Cleveland, Ohio.
Darling Bros., Montreal.
Fleming, W. A. & Co., Montreal.
Gartshore, John J., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Greay, Wm. & J. G., Toronto.
Gutta Percha & Rubber Mfg. Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Hamilton, Wm., Mfg. Co., Peterborough, Ont.
Hay, Peter Knife Co., Galt, Ont.
Hopkins, F. H. & Co., Montreal.
Jeffrey Mfg. Co., Columbus, Ohio.
London Machine Tool Co., London, Ont.
Morrow, John, Machine Screw Co., Ingersoll, Ont.
McDougall, John, Caledonian Iron Works Co., Mont-
real.

McLaren, D. K., Montreal and Toronto.
Penberthy Injector Co., Windsor, Ont.
Petrie, H. W., Toronto.

Pittsburgh Shafting Co., Detroit, Mich.
Rice Lewis & Son, Toronto.
Robb Engineering Co., Amherst, N.S.
Ryall Machine Screw Co., Montreal.
Spence, R. & Co., Hamilton, Ont.
Wilson, J. C. & Co., Glenora, Ont.

Miners' Lamps

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

Mining Machinery

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

Perrin, William R. & Co., Limited, Toronto.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

Motors and Dynamos

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

Moulding Sand

Hamilton Facing Mills Co., Hamilton, Ont.

Novelty Manufacturers

Worth & Martin, Toronto.

Nozzles

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

Office and Bank Fittings

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

Oils and Lubricants

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

Oil Cloth

Dominion Oil Cloth Co., Montreal.

Oil Cups

Penberthy Injector Co., Windsor, Ont.

Paints and Colors

Bellhouse, Dillon & Co., Montreal.
Berry Bros., Walkerville, Ont.
Fleming, W. A. & Co., Montreal.
Geigy, Aniline & Extract Co., New York City
McArthur, Corneille & Co., Montreal.

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

Pig Iron

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

Pipe (Riveted, Iron and Steel)

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

Pipe Threading Machines

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

Pipes and Tubes

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

Plaster

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

Plates

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

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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.

Portland Cement

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

Power Plants—Equipments

Allis-Chalmers-Bullock, Limited, Montreal.
Babcock & Wilcox, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Cleveland Twist Drill Co., Cleveland, Ohio.
Corbett, R. B., Brooklyn, N.Y.
Darling Bros., Montreal.
Delano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
Goldie & 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.
McDougall, John, Caledonian Iron Works Co., Montreal.
Packard Electric Co., St. Catharines, Ont.
Perrin, William R. & Co., Limited, Toronto.
Petrie, H. W., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Pittsburgh Shafting Co., Detroit, Mich.
Robb Engineering Co., Amherst, N.S.
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.
Greay, Wm. & J. G., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co., Montreal.
McLaren, J. C., Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Wilson, J. C. & Co., Glenora, Ont.

Pumps and Pumping Machinery

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

Punches and Shears

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

Purifiers

Babcock & Wilcox, Limited, Montreal.
Goldie & 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

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

Reamers

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

Rivets

Bourne-Fuller Co., Cleveland, Ohio

Rock and Ore Crushers

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

Roller Bearings

Pittsburg Shafting Co., Detroit, Mich.

Rolling Mill Engineers

Bourne-Fuller Co., Cleveland, Ohio.

Roofing

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

Rubber Goods

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

Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Washing Tubs

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

Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

Safes and Vaults

Goldie & McCulloch Co., Galt, Ont.

Screws

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

Screw Plates

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

Sewer Pipe

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

Shafting

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

Shapers and Carvers

Advance Machinery Co., Toledo, Ohio.

Shear Knives

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

Sheets (Iron and Steel)

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

Sheet Metal Goods

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

Sheet Metal Stamping

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

Ship Builders

Bertram Engine Works Co., Toronto.
Ramage, Edward, Toronto.

Smoke Stacks

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

Solder

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

Special Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
Globe Machine & Stamping Co., Cleveland, Ohio.

Speed Recorders

Bristol Co., Waterbury, Conn.

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CLASSIFIED INDEX.

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Springs—Flat and Spiral
Bailey-Underwood Co., New Glasgow N. S.

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

Stamps and Stencils
Globe Machine & Stamping Co., Cleveland, Ohio.

Steam Pumps
Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Williams, A. R. Machinery Co., Toronto.

Steam Separators
Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.

Steam Specialties
Darling Bros., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.
Penberthy Injector Co., Windsor, Ont.
Sheldon & Sheldon, Galt, Ont.

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

Steel and Composite Ships
Bertram Engine Works Co., Toronto.

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

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

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

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

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

Sulphur Furnace
Schutte & Koerting Co., Philadelphia, Pa.

Suspension Furnaces
Continental Iron Works Co., New York City.

Tanks (Oil and Water)
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
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Ontario Wind Engine & Pump Co., Toronto.
Petroleum Iron Works Co., Washington, Pa.

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

Tees
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Canada Foundry Co., Toronto.

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Smith Mfg. Co., Toronto.
Storey, W. H. & Sons, Acton, Ont.

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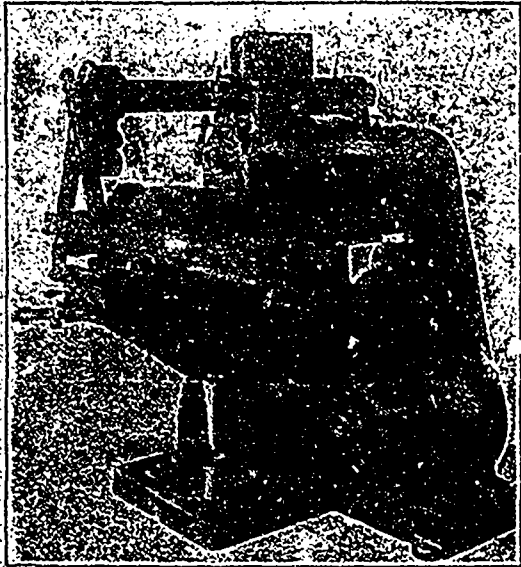
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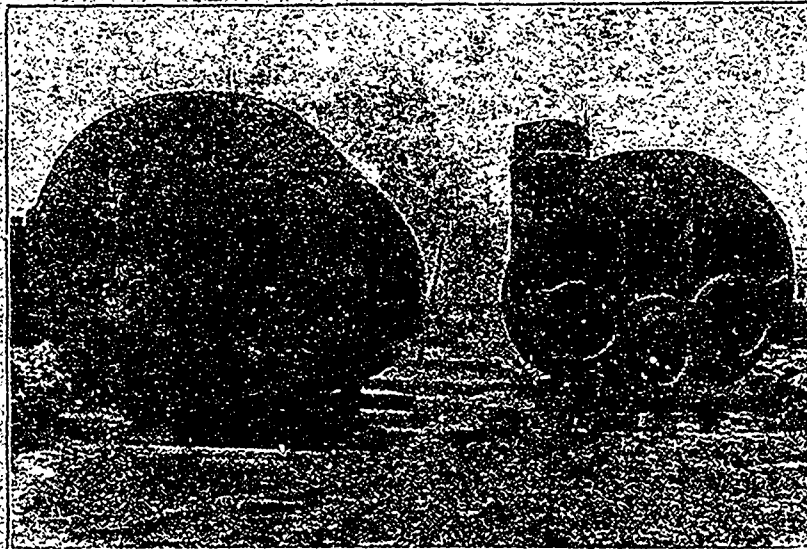
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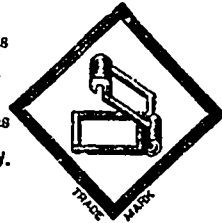
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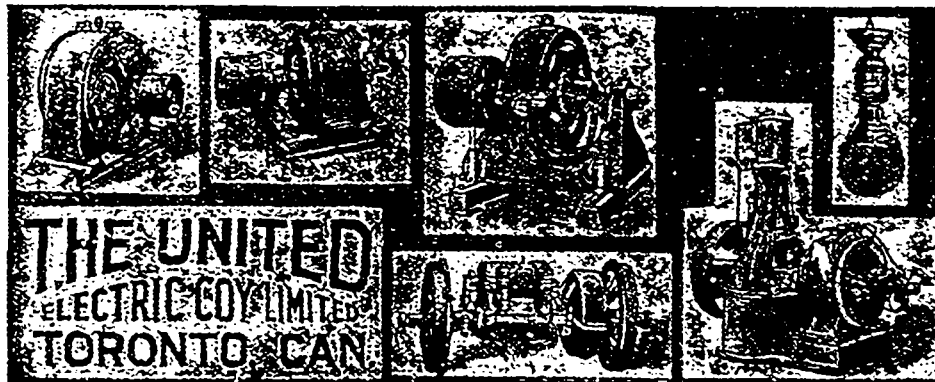
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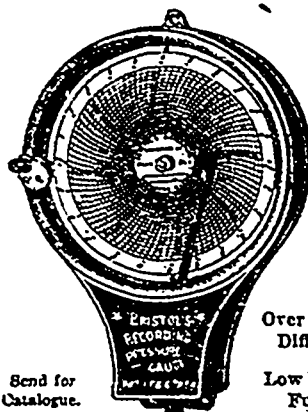


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