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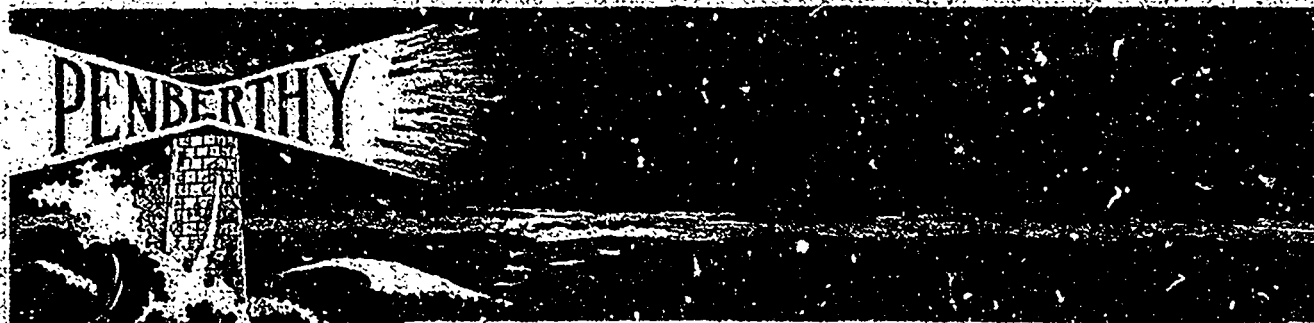
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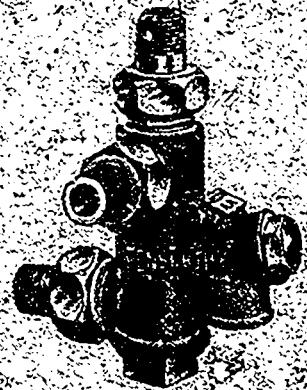
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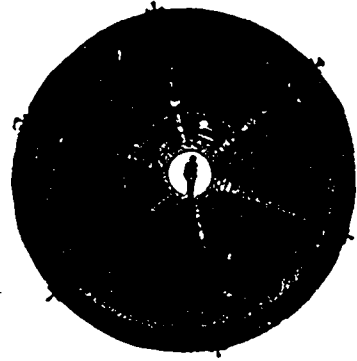
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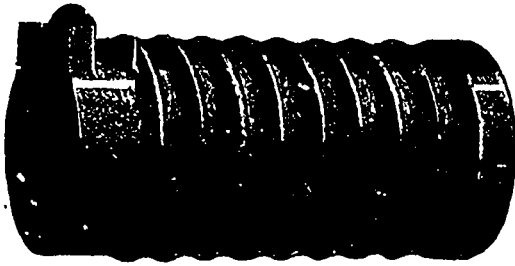
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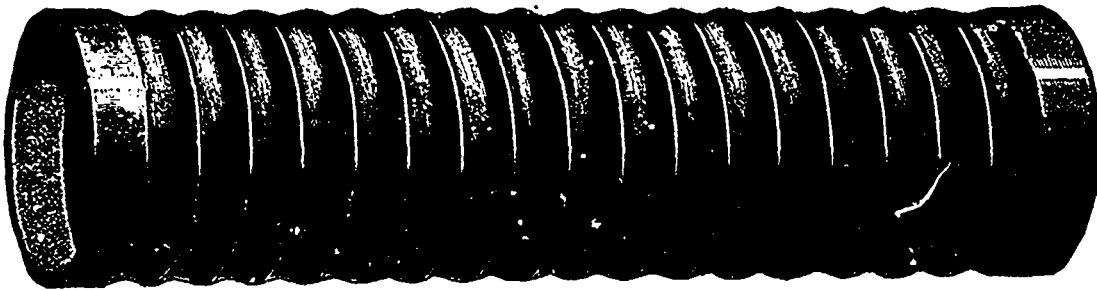


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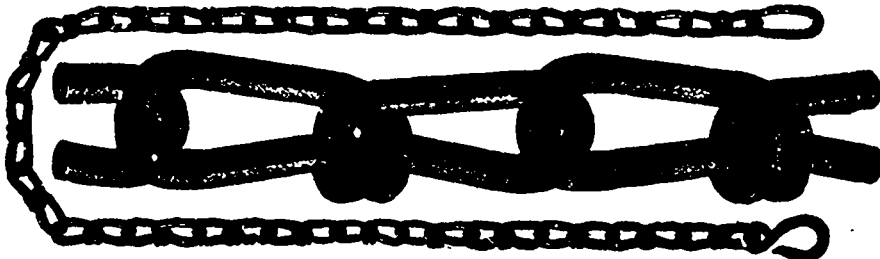
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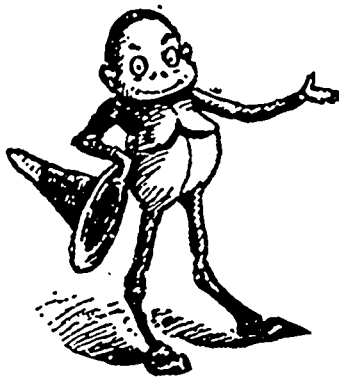
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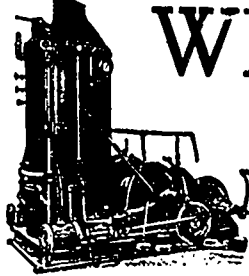
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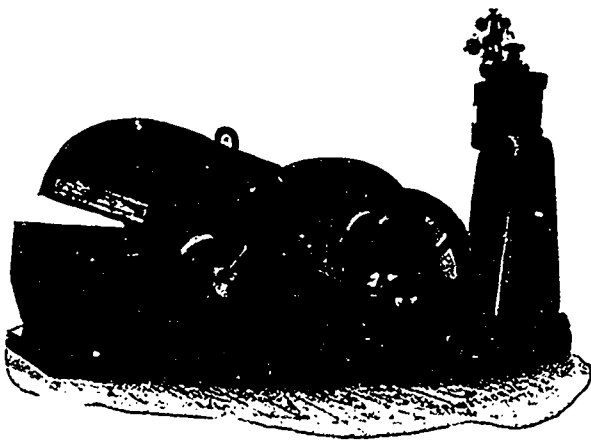
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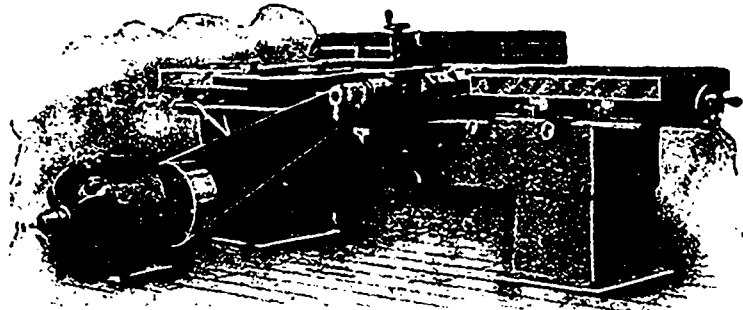
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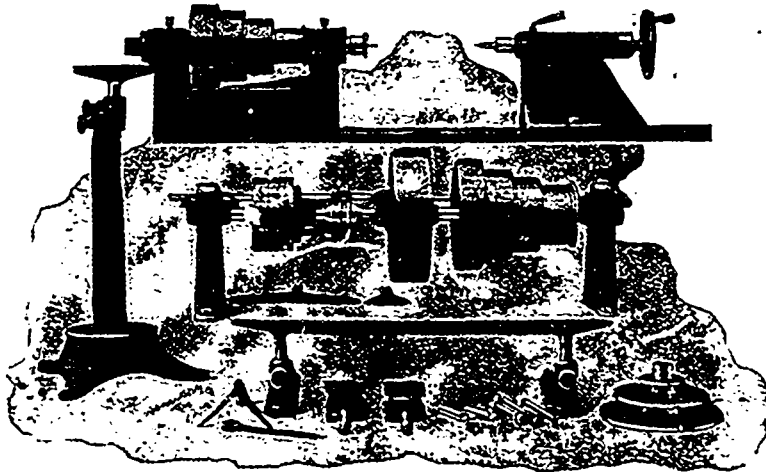
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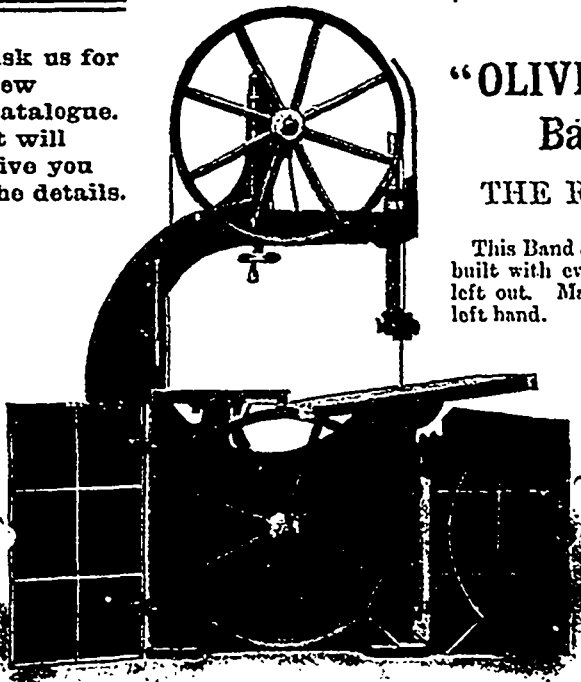
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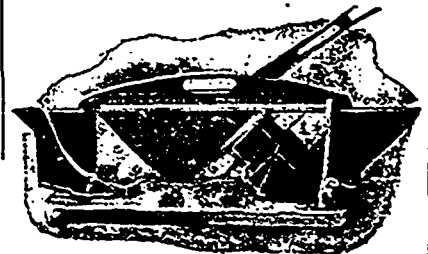
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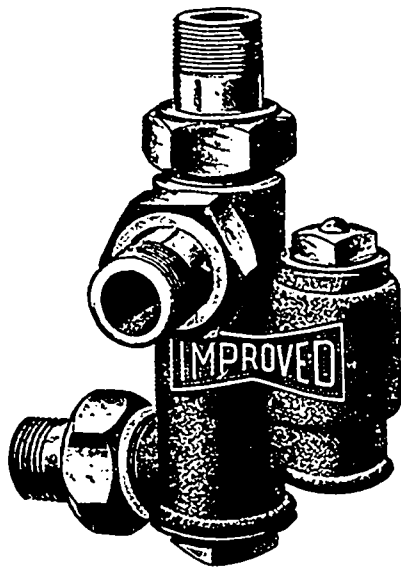
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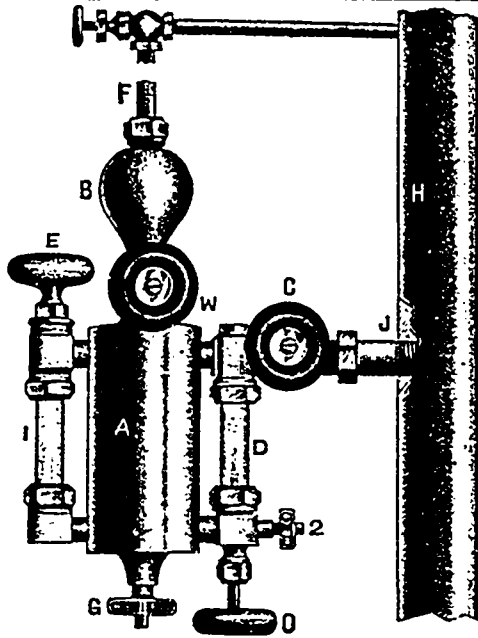
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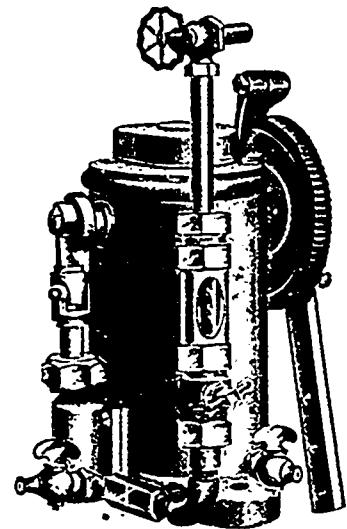
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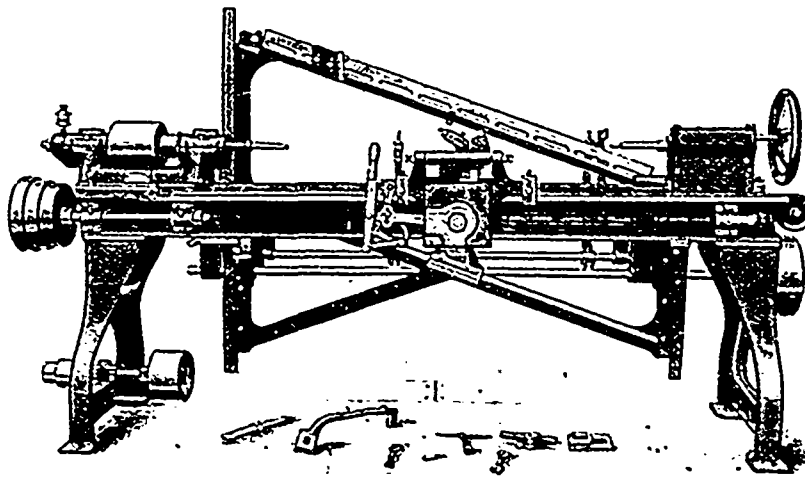
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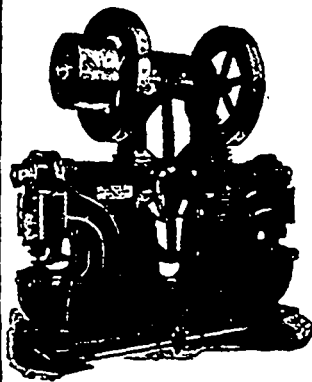
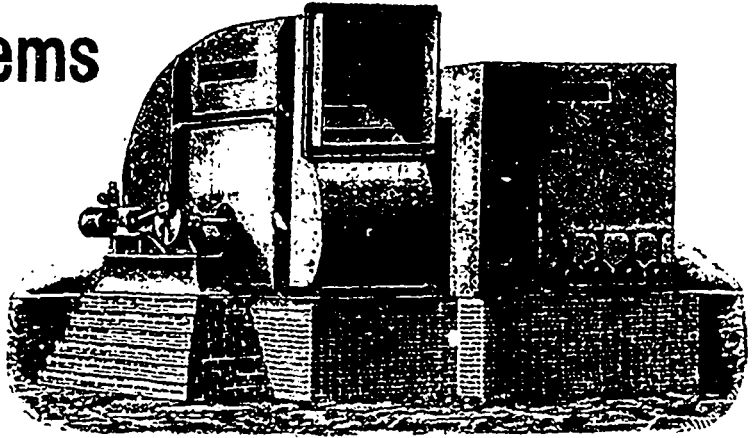
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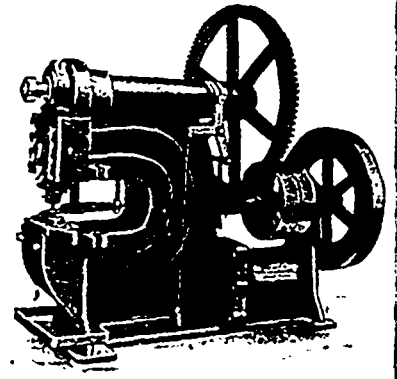
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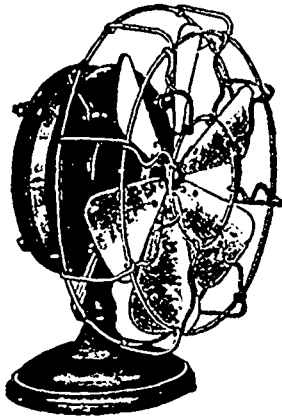
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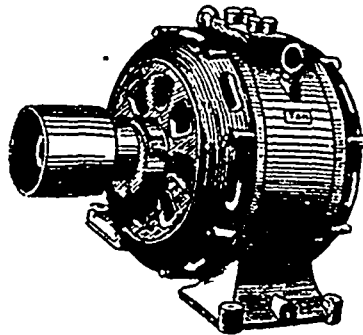
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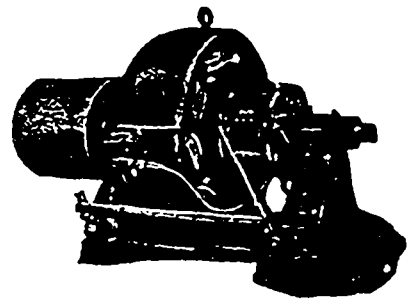
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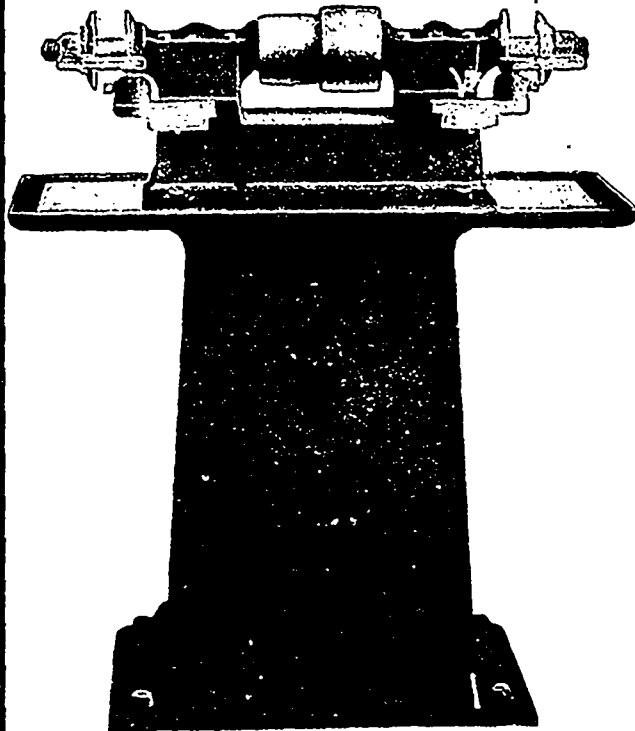
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J. J. CASSIDY, Editor and Manager

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THE TARIFF RESOLUTIONS.

The following are the tariff resolutions brought down by the Finance Minister, Mr. Fielding, in his budget speech in the House of Commons June 7 :

1. Resolved, That it is expedient to amend "The Customs Tariff, 1897," to the following effect :

Notwithstanding anything contained in schedule D, the minimum duty on the undermentioned articles shall be as follows :

Manufactures as described in item 394 of schedule A (excepting blankets, flannels, bed comforters and counterpanes), composed wholly or in part of wool, worsted, the hair of the alpaca, goat, or other like animal, 30 per cent. ad valorem.

Twine and cordage of all kinds, n.e.s., 20 per cent. ad valorem.

Notwithstanding anything contained in schedule D, the maximum duty on the undermentioned articles, when imported under the British Preferential Tariff, shall be as follows :

Tableware of china, porcelain, or other clay, 15 per cent. ad valorem.

Common and colorless window glass, 7½ per cent. ad valorem.

The words "pails and tubs of wood" shall be omitted from item 330 of schedule A.

Item 323 of schedule A shall be amended by adding the following words: Provided that the minimum value of an open buggy shall be forty dollars, and the minimum value of a covered buggy shall be fifty dollars.

Schedule C shall be amended by adding the following :

642. Stallions and mares of less value than fifty dollars each.

Item 203 of schedule A shall be repealed, and the following substituted therefor :

203. Plate glass, not beveled, in sheets or panes, not exceeding seven square feet each, n.o.p., 10 per cent. ad valorem.

203a. Plate glass not beveled, in sheets or panes exceeding seven square feet each, and not exceeding twenty-five square feet each, n.o.p., 25 per cent. ad valorem.

Duties on the undermentioned articles shall be reduced as follows :

Silk fabrics, when imported by manufacturers of men's neckwear for use exclusively in the manufacture of such goods in their own factories, under regulations to be made by the Minister of Customs, 10 per cent. ad valorem.

Items 22, 151, 170, 171, 172, 173, 175, and 178 of schedule A shall be repealed, and the following substituted :

22. Paraffine wax candles, 25 per cent. ad valorem.

151. Paraffine wax, 25 per cent. ad valorem.

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170. Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale, or lignite, costing more than thirty cents per gallon, 20 per cent. ad valorem.

171. Lubricating oils, composed wholly or in part of petroleum, costing less than twenty-five cents per gallon, 2½ cents per gallon.

172. Crude petroleum, gas oils (other than benzine and gasoline), above 40 Beume gravity, at 60 degrees temperature, 14 cents per gallon.

173. Oils, coal and kerosene distilled, purified or refined, naphtha and petroleum, and products of petroleum, n.e.s., 2½ cents per gallon.

175. Lubricating oils, n.e.s. and axle grease, 20 per cent. ad valorem.

178. Vaseline, and all similar preparations of petroleum for toilet, medicinal, or other purposes, 25 per cent. ad valorem.

Molasses, the product of any British country, entitled to the benefits of the British Preferential Tariff, in the original package in which it was placed at the point of production, and not afterwards subjected to any process of treating or mixing, shall be free of duty; the package also to be free: Provided, however, that this shall not apply to molasses to be used for the purpose of distillation.

2. Resolved, That the following articles now dutiable shall be transferred to the free list :

Goats, for the improvement of stock, under such regulations as may be made by the Minister of Customs ;

Whale oil soap ;

Plain basic photographic paper, baryta coated, for albumenizing or sensitizing ;

Hydro-fluo-silicic acid ;

Glass cut to size for the manufacture of dry plates for photographic purposes when imported by the manufacturers of such dry plates for use exclusively in the manufacture thereof in their own factories ;

Ferment cultures to be used in butter-making ;

Printing presses of a class or kind not made in Canada ;

Machinery of a class or kind not made in Canada for the manufacture of linen ;

Machinery of a class or kind not made in Canada for the manufacture of brass goods, such as are mentioned in item 492, schedule B. ;

Well drilling machinery and apparatus of a class or kind not made in Canada, for drilling for water and oil ; not to include motive power ;

Artificial teeth ;

Quassia juice ;

Crude petroleum, fuel and gas oils, 40 Beume gravity or less, at sixty degrees temperature, .8233 specific gravity.

The free admission of machinery and appliances of a kind not made in Canada for use exclusively in alluvial gold min-

ing, as authorized by section 4 of chapter 15 of the Acts of 1903, shall be continued until the first day of July, 1905.

Item 608, of Schedule B, shall be amended by striking out all the words after "the United Kingdom" in the third line.

The following proviso shall be added to sub-section A of item 7 of schedule A: Provided that bottles and flasks and packages of gin, rum, whisky, and brandy, of all kinds, and imitations thereof, shall be held to contain the following quantities (subject to the provisions for addition or deduction in respect of the degree of strength), viz.: Bottles or flasks and packages containing not more than one gallon per dozen, as one gallon per dozen; Bottles, flasks and packages containing over one gallon, but not more than two gallons, per dozen, as two gallons per dozen; Bottles, flasks, and packages containing over two gallons per dozen and not more than 3 1-5 gallons per dozen, as four gallons for 15 bottles, flasks or packages.

Item 462, of schedule B, shall be repealed and the following substituted: 462. Philosophical and scientific apparatus, utensils, instruments, and preparations, including boxes and bottles containing the same, of a class or kind not manufactured in Canada, when specially imported in good faith for the use and by order of any society or institution incorporated or established solely for religious, philosophical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use or by order of any college, academy, school, or seminary of learning in Canada, and not for sale, subject to such regulations as the Minister of Customs shall prescribe.

3. Resolved, That whenever it shall appear to the satisfaction of the Minister of Customs or of any officer of Customs authorized to collect Customs duties, that the export price or the actual selling price to the importer in Canada of any imported dutiable article of a class or kind made or produced in Canada, is less than the fair market value thereof, as determined according to the basis of value for duty provided in the Customs Act in respect of imported goods subject to an ad valorem duty, such article shall, in addition to the duty otherwise established, be subject to a special duty of Customs equal to the difference between such fair market value and said selling price: Provided, however, that the special Customs duty on any article shall not exceed one-half of the Customs duty otherwise established in respect of the article, except in regard to the articles mentioned in items 224, 226, 228 and 231 of schedule A, the special duty of Customs on which shall not exceed 15 per cent. ad valorem. The expression "export price" or "selling price" herein shall be held to mean and include the exporter's price for the goods, exclusive of all charges thereon after their shipment from the place whence exported directly to Canada.

The foregoing provisions respecting a special duty of Customs shall apply to imported round-rolled wire rods not over three-eighths of an inch in diameter, notwithstanding that such rods are on the Customs free list: Provided, however, that the special duty of Customs on such wire rods shall not exceed 15 per cent. ad valorem.

If at any time it shall appear to the satisfaction of the Governor-in-Council, on a report from the Minister of Customs, that the payment of the special duty herein provided for is being evaded by the shipment of goods on consignment without sale, prior to such shipment, the Governor-in-Council may in any case or class of cases authorize such action as is deemed necessary to collect on such goods or any of them the same special duty as if the goods had been sold to an importer in Canada prior to their shipment to Canada.

If the full amount of any special duty of Customs be not paid on goods imported, the Customs entry thereof shall be amended and the deficiency paid upon the demand of the Collector of Customs.

The Minister of Customs may make such regulations as are deemed necessary for carrying out the provisions of the foregoing sections, and for the enforcement thereof.

The special duty mentioned in the preceding sections shall not apply to goods of a class subject to excise duty in Canada, nor to imported goods entered for consumption prior to the eighth day of June, 1904.

DUAL TARIFFS.

At the recent Pittsburg Convention of the National Association of Manufacturers, the committee on Tariff and Reciprocity reported the following resolution which was adopted:

"Resolved, that the National Association of Manufacturers recommend to Congress the establishment of a tariff and reciprocity commission as a bureau in the Department of Commerce and Labor, to investigate and report to the President and Congress the effort of tariff changes; that Congress establish a maximum and minimum of tariff rates, and authorize the President to change within the limits by proclamation the tariff, to carry into effect reciprocity treaties, or to oppose unfair combinations or any unfair trade or commerce in this country or between this and foreign countries."

The United States tariff already provides for maximum and minimum duties under certain circumstances, some of which are intended to restrict trade between that country and Canada, and to prevent, if possible, the free action of Canadian legislative bodies. Thus, in item 195 of the United States tariff in schedule D, relating to wood and manufacturers of, it is provided as follows:

"That if any country or dependency, (meaning Canada) shall impose an export duty upon saw logs, round, unmanufactured timber, stave bolts, shingle bolts or heading bolts, exported to the United States, or a discriminating charge upon boom sticks or chains used by American citizens in towing logs, the amount of such export duty, tax or other charge, as the case may be, shall be added as an additional duty to the duties imposed upon the articles mentioned in this paragraph when imported from such country or dependency" (meaning Canada.)

So, too, in item 396, in schedule M, relating to pulp and paper, it is provided as follows:

"That if any country or dependency, (meaning Canada) shall impose an export duty upon pulp wood exported to the United States, there shall be imposed upon printing paper when imported from such country or dependency (meaning Canada) an additional duty of one-tenth of one cent per pound for each dollar of export duty per cord so imposed, and proportionately for fractions of a dollar of such export duty."

Sec. 5 of the free list of the United States tariff provides that whenever any country shall pay directly or indirectly any bounty or grant upon the exportation of any article of merchandise from such country, and such article is dutiable, then upon such article, whether imported directly or indirectly from the country of production or otherwise, there shall be levied, in addition to the regular duty, an additional duty equal to the net amount of such bounty or grant. The enforcement of this law does not always work to the general good of the United States as was evident in the recent case where a shipment of beet sugar was made from Russia to the United States, the ruling of the Secretary of the Treasury being that an export bounty had been paid by Russia upon the article, the contention of the Russian authorities being that no export bounty had been paid. The extra duty was insisted upon and paid, in retaliation for which Russia largely increased her duty on certain manufactures of iron and steel, chiefly agricultural implements, when imported from the United States. At that time American agricultural implements were in strong demand in Russia at very remunerative prices, but since then that trade has fallen off wonderfully, the sacrifice being an expensive one under the circumstances.

The enforcement of maximum and minimum tariffs is prevalent in most European countries; and although the National Association of Manufacturers desire their Congress to adopt that feature in their tariff, it is already in existence in a certain form as we here show.

A feature of it is also in existence in Canada as exemplified in the surtax levied upon German merchandise; and the en-

forcement of it shows that it has an exceedingly depressing effect upon the trade of that country with this. Germany undertook to penalize Canada because Canada granted a tariff preference to Great Britain. Under the "most favored nations" clause of the German tariff, imports for Great Britain are admitted at the minimum rates of duty, but the maximum rates are imposed upon Canadian merchandise, in retaliation for which Canada imposes the surtax of 33½ per cent.

Many Canadians believe that for reasons which it is not necessary now to discuss, many of the provisions of the United States tariff are intentionally and unnecessarily severe and in restraint of what would be a livelier trade between that country and this. Some Canadians think that a drastic retaliatory tariff should be instituted for that which we now have; while others contend that the adoption of dual rates would be sufficient. If such a system were adopted, it would be, in our opinion, of the utmost importance, the minimum rates to be sufficiently high to give adequate tariff protection to every important Canadian industry, which would apply to British as well as to all other imports, the maximum rates to apply to any and all countries which do not deal fairly with us in commercial matters.

The proposition of the National Association of Manufacturers to introduce into the tariff of the United States a system of maximum and minimum duties, and its discussion lends interest to a statement recently published by the Treasury Bureau of Statistics regarding the maximum and minimum tariffs of the world and their method of application.

The countries at present using a multiple or maximum and minimum tariff system are Spain, France, Russia, Brazil, Greece and Norway.

The present tariff of Spain dates from 1892, when the commercial treaties were denounced and a consistent scheme of double rates drawn up. At the same time the Spanish Administration announced its intention of no longer making unconditional most-favored-nation treaties. Commercial relations with other countries at once became strained. A tariff war broke out with Germany, and the penalty tariffs of several countries were applied to Spanish goods. The relations at present are mainly on the basis of a provisional most-favored-nation treatment.

In 1893 Russia adopted a system somewhat similar to that of France. Instead of having a special rate on each article, however, the Russian tariff made the general schedule (which was in use prior to 1892) the minimum schedule of the new tariff, and placed increases ranging as high as 30 per cent. over the minimum. Russia was not able to uphold the plan in its entirety, and was compelled to make commercial treaties with France and Germany, in which reductions on the minimum rates were given. At present, therefore, Russia's tariff system is composed of a maximum, a minimum, and a conventional schedule.

The Brazilian tariff of 1900 is arranged in a manner similar to the Russian. The tariff contains maximum and minimum rates, the latter to be applied to imports from those countries which treat Brazilian exports, especially coffee, on a favorable basis.

The experience of Greece has been similar to that of Russia. The law of 1893 provided maximum and minimum rates, but the later commercial treaties reduced the latter, so that at present the rates applied to most-favored-nation countries are partially the conventional rates and partially the minimum rates.

In Norway the maximum rates are intended to be used only in case Norwegian goods are treated less favorably than those of any other country—that is, these rates are to be used in case of a tariff war.

Although Spain was the first country to attempt to use the system of maximum and minimum tariffs, France may be regarded as the country which has given the system its present prominence.

The Melin bill was adopted in January, 1892. The underlying idea of the plan was that the legislative body should fix the limits of the tariff rates, below which the executive could not go in the effort to establish commercial connections with other countries. That is, the home industries were to be assured that they would not be disturbed by any attempts to alter the tariff rate in the minimum schedule, and perfect stability of conditions was thus hoped for.

On the other hand, in order to make it to the advantage of foreign countries to grant concessions to France, in return for which they would receive the rates of the minimum tariff, it was proposed to make the difference between the maximum and the minimum rates as large as possible, so that there would be a gain if the minimum rates were secured and a loss if it were not.

The rates in the two tariffs differ by about 75 per cent. that is, the maximum rates average about 75 per cent. higher than those of the minimum tariff. Agricultural products were, however, given the same rates in both. By special decree the administration was authorized to grant the minimum tariff to all countries which before 1892 had enjoyed the conventional tariff and which after that date had given French commodities the most favored-nation treatment. Accordingly, only Portugal was subjected to the complete maximum tariff.

AN ECONOMIC FAILURE.

The London Economist publishes an interesting communication from a Canadian correspondent which most truthfully shows some of the disastrous effects of the preferential feature of the tariff upon the woolen industry. It says:

Woolens are the largest single class of goods imported into Canada from Britain. The total purchases, including those of raw wool, from all countries in the fiscal year 1902-3 amounted in value to \$15,000,000, of which \$12,000,000 worth were bought in Britain. When Canada adopted a protective tariff in 1879 the imports of manufactured woolens, coming principally from Britain, amounted to \$7,000,000. In 1890 they reached \$11,000,000 after which they began to decline, owing, it was said, to the progress made by the Canadian industry under the stimulus of the high duties, until in 1897, when a preference was first given to British goods, they barely exceeded the old figure of \$7,000,000, whereas in 1903 they had risen to \$14,000,000, an increase in six years of 100 per cent.

The Canadian woolen manufacturers are now making a determined effort to have the preferential duties on British woolens augmented. Their interviews with the Government are watched with keen interest by the Canadian supporters as well as by the Canadian opponents of Mr. Chamberlain's scheme. The broad ground they take is that, no matter whether Englishmen give a preference to Canadian breadstuffs or not, the Canadian Administration, be it Liberal or Tory, ought to legislate for the development of Canadian industries, so that Canadians, not Englishmen, may be assured of employment at a fair wage. About \$6,000,000 is, they say, invested in Canadian woolen mills; fully 40 per cent. of the machinery is now idle, and the hands are migrating to the United States, where preferences are unknown, and American interests are protected up to the hilt. Under such circumstances they ask Sir Wilfrid Laurier to stand by the doctrine of "Canada for the Canadians," and let the English manufacturer and mechanic shift for themselves. Coming to details, they say that the present preferential duty on woolens, which in most lines is 23½ per cent., should be increased to 30 per cent.

As may be supposed the clamor of the woolen men has had the effect of discrediting Mr. Chamberlain's proposals in the eyes of Canadian manufacturers at large. To be sure they

never had much regard for Mr. Chamberlain's policy, those who supported it on sentimental grounds doing so with a good deal of mental reservation. When asked in private to say what sort of a preference they would give England in return for a substantial English preference in behalf of Canadian wheat, flour, meats, and other products, they usually replied that they would support the Government if it would increase the present tariff 33½ per cent., and then give English goods a preference, as now of 33½. In other words, if American and other foreign wares were excluded, they would concede English wares a preference on paper of less value than the paper one already in existence. This, I am sure, was as far as the great majority cared to go, although some talked in public, without really meaning it, as if they were willing to do better. Of late, however, they have almost ceased to discuss Mr. Chamberlain's programme, the plight of the woolen men being held up as an example of what would happen to every manufacturing industry in Canada if British goods were given a bona-fide preference such as, on the hypothesis, Englishmen would expect. Besides, the result of the by-elections in the United Kingdom has greatly diminished Canadian interest in Mr. Chamberlain. If he can not induce the British democracy to tax its food and raw materials for our benefit, why should we waste any more time over his attempt to resurrect the old colonial system?

The whole Imperialist campaign, so far as Canada is concerned, has been a blunder. In the nature of things it was bound to fail, and the increase of the preferential duties on British goods to a minimum of 30 per cent. will doubtless put an end to it.

A TARIFF ANOMALY.

Discussing the need of tariff protection to certain branches of the Canadian iron industry, the Mail and Empire says:

Mr. Fielding stuck to the bounty plan, and his bill became law. One of its provisions calls for a bounty of \$6 a ton on wire rods. Wire rods were on the free list, and there the Minister left them. United States manufacturers have as unrestricted a privilege on this market as Canadian manufacturers have. These wire rods are the raw material out of which wire and wire nails are made. Now the greater part of the wire used in this country is non-dutiable. Barb wire, galvanized wire of the gauges in greatest demand, and flat steel fence wire, are all on the free list. Wire nails are subject to a low duty of three-fifths of a cent a pound. Thus the Canadian market for wire rods and for the products of wire rods offers an open door to the United States manufacturers. The great producer of wire rods, wire and wire nails, is the American Steel & Wire Co., one of the operating companies included in the United States Steel Corporation. This concern has been in the habit of dictating terms to our wire drawers and nail manufacturers. It requires them to send their rod orders to its mills. If they buy elsewhere it will make a raid on their market. That is, it will send its travellers into Canada to sell wire and wire nails to the wholesale hardware houses and other large customers of the Canadian wire-drawers and nail-makers. Last autumn, when the American Trust learned that some of the Canadian wire-drawers had purchased rods in Britain or Germany, it at once began selling wire here, thus destroying the trade on which the Canadian wire-drawers depended. The latter had to come to terms, and enter into a six months contract to buy their rods from the Trust. That contract recently expired and the Trust presented another. The time favored it. Navigation had not opened on the St. Lawrence, so that supplies could not be brought from beyond the Atlantic with advantage. At home the rod mill of the Dominion Iron & Steel Co. was not quite ready for production. As the wire-drawers were practically out of material, and as the home market for their finished products was at the mercy of the Trust, most of them had to sign the proffered contract, binding them to buy their rods for the next six months from the United States Steel Corporation.

So when the new rod mill of the Dominion Iron & Steel Co. is ready for business it finds its market gobbled up by a foreign concern. What hoots it that there is a bounty on rods if rods are on the free list? It is easy to say that the wire-drawers and nail-makers of Canada ought to be patriotic enough to keep their orders for the home rolling mill. One of them, Mr.

James Pender, who happens to have certain advantages of location and other conditions of independence, has indeed refused to bow to the Trust. But if all the Canadian wire-drawers chivalrously stood by the home mill, they would lose their market, for the United States Steel Corporation would sell wire and wire nails to the hardware men if it could not sell rods to the drawers, wire as well as wire rods being on the free list. A protective duty on wire rods, and a protective duty on wire and wire nails, would have placed our own manufacturers out of the power of the dictatorial American Trust.

An anomaly of the situation is that while certain forms of wire are admitted duty free, Canadian manufacturers are taxed with a heavy duty on machinery for drawing wire.

THE METRIC SYSTEM.

A United States correspondent of the London Times discusses the question of the disadvantages American manufacturers would labor under were the metric system to be made compulsory in that country, and mentions some of the reasons for their opposition to it. This opposition takes the view that the metric system is not necessary, and that it is no improvement upon the duodecimal system already in use. The writer says:

Amongst those who have given evidence against the American bill is Mr. Joseph Wharton, president of the American Iron & Steel Association, who appeared in his representative capacity and showed that not a single iron and steel manufacturing concern in the United States desired the change to be made. In the course of his evidence, which was extremely interesting and long, Mr. Wharton said that the business men of America had never given any attention to the matter, as they looked upon it as being one of the harmless vagaries of the professors. Another witness was Mr. L. D. Burlingame, of the celebrated Browne & Sharpe Mfg. Co., Providence, R.I., a concern which has a world-wide reputation for its machine tools, instruments of precision, etc. Mr. Burlingame, apart from his own interests, also appeared as the representative of the Providence Association of Mechanical Engineers, which has an influential membership amongst the chief machinery producers. Mr. Burlingame opposed the measure on the ground that it would cause great confusion in the machinery trade by introducing a double standard, and would materially increase the cost of operating machine shops and other manufacturing plants because it would necessitate duplicate parts of machines as well as maintaining complete sets of measuring instruments graduated to both English and metric systems.

Referring to the units of the metric system, Mr. Burlingame said that there was none so convenient for machinery manufacturers as the inch. The millimetre was so small a unit that its value must be expressed for practical work in large figures; for example, 30 inches would become 760 odd millimetres. In the matter of figuring drawings it was his experience that the English system was quite as simple as the metric and involved fewer figures. Referring to the statements made by advocates of the metric system, that it was much simpler for purposes of calculation, Mr. Burlingame said he had made an effort for several months, not only with the aid of his own men, but with the assistance of the members of the Mechanical Engineers' Association, to find a problem in their line of work in which there would be a saving of time, but he had failed to find a single instance, although the draughtsmen of his company included many foreigners who were brought up on the metric system.

I venture to think that this attitude on the part of the American machinery interests and iron and steel manufacturers is of the utmost moment to our own engineers and producers. Obviously we should place ourselves at an enormous disadvantage if we were to adopt a system which our keenest and most pushing rivals can see would be so disadvantageous to themselves. We are handicapped quite sufficiently as matters now stand without adding to our burdens a system which has no practical advantages—and many serious disadvantages—over that now in universal use and understood by all the commercial people of the world.

EDITORIAL NOTES.

The surtax levied on importations from Germany has cut seriously into that country's trade with Canada, but has helped the British West Indies. The additional duty collected by Canada has shut out a lot of raw sugar we formerly obtained from Germany, and British colonies in the West Indies are now the chief source of supply. For the nine months of the fiscal year of 1902-3, ending March 31, Canadian importations of raw sugar from Germany amounted to 150,000,000 pounds, for the same period of the fiscal year ending March 31, 1904, the importations of sugar from Germany dropped to 530,000 pounds. On the other hand, the quantity of raw sugar brought in from British Guiana and the British West Indies increased from 40,000,000 pounds for the nine months ending March 31, 1903, to 162,000,000 pounds for the nine months ending March 31, 1904. Sugar produced by the British planters has thus to a large extent displaced German sugar in the Canadian market. Reductions have also taken place in importations in other lines from Germany. Whereas for the nine months ending March 31, 1903, the total dutiable goods entering Canada from Germany amounted to \$7,776,205, they had sunk for a similar period, terminating March 31 last, to \$5,076,383, a falling off of \$2,699,822. No wonder the man with the mailed fist is calling for a halt in the war of tariffs. In March, 1903, Canada took \$928,831 worth of German dutiable goods. Last March this country bought only \$491,440. In view of these facts, Germany seems to be getting more than she bargained for when she raised the duties against Canada because of the preference given to Great Britain.

A resolution was adopted at a meeting of the Toronto City Council, held on May 9 last, providing that the by-law of the Council requiring the use of smoke consumers would be enforced on and after the 1st day of July, 1904. The by-law provides:

(1st) That all manufacturers and others in the City of Toronto using combustible material to produce heat or power, and thereby creating smoke in such quantities as to foul the atmosphere, or that may be carried by the wind or otherwise to other shops, houses or premises, to the inconvenience or injury of the neighboring premises or residents therein, shall have such chimney or other apparatus as shall consume the smoke, or prevent the same from fouling the atmosphere, or being carried by the wind or otherwise to other shops, houses or premises, to the inconvenience or injury of the neighboring premises or residents therein.

(2nd) That it shall take effect on the 1st day of July, 1904.

The penalty for a breach of any of the provisions of the by-law is a fine not exceeding \$50 for each offence, and in default of payment, imprisonment.

What are Toronto manufacturers going to do about it? No "smoke consumer" that practically consumes smoke is in existence. Apparatus is made, however, intended to prevent the generation of smoke, but the most of such is expensive and therefore beyond the ability of only the larger concerns to purchase. A cheap, practical smoke preventer should find brisk demand in Toronto at this time.

A severe condemnation has been pronounced by Sir Frederick Darley, Chief Justice of New South Wales, the remainder of the full court concurring, of the State system of compulsory arbitration. The Chief Justice declared that the results showed that the Act was in derogation of the common law. "It encroaches on the liberty of the subject as regards person and property," he said, "creates new crimes, interferes with the liberty of employer and employee, and prevents the former from giving and the latter from obtaining employment except

on terms settled by the court. It deprives the employer of the conduct of his own business, the management of which is vested in a tribunal which must be obeyed under a penalty. Finally," said Sir Frederick, "it is an Act productive of a most alarming and deplorable amount of litigation, with concomitant ill-will and ill-feeling between employers and employed, who are forced into hostile camps."

A new steamship service to Canada is being arranged in London. The steamers are to run up the St. Lawrence when navigation is possible, and a fortnightly service is proposed, to be increased if business justifies it. The boats will coal at Newcastle-on-Tyne, where passengers will embark. W. Petersen, Limited, of Newcastle, and Mackenzie & Mann, of Montreal, and Toronto are interested.

Last year Canada imported under the preferential tariff woolen goods to the value of \$10,171,597. The change in the woolen duties will apply to \$7,047,595, but woolen goods to the amount of \$3,097,002 will not be affected. The articles to which the minimum duty does not apply and the importations in each case last year are:—Blankets, \$39,131; flannels \$48,531; knitted goods, \$61,658; bed comforters and counterpanes, \$5,885; shawls, \$65,316; shirts of wool, \$19,493; socks and stockings, \$769,376; undershirts and drawers, \$52,875; yarns, \$549,715; women's and children's dress goods in the grey, to be finished here, \$30,017; carpets, \$1,416,190; felt, \$20,810; shoddy, \$18,007.

The probable effect of putting molasses on the free list will be to divert a very large portion of the article that now comes from Porto Rico and New Orleans to the British West Indies. Last year the total importation of molasses was valued at \$787,153, of which \$302,334 came in under the preference from British colonies.

In the paper prepared by Mr. George Johnson, Dominion Statistician for the information of the Duke of Argyll, showing the effects of the tariff preference given by Canada to Great Britain, recently published in this journal, this sentence occurs:

There is one subject which is intimately connected with the development of trade to which, however, your Government does not appear to attach as much importance as I do. Your newspapers do not circulate in Canada. The United States newspapers do. "Trade" we say, "follows the flag." It is even more true that trade follows the advertisements of the newspapers.

Mr. Johnson knows.

The Canadian Electrical Association are in convention assembled in Hamilton this week. The programme is a most interesting one, of course, of which further mention will be made in our next issue.

The Secretary of the Canadian Forestry Association has received a reply from the Department of Railways & Canals to the resolution urging that care should be taken for the prevention of forest fires along the line of the new Trans-continental Railway, which was passed at the last annual meeting of the association. The Secretary of the Railway Department states that the Department fully appreciate the great importance of every precaution being taken to prevent such fires in connection with the surveying of the route and the construction of the railway, and that the Grand Trunk Pacific Railway Co. have been written to by the Department and have replied to the effect that the importance of the subject and the desirability of their taking such action as is indicated by the copy of the resolution transmitted has their full sympathy, that they will be glad to do what they can in the direction indicated, and that their Engineering Department has been instructed accordingly. A similar reply has been received by the Secretary of the association from Mr. C. M. Hays, the General Manager of the Grand Trunk Railway, in reply to a copy of the resolution which was sent direct to him.

THE STATISTICS OF CANADIAN PROGRESS IN ELECTRICAL APPLICATIONS.*

By GEORGE JOHNSON, DOMINION STATISTICIAN.

The 24th May will be the sixtieth anniversary of the sending of the first Morse message over a telegraph wire.

There are now 1,764 private and government cables with a length of 204,527 nautical miles.

On the land there are 1,025,700 miles of line and 3,978,500 miles of wire. These represent an outlay of capital equal to 500 million dollars. Add the outlay for cables and there is a total outlay of 850 million dollars to provide the means for transmitting wire messages by sea and by land.

Over head and under seas there is a daily transmission of one million, four hundred thousand telegrams and 36,000 cable messages; the totals being 478,330,000 land messages and 13,140,000 cables in the year 1903.

This is the minimum, for in South Africa (for instance), there are thousands of miles of line which are in the hands of companies that are not required to make returns. Another fact has to be taken into consideration and that is that these figures do not include the telegrams sent by railways in the management of their own business. These number many millions in the course of the year. Thus Russia in 1902 included the telegrams, despatched hither and thither over that vast country in connection with the running of her railways, and the result was a total of 101,639,542 telegrams, whereas in the year before (1901), when railway telegrams were not included, the messages sent numbered only 20,000,000.

A third fact must be kept in mind. In Canada the press messages are not included in the number reported. Everyone knows the important part the newspaper telegraph service plays in such a country as Canada. Divided by ten to represent an ordinary message the millions of words of the "flimsy" of the Press would far exceed the other messages sent and delivered in the course of the month or year, and representing the business, the social and the other activities of the country. No estimate can be made of the number of these messages. It is plain, however, that at least a million, four hundred thousand messages pass to and fro every day of the 365 days of the year. All this from the one or two telegrams which passed on the 24th May, 1844, when the Morse system turned the plaything of science into an instrument of practical everyday use.

The countries which most use the telegraphic mode of communication are the British Empire, the United States, Germany, France, Austria-Hungary.

The British Empire has 218,000 miles of line, nearly one million miles of wire, and sends and receives 127,000,000 messages.

*Prepared for the Canadian Electrical Association, and read at their Convention in Hamilton, Ont., June 17, 1904.

Great Britain despatches and receives 92,471,000 messages or 222 per 100 of her population. Her daughters follow her illustrious example. Australia even goes beyond her, sending 228 messages per each one hundred, while New Zealand, that wonderful sister under the southern cross, goes far beyond mother, sisters, cousins, aunts, or anybody else, topping the list with 610 telegrams per one hundred of her population. Canada does not make a good second, her record being only 101 messages per one hundred of her population. The African possessions of the British Empire, notwithstanding the fact that only a comparatively small proportion of the messages actually sent, are included in the available statistics exceed in the per head number, the record of Canada.

Of outside nations Belgium holds the record, her telegraphic messages numbering 207 per one hundred of her population. Argentina, comes next with 146 messages per one hundred of her population. The United States does better than Canada having 120 messages per each one hundred of the population. France slightly exceeds the United States with 121. Germany is considerably below the other principal countries, having a record of 80 messages for each one hundred of the population. In the matter of miles of wire, Canada somewhat exceeds the United States. If the latter had as many miles as the Dominion in proportion to population, it would have over 200,000 miles more than it has.

The table being Appendix "A" (page 22) gives as complete a list as I have been able to make up.

The employment of electricity, that

and the funded debt \$1,275,000,000; the earnings were over \$240,000,000 last year. Our neighbors have made great progress. They have 322 miles of electric railway to each million of the population of continental United States. These carried 5,000,000,000 persons, or about 65 times the population, and about eight times as many as the steam-driven railways. Canadians have no cause to feel inferiority. Our electric railways carried last year 167,704,000 passengers or about thirty times the population of the Dominion. When it is recollected that the urban population of the United States forms over 37 per cent. of the whole, while Canada's town population is only 26 per cent., it is evident that our electric railways come out well in a comparison and give promise of doing better in the future, as Canada's urban population, following the continent's trend, increases its proportion. Our electric railways carried, like those of the United States, about eight times as many passengers as our steam railways carried.

I believe that Hamilton claims the honor of being one of the first cities in Canada to adopt electricity as the motive power of street railways, the Hamilton Street Railway Co. having been equipped with electricity in 1892, the Ottawa Electric Railway Co. beginning its career in July, 1891. Our development is, therefore, all within eleven or twelve years. That of the United States began in 1888.

ELECTRIC RAILWAY STATISTICS OF CANADA.

The following table gives particulars of Electric Railway Companies during the years ended December 31, 1901-1903:—

	1903.	1902.	1901.
Total number of railways sending returns.....	46	44	43
“ miles of track, single	454.75	421.39	376.35
“ “ double	192.54	188.09	179.10
“ motor cars.....	2,053	1,895	1,853
“ trailers	298	326	302
“ snow-sweepers and ploughs.....	109	97	85
“ miles run.....	39,721,153	36,711,130	34,547,975
“ passengers carried.....	167,703,958	145,609,993	132,885,258
“ employees	7,439	5,427	5,443
Total amount of capital paid up.....	\$29,838,326	\$25,961,254	\$24,734,040
“ bonded debts	17,013,738	15,794,408	14,166,225
“ gross earnings	7,777,324	6,865,907	6,283,666
“ gross expenses	5,018,779	4,140,490	3,699,283

*In 1900 the United States Census Returns for 1899 gave 871 street railways, chiefly electric.

subtle fluid of whose properties we know much without knowing anything of itself is, by no means limited to the circulation of telegraphic messages among the nations of the world.

ELECTRICAL PROPULSION.

It is about sixteen years since the scientific practicability of propulsion by means of electricity was proved beyond dispute.

In the United States there are to-day about eleven hundred street railway systems*, the motive power of which is electricity. There are 25,800 miles of track, the capitalization is \$1,630,000,000,

MILEAGE IN EACH PROVINCE IN 1903.

	Single Track.	Double Track.
Ontario	273.14	87.64
Quebec.....	96.09	82.57
British Columbia.....	41.75	6.25
New Brunswick.....	10.06	2.50
Nova Scotia.....	23.71	1.58
Manitoba.....	19.00	12.00
Total	454.75	192.54

The following table gives the number of employees, passengers and others killed and injured on Electric Railways in Canada for the year ended June 30, 1903, also totals for 1902:

Causes.	Employees.		Passengers.		Others.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Falling off trains.....	2	18	..	71	..	..	2	89
Jumping off trains.....	..	..	5	318	..	2	5	320
Struck by engine or cars.	1	..	3	42	8	117	12	159
Head out of window....	..	..	..	3	..	..	..	3
Coupling cars.....	..	6	..	..	..	..	..	6
Collisions.....	2	24	1	34	..	26	3	84
Walking on track.....	..	1	..	18	13	57	13	76
Other causes.....	2	13	1	18	1	10	4	41
Total, 1903.....	7	62	10	504	22	212	39	778
" 1902.....	2	30	8	413	22	120	32	563

In the Statistical Office we began to obtain returns in 1898. The following is the return for that year:

Number companies sending returns.	35
Total number miles of track.	635
Number of cars.....	1,379
" trailers.....	382
" snow-sweepers, ploughs	69
" miles run.....	28,547,908
" passengers carried.....	94,616,344
" employees.....	4,004
Total amount capital paid up....	\$18,309,876
Bonded debt.....	10,454,452

I think that there was some misunderstanding about the miles of track. Otherwise the return for 1898 appears to me to be fairly correct. In 1900 the return gave 688 miles. In 1901 we asked for the miles of track, single and double, in order to eliminate the apparent confusion, and obtained as the result answers which aggregated 555 1/2 miles. The latest return gives a total of 647.29 miles, showing an increase of 92 miles since the new century came in.

TELEPHONES.

The summer of 1904 is the 30th anniversary of the invention of the telephone. In 1874 Mr. Graham Bell, then on a visit to his parents, who lived in Brantford, made some laboratory experiments which proved that speech could be transmitted by wire. Two years later, August, 1876, the first transmission of speech over a telegraph wire took place in Brantford. In 1877 the telephone went into commercial use, this city of Hamilton being the first to establish it. From that beginning the use of the telephone has been constantly on the increase. The first returns the Statistical Office secured showed that in 1893 Canada's equipment was 44,000 miles of wire; 33,500 instruments, by means of which 72,500,000 messages were sent in the year. In the ten years since the number of instruments has increased to 81,500 and of messages to 253,970,000, an increase of 144 per cent. in instruments and of 250 per cent. in number of messages—instruments 1 1/2 times more; messages 2 1/2 times more.

Taking the population of the last census there is in Canada one telephone instrument to every 65 persons.

By provinces:

Ontario, one telephone to every..	59.7 persons.
Quebec, " " " "	63.8 " "
Nova Scotia, " " " "	99.4 " "
New Brunswick, " " " "	85.3 " "
P. E. Island, " " " "	215.0 " "
Manitoba, " " " "	51.5 " "
N. W. Territories, " " " "	251.3 " "
British Columbia, " " " "	33.4 " "

According to our list there were on the first of this year 56 companies in Canada, divided by provinces as follows:

Twenty in Quebec, eleven in Ontario, seven in New Brunswick, six in Nova Scotia, one in P. E. Island, two in Mani-

toba, three in the North-West Territories, one of these being in the Yukon, and six in British Columbia—the Bell Telephone Co. being counted three times, one in Quebec, one in Ontario, and one in Manitoba. Actually there are fifty-three, and we obtained this year returns from all but seven.

Some of them are, I believe, under the control of the Bell Telephone Co., and their returns are included in that company's returns.

(Just here I may note with satisfaction that all responded to our request with promptitude, and showed sympathy with our efforts to procure the statistics published in the Year Book of Canada.)

Our neighbors to the south in 1900 showed a per capita of one telephone in 40, while in some places, such as San Francisco, it had reached one in twelve (U. S. Census Bulletin). The latest statistics indicate a per capita of one in 38. This rate of progress is exceeded by Denmark, in which country, according to Mr. F. Dagger in the Canadian Engineer, the per capita is one in every 14. Canada

	Manufacture of Electrical Appliances, Electric Supplies.		Electric Light.	
	1891.	1901.	1891.	1901.
* Establishments.....	No. 13.	25	23	58
Capital.....	\$1,520,000	\$5,207,397	\$3,185,257	\$11,891,025
Hands.....	No. 408	1,922	630	899
Wages.....	\$158,500	\$846,618	\$237,348	\$ 451,047
Output.....	801,752	3,032,262	845,134	2,008,017.

* Establishments having five hands and over.

has not used the telephone to the same extent, but we appear to be making great strides forward, and British Columbia has come within measurable distance of the greatest of telephone-using peoples, the people of Stockholm, in which city there is one telephone in every eight persons.

The Dominion began to construct telephone lines with a commercial end in view, in 1877, as already stated. As far as our somewhat incomplete statistics show, 14 telephone companies now in operation began distributing "hellos" in the decade 1880-1889; 14 in 1890-1899 and 13 in the present decade. Of the remainder we have no record.

The usefulness of the telephone in business in rural communities is well illustrated by the practice in the great fruit growing valley of Nova Scotia. The steamer at Halifax has loaded up with all she purposes carrying of other articles. She is to sail on Saturday afternoon for Liverpool. Her agents telephone to Kentville and Wolfville on Thursday that there is space left for say 2,000 barrels of apples. Kentville and Wolfville telephone to the sub-agents of the London (Eng.) fruit dealers, "How many barrels can you send to Halifax?" These sub-agents jump into their gigs and in an hour have arranged with the orchardists as to

the number of barrels to be delivered on Friday evening at each station along the railway. Then they telephone the result to head stations. Cars are provided in accordance. The fruit is shipped to Halifax Friday night, put on board the steamer the next morning and off goes the steamer, the fruit having been exposed to high temperature hardly at all, the orchardists having had ample time to get their barrels repacked, the railway full opportunity to supply the necessary cars and the steamer being able to take on board the freight without exposing it to the influence of adverse conditions of weather on the wharf.

The number of telephone messages per annum for different countries is:

France.....	187,002,352
Germany.....	766,226,337
Great Britain and Ireland.....	723,246,368
Austria-Hungary.....	147,543,138
Denmark.....	59,210,855
Belgium.....	38,753,367
Switzerland.....	20,670,381
Netherlands.....	31,460,979
Norway.....	1,723,347
United States.....	3,002,000,000

ELECTRIC LIGHT, HEAT AND POWER COMPANIES IN CANADA.

The equipment of these with which Canada has provided herself is of comparatively recent date.

There is no mention made of electricity in the census records of 1881.

In the census of 1891 the following information is given, 1901 being given for comparison:

In addition the census of 1891 gave as follows:

ELECTRICAL APPLIANCES AND SUPPLIES.

(Establishments having under 5 employees.)

Establishments.....	No. 10
Capital.....	\$43,813
Hands.....	No. 17
Wages.....	\$14,615
Output.....	63,100

In the census of 1901 no provision was made for the collection of statistics of establishments having under five hands, so that for purposes of comparison we must take the development which has occurred in establishments having more than five hands.

These show an increase in the ten years as follows:

	ESTABLISHMENTS.		Per cent.
	(Electrical Appliances and Supplies.)	—increase in ten years—	
Capital.....	246	246	
Hands employed.....	346	346	
Wages paid.....	434	434	
Output.....	278	278	

The statistics of electric light, heat and power plants having five hands have been given before. In addition to these there were in 1891, 57 establishments having fewer than five hands, with a capital of \$928,514; employees 133, receiving in wages \$60,336 and having an output of \$309,015 of finished products.

The total equipment of Canada then of 1891 in light, heat and power establishments was :

Establishments	80
Employees	763
Capital	\$4,113,771
Wages	297,684
Output	1,154,149

Comparing these totals with those of 1901 which include only establishments having five hands, the evidence is strong that there has been a marvellous increase in the development of electric light, heat and power applications in Canada.

The Statistical Office has been able to secure a fairly complete return of the electric light companies for 1903, so that we can give data which enable us to ascertain the extent of the development in twelve years with a successful approach to accuracy.

The first point necessary for a comparison of the equipment of electric light works possessed by Canada is the number of establishments.

By provinces these were in :

Provinces.	1891.	1903.
British Columbia	2	17
Manitoba	2	7
New Brunswick	7	13
Nova Scotia	7	22
Ontario	48	199
P. E. Island	2	3
Quebec	9	49
Territories	2	6
Total	80	316

This is a marvellous development in twelve years. It shows how fully Ontario has entered into the spirit of the age and what a full equipment of the great force of modern times she has provided for herself.

In the 316 establishments of 1903 there were 1,786 hands, compared with 762 hands in 1891. There was a capital of over \$20,000,000 invested against \$3,200,000 in 1891.

Another result of our enquiry was that in the Province of Ontario about 100 of the plants were found to be using coal or wood, about 60 using water-power, and 35 steam and water, remainder not stating the particulars. In Quebec 6 establishments used coal or wood ; 38 utilized the water-power of the province, and 7 combined water-power and steam-power. In New Brunswick 11 obtained power from coal or wood and 2 from water. In Nova Scotia 16 used coal and 6 water. In Prince Edward Island 2 coal and 1 water. In Manitoba 5 coal and 2 steam and water. In the Territories 4 coal and 1 water and steam. In British Columbia 8 coal or wood, 8 water and 1 water and steam.

Except in the Province of Quebec the majority of the plants use coal or coal and wood. Sometimes sawdust is utilized.

ELECTRIC LIGHTING IN CANADA.

An analysis of the statistics of electric lights, prepared by me for the Year Book for 1903, shows that in 1903 there were 324 electric plants* in the Dominion with 14,780 arc lights and 1,212,861 incandescent lights. Taking the arc as equal to ten incandescent lights the country had on June 30 last 1,360,661 lights in use. This is an increase of 236,-

865 lights in the twelve months, or over 21 per cent. Where there were 5 lights in 1902 there were 6 in 1903. The growth since 1898 has been : Establishments, 1903, 324 ; increase 65. Arc lights, 14,780 ; increase, 4,391. Incandescents, 1,212,861 ; increase, 749,246, showing an increase of 42 per cent. in the number of arc lights and of 161.6 per cent. in the incandescents.

Of the provinces, Ontario is far away the chief employer of the electric light. This province had 203 of the 324 plants in use in the Dominion. It has considerably more than one-half the total number of arc lights and 47 in each hundred of the incandescents. Thirty-four municipalities in the province supply themselves with electric lighting.

The Province of Quebec has 53 plants,

Countries.	Year.	APPENDIX "A".		Number of Messages.	Number of Offices.	Number of Messages per head of Population
		Miles of Line.	Miles of Wire.			
Great Britain	1903	49,459	480,400	92,471,000	12,129	2.22
Australia	1902	45,343	121,818	8,431,372	3,102	2.23
New Zealand	1902	7,749	22,672	4,713,351	1,103	6.10
India and other Asian Poss*	1902	57,495	190,837	6,749,372	2,006	.02
African Possessions	1902	17,835	38,832	7,555,500	.....	1.08
Canada	1903	36,780	96,728	5,312,800	3,004	.....
Newfoundland and British West Indies	1902	3,308	15,137	1,654,000	300	92
Gibraltar and Malta	1902	67	.....	33,500	.....	.15
Total British Empire		218,077	966,524	128,921,895	21,614	
Abyssinia	1902	1,050	3,168	158,400	.....	..
Austria-Hungary	1902	39,372	198,303	31,554,715	9,228	.69
Argentina	1902	29,397	58,056	7,000,000	520	1.46
Belgium	1902	4,047	21,874	14,252,100	1,372	2.07
Bolivia	1902	2,465	8,625	1,075,000	68	.47
Bosnia	1902	1,803	4,873	427,452	134	.25
Brazil	1900	14,710	27,720	1,505,042	1,003	.10
Chile	1902	11,060	68,710	4,879,719	608	1.57
China	1902	14,000	49,000	3,430,000	250	.01
Columbia	1893	8,600	25,800	600,000	448	.15
Congo Free State	1902	838	3,108	62,160	40	.....
Costa Rica	1902	840	2,940	294,532	68	.92
Cuba	1902	2,300	3,450	430,125	153	.27
Denmark	1902	2,385	8,855	2,409,365	169	.98
Ecuador	1902	1,242	4,347	434,470	60	.31
France	1902	90,592	340,180	47,280,070	13,527	1.21
Colonies and Dependencies :						
Algeria	1901	6,520	18,240	2,369,456	539	.50
Tunis	1901	2,420	5,500	978,000	122	.51
Other Possessions		10,700	32,100	1,605,000	300	.40
Germany	1902	83,526	309,644	45,216,963	25,621	.80
Greece	1901	3,830	5,590	1,275,095	241	.50
Guatemala	1901	3,490	10,470	929,619	157	.59
Honduras	1902	2,825	8,475	618,000	168	1.05
Italy	1901	28,472	107,810	11,682,366	6,078	.36
Japan	1903	x16,128	78,710	18,073,407	2,197	.38
Korea	1902	2,170	6,510	325,500	325	.06
Luxemburg	1902	656	1,390	87,300	196	.37
Mexico	1901	43,675	.....	2,665,998	377	.19
Montenegro	1902	343	427	29,590	21	.13
Netherlands	1903	4,010	16,158	5,728,222	761	1.08
Colonies, East Indies	1901	7,518	22,554	729,316	389	.02
Nicaragua	1901	2,440	7,320	140,640	119	.28
Paraguay	1901	500	1,500	97,044	75	.15
Persia	1901	5,480	8,270	16,540	112	.002-10
Peru	1903	3,220	.....	152,808	48	.03
Portugal	1902	5,301	11,688	4,054,230	461	.73
Portugal-Colonies of	1903	2,368	7,104	142,080	80	.01
Rumania	1902	4,350	8,780	2,318,683	1,866	.12
Russia	1902	106,417	325,978	*101,639,542	.....	.15
Salvador	1902	1,920	5,760	715,084	135	.71
Santi Domingo	1902	430	1,290	40,000	65	.07
Servia	1902	2,300	4,925	1,092,527	145	.44
Siam	1902	2,900	7,700	154,000	360	.02
Spain	1901	20,170	47,470	4,627,713	1,634	.25
Sweden	1901	10,077	31,695	2,813,830	2,175	.55
Norway	1902	9,978	53,813	2,278,639	974	1.01
Switzerland	1902	5,556	23,765	3,273,784	2,137	.99
Turkey	1902	25,100	39,800	4,976,070	907	.21
Egypt	1903	2,562	10,868	x1,617,946	544	.16
United States	1903	196,115	1,029,983	91,391,443	23,567	1.20
Hawaii	1903	250	750	37,500	40	.24
Porto Rico	1903	470	1,410	70,400	70	.07
Philippine Islands	1903	720	2,160	43,200	42	.00 1-2
Uruguay	1901	4,604	13,812	397,493	101	.04
Total Foreign Countries		854,268	3,099,028	430,118,178	100,697	
Grand Total		1,072,345	4,065,552	557,040,073	122,341	

* Including Railway Telegrams numbering 91,639,542.

x Not including State Telegrams.

* The statistics for Africa are very incomplete, many thousands of miles of line being in hands of companies not making returns.

x Submarine cable 2,130 miles in addition.

* Some of these are absorbed by others but made their returns to the Department of Internal Revenue separately and are therefore given here separately. In the previous tables they are dealt with under the return of the absorbing companies.

3,853 arc lights and 409,503 incandescents. It is, therefore, behind Ontario by 4,571 arcs and 153,990 incandescents. It has made, however, greater proportionate gain since 1898 than Ontario, the gain in arcs being: Ontario, 36.2 per cent.; Quebec, 47.6 per cent.; and in incandescents: Ontario, 138.6 per cent., and Quebec, 212.3 per cent. During the period 1898-1903 the number of plants in Quebec increased by 13.

The largest single plant in the Dominion is that of Toronto, with its 170,000 lamps, arcs being taken as each equal to 10 incandescents. The next largest is that of the Lachine Rapids Hydraulic & Land Co., Montreal, 153,503. The third in size is the Ottawa Electric Co. with 111,927 lights.

The other provinces have made considerable progress. To the west, Manitoba has increased in 1898-1903 its arc lights from 162 to 375, and its incandescents from 13,800 to 31,905.

The North-West Territories have not increased as rapidly as the other parts of the Dominion, their arcs numbering 29, an increase of 4 in the period named, and their incandescents numbering 6,677, an increase of 1,997.

British Columbia shows the largest proportionate increase of any of the divisions of Canada, its increase of arcs being 377, or 82 per cent., and of incandescents, 74,297, or 257 per cent. In 1898 British Columbia and Nova Scotia had almost the same number, British Columbia having 7 more arcs and 169 more incandescents; yet Nova Scotia has

increased the number of its incandescents by 32,140, or 11.16 per cent. The three Maritime Provinces had in 1898, 951 arc lights and 46,977 incandescents, and in 1903 they had 1,267 arcs and 93,120 incandescents, an increase of 33½ per cent. for arcs, and of over 98 per cent. for incandescents.

The imports of the country as well as the increased manufactured output of our own establishments attest the vigorous development of electricity as the harnessed servant of humanity. Of electric arc lights and carbon and carbon points we imported during the pasts fourteen years an average of \$35,000 worth a year, and the last two years' average was \$76,200. Of electric light apparatus and batteries we imported in fourteen years an annual average of \$407,000, and the last two years the average was \$1,090,050. Of electric motors and meters in fourteen years we imported \$151,700 a year. The average of the last two years is \$378,300.

It appears to me that the outlook for Canada is one that shows the country going forward by leaps and bounds in its application of electricity. Electricity will drive the carriages on the king's highway as well as those on the iron way. It will do our ploughing, our sowing and our reaping. It will make trolley parks an important part of the national equipment for recreation. If it does not help us into this life, it will help some (no one of this association of course) out of it—by order of justice. It will do the nation's smelting and welding. It will supply from peat bogs fuel for Ontario and Quebec.

In the form of the "wireless" it will make travel by sea along our coasts and estuaries as safe as travel about the streets of our towns. It will make our hats, cook our dinners and warm our toes. It will become so tame to our service that it will with the message present a photo of the speaker, and cut out in one town a cheque on a bank written hundreds of miles away, and do it so well that the original will be destroyed and the transmitted cheque remain the only existing original. We already have twelve messages over the one wire. How many more who can say? We have in use a telegraph-telephone system by which our railways can employ the same wire for both simultaneously. Our surgeons use it to minister to mind and body diseased. Our warriors use it in the form of the wireless to transmit orders from the right to the left of an army in extended order and thus are able to set thousands moving as one at the same instant over miles of distance.

In fact the electrical engineer is dealing with a force whose uses have become, and promise to become even more in the future than in the past, so varied that more than any profession a man has to be a hustler all the time or he will become a way-back even while he is positive he is well to the front. The up-to-date man of to-day is rear-guard to-morrow if he is not always on the alert, so rapid are the movements, so numerous the applications of the electrical forces.

DEPARTMENT AGRICULTURE, OTTAWA,
May 16, 1904.

SCIENTIFIC GLUE HEATING EQUIPMENT.

The accompanying illustration is of the Wetmore Glue Heater, manufactured by the Advance Machinery Co., Toledo, Ohio.

This appliance is built in six different designs in all sizes, from 2 to 150 gallons capacity. About two years ago the company started this business by placing on the market a cooker or tank of 10 gallons capacity for dissolving glue. The tank, while at the time very crude, was a wonderful improvement over methods at that time in vogue. Improvements and additions have been made from time to time, until to-day the company is in position to offer its heater and other copper appliances for the glue room under an absolute guarantee that the purchaser will realize sufficient savings by its use over old methods to return its cost in a year. They are sent out for thirty days trial under this guarantee. These appliances are now made for use in connection with gas, steam and electricity. For steam there is a patent siphon for introducing it into cold water. For electricity electric coils and all attachments are furnished, together with a switch which enables the user to bring glue to 150° in a very short time, and thereafter reduces the current to a point where glue will retain the proper heat throughout the day. Pot heaters are also made to be arranged at the workman's bench. These are arranged for heating by steam, gas or electricity. They save a wonderful

amount of time by permitting the workman to have a pot of hot glue at his bench at all times.

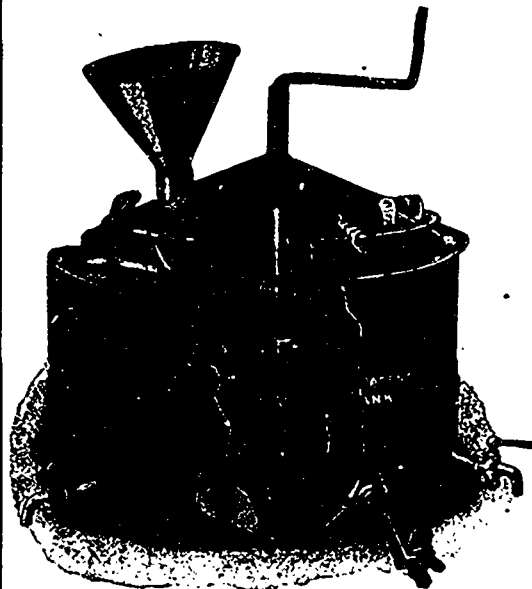
For steam it is necessary to pipe it from the boiler. For gas a tube or pipe is run from the individual pot heater to the gas supply. For electricity a cord is run from the heater to an electric wire and is controlled by a switch, as in the case of the large heaters.

Glue should be placed to soak in cold

water in a separate vessel. Every glue manufacturer recommends this, for the reason that in order to absorb the requisite amount of water glue should be kept cool. As soon as it is heated it swells, which closes the pores and prevents absorption. If flake glue is placed to soak in cold water at night it can be prepared ready for use in one-fourth the time that is necessary where the users place it to soak in the cooker. While almost any bucket will do for this purpose, a very handy one, one especially designed for this purpose, is described on page 28 of their catalogue.

Whereas the glue room in the ordinary factory has in the past been a very dirty affair, a number of institutions have installed these individual pot heaters for the bench, and a Wetmore Heater as a central source of supply, and these glue rooms are as neat as any part of the factory. Page 8 of the catalogue refers to this matter.

This economic appliance, which is now in wide use by woodworkers and others, is manufactured for the Canadian trade at Windsor, Ont., and thus supplied free of duty and at the lowest possible cost. All correspondence should be addressed to the head offices of the company at Toledo, Ohio.



Wetmore Glue Heater.

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 head of Captains of Industry.

It is said the Grand Trunk Railway Co. have acquired an option on a controlling interest in the Hamilton, Grimsby & Beamsville Electric Railway, and that the electric railway may be turned over to the Grand Trunk Railway Co. The option is said to have been obtained about May 1 for a month, and renewed a few days ago for another month. The proposition is to run the electric line as an adjunct of the steam railway. For several years the Hamilton, Grimsby & Beamsville Railway have been doing a big business in the fruit line in connection with the Canadian Pacific Railway and Dominion Express Co., and it is understood that all this fruit business will be diverted to the Grand Trunk Railway and Canadian Express Co.

The Canadian Rand Drill Co., Sherbrooke, Que., have just closed with the Canadian Westinghouse Co., Hamilton, Ont., for the installation of a Rand-Corliss compound, power driven, air compressor, to be installed in their new plant. This machine is designed to furnish air for the various pneumatic appliances throughout the works and is to be driven by a Westinghouse motor, through a Morse chain drive.

Building permits representing an expenditure of \$55,000 were issued in Toronto as follows: R. Parker & Co., two story brick addition to dye works and stable, \$1,000; A. Nelson, pair semi-detached 2½ story dwellings, \$3,500; Mrs. Coles, 3 story brick store, \$12,000; A. C. Mably, 2 story stone and brick detached dwelling, \$2,000; A. M. Canibear, 2 story rough-cast dwelling, cement cellar, \$1,200; Thos. E. Earles, 2 story brick dwelling, \$2,000; Hon. Justice Anglin, 2 story brick residence, alterations and additions, \$4,000; Merchants' Dyeing & Finishing Co., Messrs. Garside & White, pair of 5 story warehouses, brick, stone and mill construction, \$50,000; G. T. Webb and V. F. W. Dunn, pair of semi-detached 2½ story stone and brick dwellings, \$4,000; Stanyon Metallic Furniture Co., 3 story roughcast warehouse and office, brick cellar, \$3,000.

An important auction sale of timber limits will take place at the office of the minister of lands, mines and fisheries, Quebec, on June 22. Some thousands of square miles of limits are to be offered in the district of Upper Ottawa, St. Maurice, St. Charles, Lake St. John, Saguenay,

Bonaventure, Rimouski, Metapedia Valley, Grandeville and Gaspé.

The Globe Printing Co., Toronto, are installing a new Hoe quad press, which will increase the printing capacity to 96,000 eight page papers per hour.

The National Hotel, at Sudbury, Ont., was destroyed by fire June 2. Loss about \$7,000.

The plant of the Palmerston Pork-packing Co., Palmerston, Ont., has recently been purchased by Joseph M. O'Mara, of Limerick, Ireland, and is now running to its full capacity.

The following firms whose premises were destroyed in the recent Toronto fire will rebuild:—Messrs. Suckling & Co., will erect a building 146 feet by 32 feet, four stories high, at a cost of \$10,000. The Office Specialty Mfg. Co. will rebuild, also Messrs. Wm. Jessop & Sons, and Messrs. Rolph & Clark will erect an addition 86x80 feet, five stories high.

The Chicago Metallic Sash Co., Chicago, Ill., are considering the establishment of a branch works in Canada.

The Diamond Glass Co., Montreal and Toronto, which closed up their factory in Hamilton, Ont. about five years ago, have decided to reopen it. The intention is to reopen the flint house, and about \$30,000 will be spent putting the factory into first-class shape. Probably 80 or 35 glass blowers will be employed, and it is thought the furnace will be lighted early in September.

Mr. H. Appleton and Mr. P. Primeau had an interview with Hon. E. J. Davis, Ontario Commissioner of Crown Lands, and Mr. T. W. Gibson, Director of the Bureau of Mines, a few days ago, on the subject of erecting a copper smelter on the north shore of Lake Huron. They are interested in copper properties in the township of Salter, and are of opinion that the erection of a smelter would be of great assistance to the development of the copper mines of that section. Their idea would be to put up a smelter capable of treating 100 or 150 tons of ore per day, and to increase the capacity as required. The product would be a matte containing 80 or 90 per cent. copper. In view of the benefits which such a smelter would confer upon the copper mining industry, these gentlemen sought Government aid in the form of a bounty on the product. Mr. Davis requested the proposition to be

put in writing, and promised his careful consideration.

It is stated that the Robert Simpson Co., Toronto, will establish departmental stores in Winnipeg, Man.

The Merchants' Bank of Canada at Chatham, Ont., are inviting tenders for the erection of a stone and pressed brick block and banking building.

A by-law has been carried at Glencoe, Ont., authorizing a loan of \$30,000, to Mr. T. Aldred of that place, for the extension of his foundry.

The Toronto Lithographing Co., Toronto, have purchased the engraving business of George Cox, of Ottawa, Ont. They will establish a branch office in Ottawa and enlarge the works.

The Naisbitt Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture poultry foods, drugs for stock, and veterinary supplies. The provisional directors include H. F. Naisbitt, W. B. Laidlaw and J. W. Milburn, Toronto.

Thompson Bros., Toronto, have purchased a 25 h.p. hoisting engine, from H. W. Petrie, to be used in connection with the erection of the new T. Eaton Co.'s factories.

Messrs. T. Lindsay & Co., Ottawa, Ont., will erect a mammoth departmental store in that city.

The Mortimer Printing Co., Ottawa, Ont., have purchased the hotel Cecil property and will erect a six-story lithographing and printing plant there at a cost of about \$50,000.

The Electrical Development Co., Niagara Falls, Ont., are having some more large centrifugal pumps installed by H. W. Petrie, Toronto, for their construction work. They are now using several, including two 18 inch direct connected machines.

The Simpson Brick Co.'s drying plant, Toronto, was destroyed by fire June 12. Loss about \$15,000.

Robt. Fairbairn, Essex, Ont., has been awarded the contract for the erection of 300 miles of wire fence along the Canadian Northern Railway.

The Kingston Milling Co., Limited, Kingston, Ont., have been incorporated with a capital of \$60,000, to acquire the business of the Kingston Milling Co., and to manufacture flour, oatmeal, etc. The provisional directors include J. G. Campbell, Perth, Ont., E. C. Gildersleeve and J. M. Campbell, Kingston.

Messrs. Orr Bros., Limited, Toronto, have been incorporated with a capital of \$40,000, to acquire the business of Orr Bros., and to carry on a general contracting business for the erection of buildings, etc. The provisional directors include R. J. Orr, Wm. Orr and Geo. Orr, Toronto.

The Northern Timber Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture timber, lumber, etc. The provisional directors include A. H. Vanderburgh, C. W. Bennett and W. J. Martin, Toronto.

The Galt Down Draft Furnace Co., Galt, Ont., have been incorporated with

a capital of \$100,000, to manufacture furnaces, stoves, malleable castings, etc. The provisional directors include Thos. H. Smith, A. Newlands and T. E. Montague, Galt.

The Martin & Stanley Piano Co., Toronto, have changed their name to the Martin-Orme Piano Co., Limited.

The Chatham Mfg. Co., Chatham, Ont., have changed their name to the Chatham Wagon Co., Limited.

The New Century Refrigerator & Mfg. Co., Dundas, Ont., have been incorporated with a capital of \$75,000, to manufacture refrigerators, refrigerating appliances, etc. The provisional directors include J. D. Pennington and Thos. E. right, Dundas, and R. B. Baker, Hamilton, Ont.

The Digby Lumber Co., Toronto, have been incorporated with a capital of \$25,000, to manufacture lumber, etc. The provisional directors include A. Kidd and F. H. Kidd, Toronto, and F. A. McDiarmid, Fenelon Falls, Ont.

Mr. Thos. Pink, Pembroke, Ont., has installed a new iron planer, supplied by H. W. Petrie, Toronto.

The Mulholland-Newcombe, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture pianos, organs, etc. The provisional directors include Wm. F. Mulholland, O. Newcombe and A. Ogden, Toronto.

The Montreal & Ottawa Peat Co., Ottawa, Ont., have been incorporated with a capital of \$75,000, to manufacture peat and peat fuel, etc. The provisional directors include A. Watts, Brantford, Ont., A. Lumsden and A. W. Fleck, Ottawa.

H. W. Petrie, Toronto, is adding still more to the complete laundry plant at St. Michael's Hospital, Toronto, having just supplied a large mangle.

The Owen Sound Natural Gas & Oil Co., Owen Sound, Ont., have been incorporated with a capital of \$40,000, to produce electricity and natural gas, and to carry on an oil-refining business, etc. The provisional directors include Wm. Morrison, R. J. Doyle and Wm. Pedwell, Sarawack, Ont.

The Sub-Target Co., Toronto, have been incorporated with a capital of \$1,000,000, to manufacture firearms, machinery for targets and sub-targets, etc. The provisional directors include H. H. Dewart, and Robt. Harmer, Toronto, and J. H. Tilden, Hamilton, Ont.

The Barrie Carriage Co., Barrie, Ont., have purchased a large machine shop outfit, including a heavy punch and shears from H. W. Petrie, Toronto.

The Electrical Advertising Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture electrical advertising apparatus. The provisional directors include Geo. Stevenson, Robt. Caldwell and P. Shea, Toronto.

An 80 h.p. boiler and 65 h.p. engine has been forwarded by H. W. Petrie, Toronto, to the Beaverton Brick & Tile Co., Beaverton, Ont.

The Pelee Island Navigation Co., Pelee Island, Ont., have been incorporated with a capital of \$40,000, to carry on a trans-

portation and navigation business. The provisional directors include J. McCormick, A. M. McCormick and C. L. Meyer, Pelee Island, Ont.

The Henderson Roller Bearing Co., Toronto, have just added a cold steel cut-off saw, a gas tempering furnace, and other tools to their large plant, installed by H. W. Petrie, Toronto.

The International Gas Appliance Co., Toronto, have been incorporated with a capital of \$49,000, to manufacture gas appliances, glassware, hardware, etc. The provisional directors include W. M. Campbell, Toronto, G. T. Merwin and J. L. Reay, Montreal.

The Canadian Westinghouse Co., Hamilton, Ont., are having eleven Cincinnati milling machines, and two Cincinnati Universal grinders, installed by H. W. Petrie, Toronto.

The Dominion Messenger & Signal Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture signal, fire alarm and electrical call boxes, etc. The provisional directors include I. Mitchell, Geo. D. Perry and D. E. Henry, Toronto.

Robertson Bros., candy works, Toronto, have had a Wheelock automatic engine installed by H. W. Petrie, Toronto.

The Reinhardt Salvador Breweries, Limited, Toronto, have been incorporated with a capital of \$600,000, to acquire the business of Reinhardt & Co., and to manufacture malt liquors, etc. The provisional directors include L. Reinhardt, A. A. Reinhardt and A. MacBean, Toronto.

H. W. Petrie, Toronto, has just shipped two large portable engines to Haileybury, New Ontario, to Little Bros., and T. H. Thompson.

Messrs. Hope & McDonald, Montreal, have been awarded the contract for the construction of the additional portion of the Temiskaming Railway north from North Liskeard.

The Department of Public Works, Ottawa, Ont., are inviting tenders for the construction of a breakwater at Goderich, Ont.

A fine laundry plant is being equipped by H. W. Petrie, Toronto, for the Orillia Steam Laundry, Orillia, Ont.

Messrs. Ellis & Son's sawmill at Meaford, Ont., was destroyed by fire June 11. Loss about \$3,000.

The Frost Wire Fence Co., Hamilton, Ont., have been incorporated with a capital of \$500,000, to manufacture fences, gates, etc., and to acquire the business of the Manitoba Frost Wire Fence Co. The provisional directors include M. H. Frost, Cleveland, Ohio, H. L. Frost and C. H. Hanson, Welland, Ont.

The Grand Trunk Railway Co. will erect another freight shed in Toronto at a cost of \$10,000.

J. Ross, Chicago, Ill., will build a three story brick block at Fort William, Ont.

The city of Niagara Falls, Ont., will spend \$18,960 on sidewalks, \$15,828 on sewers and \$12,000 on waterworks construction.

The Methodist congregation of Windsor, Ont., will erect a \$35,000 brick and stone church building.

The congregation of All Saints church, Peterborough, Ont., will erect a new edifice at a cost of \$20,000.

The Dairy School at Kingston, Ont., will be improved at a cost of \$9,000.

Mr. T. Mitchell, Forest, Ont., will develop a water power on the Souble River at Rock Glen, and will install an electric plant.

J. M. Campbell, Kingston, Ont., will develop a water power at Kingston mills.

Mr. H. Lindop, St. Thomas, Ont., will rebuild his planing mill which was recently destroyed by fire.

Woodward Bros. will erect a large biscuit factory in Sunderland, Ont.

The Laurentide Mica Co. will erect a new factory at Ottawa, Ont.

A new gymnasium will be erected at Ottawa, Ont., at a cost of about \$12,400. Chas. Emery, of the Ottawa Amateur Athletic Association is interested.

City Engineer Speakman, of St. Catharines, Ont., has prepared plans for the erection of a high level bridge at a cost of \$100,000.

The town of Arnprior, Ont., will purchase a ten ton steamer road roller and one rock crusher No. 4.

The Niagara, Queenstown & St. Catharines Railway Co., will build an electric road from St. Catharines, Ont., to Niagara-on-the-Lake, Ont.

The Montreal City Council are considering the construction of a sewer to the Back River at a cost of about \$88,000.

The plans and specifications for the erection of a parish church in Maisonneuve, Que., having been approved, the contract will be awarded immediately. The building will cost about \$125,000.

The plans of Messrs. Marchand & Haskell, architects, Montreal, have been adopted for the new Catholic Church at St. Cuneonde, Que. The cost of the church will be about \$120,000.

W. J. Gregoire, architect, Sherbrooke, Que., has completed plans for interior of the church of St. Anne of Stukely at a cost of about \$10,000.

The International Coal & Coke Co., Coleman, Alberta, have just placed an order with the Canadian Rand Drill Co., Sherbrooke, Que., for a 300 h.p., steam driven, Rand duplex compressor of the very latest type.

The Quebec Improvement Co., Quebec City, have been incorporated with a capital of \$100,000, to erect mills, warehouses, factories, etc. The provisional directors include B. Lowry, W. F. V. Atkinson and G. E. A. Jones, Quebec City.

Messrs. Revillon Bros., a French incorporation, have been licensed to manufacture furs, etc., in Canada, with a capital of \$5,404,000. Mr. P. D'Aigneaux, Montreal, is their attorney.

The Star Mantle Mfg. Co., Montreal, have increased their capital from \$10,000 to \$25,000.

Messrs. R. H. Buchanan & Co., water works contractors, Montreal, are putting in the water supply machinery for the

new paper mill at Mille Roches, Ont., and a 40,000 gallon tank on a 75-foot steel tower for the Robt. Mitchell Co. at St. Cuenegonde, Que.

The Dominion Government have accepted the recommendation of the Montreal Harbor Board that the \$2,500,000 contract for fourteen steel freight sheds to be erected in that city should be awarded to Peter Lyall & Sons. Although the contract is the largest of its kind ever awarded in Canada, Messrs. Lyall & Sons are prepared to go ahead with the contract immediately. It is estimated that the contract will give employment to about 1,000 men. The fourteen sheds are to be completed within two years.

The steamer Canada, owned by The Richelieu & Ontario Navigation Co., Montreal, was wrecked June 12. Loss about \$190,000.

The Montreal Dressed Meat Co., Montreal, have been incorporated with a capital of \$20,000, to manufacture and pack meats, etc. The provisional directors include C. F. Mitchell, Cobourg, Ont., J. L. Mitchell and A. Bessner, Montreal.

The Review Publishing Co., Montreal, have been incorporated with a capital of \$20,000, to take over and continue the publication of The Canadian Mining Review and the Canadian Mining Manual. The provisional directors include S. Bell and A. F. May, Ottawa, and J. E. Hardman, Montreal.

Messrs. R. H. Buchanan & Co., 692 Craig Street, Montreal, have received the contract from the Cornwall Paper Co., Mille Roches, Ont., for one 18x10x12 Blake underwriter fire pump and complete fire service, piping, hydrants, indicator, posts, etc.

The Intercolonial Railway are considering tenders for extensions to the station, and for the erection of a new freight shed at St. Michel's, Que.; a new station and freight shed at Rimouski, Que.; a station and agent's house at St. Leonard Jct., Que.; and for the construction of about 4,000 feet of line at Pictou Landing, N.S.

Referring to the announcement in a despatch from Sydney that the Dominion Steel Works would be closed down, Mr. Frederic Nicholls, Vice-President of the company, states that probably work would not be resumed until the completion of the rail mill and finishing mill early next year. The low price of billets and the downward trend of prices were given as the reason, whereas when the plant was completed by the erection of the finishing mills the company would be in a much stronger position to compete for the trade.

The Richard Steamship Co., North Sydney, N.S., have been incorporated with a capital of \$40,000, to build and operate vessels. The provisional directors include Wm. Hackett, J. Salter, North Sydney, N.S., and J. T. Burchell, Sydney.

Messrs. J. A. Humphrey & Son, Limited, Humphreys' Mills, N.B., have been incorporated with a capital of \$500,000, to acquire the business of J. A. Humphrey & Son, and to manufacture woolens,

cloth, yarns, etc. The provisional directors include W. F. Humphrey, Humphreys' Mills, P. S. Archibald and J. H. Harris, Moncton, N.B.

Messrs. Willis Bros.' carriage factory at Halifax, N.S., was destroyed by fire June 7. Loss about \$5,000.

Alex. D. Chisholm, secretary, Antigonish, N.S., will receive tenders for the erection of a building for the Antigonish C.M.B.A. Hall Co.

The Amherst Foundry Co., Amherst, N.S., have added a plant for the manufacture of enamel ware. The goods turned out will consist of plumbers' and kitchen lines.

The flour and corn meal mills of the Dominion Milling Co., St. John, N.B., were destroyed by fire June 5. Loss about \$30,000.

The Department of Public Works, Fredericton, N.B., are inviting tenders for the construction of Murray's Mill Bridge at Botsford, N.B.

The Lewisville Brick & Mercantile Co., Lewisville, N.B., have been incorporated with a capital of \$24,000, to manufacture bricks, terra cotta, drain pipes, etc. The provisional directors include G. R. Jones, F. C. Jones, Lewisville, and M. B. Jones, Moncton, N.B.

The Pender Nail Co., St. John, N.B., received on May 21 two carloads of steel rods, the first output of the new rod mills at Sydney, C.B. The Pender Co. use about 100 tons per week.

The New Brunswick Central Railway Co., Coal Branch, N.B., have been incorporated with a capital of \$100,000, to construct a railway from Coal Branch towards Chipman, N.B.

Mr. S. W. Dugan, of the Canadian Rand Drill Co., Sherbrooke, Que., has arrived in Montreal, to take over the management of the advertising department.

D. A. Ritchie, Winnipeg, Man., will erect a brick office block in that city.

P. McArra, jr., Regina, N.W.T., is inviting tenders for the erection of a Presbyterian Church building at that place.

The municipal lighting plant at Edmonton, N.W.T., will be enlarged at a cost of about \$50,000.

Messrs. Wilson & Wattenhall, architects, Calgary, N.W.T., are preparing plans for a Presbyterian Church building, also for a new hall for the Bow River Lodge of Freemasons.

Architect Marshall, Brandon, Man., is preparing plans for a large hotel building for Messrs. Broadfoot & Clegg of that city.

It is proposed to build a flour mill at Macgregor, Man. For further information apply to the mayor.

Messrs. R. B. Bissett & Co. will erect a sash and door factory at Strathcona, N.W.T.

The Wetaskiwin Sash & Door Co., Wetaskiwin, N.W.T., will erect a sash and door factory, and install new machinery, at a cost of about \$10,000.

The Public School Board of Wetaskiwin, N.W.T., are inviting tenders for the erection of an eight-roomed school building at a cost of \$30,000.

The Gibson Lumber Co., Winnipeg, Man., have been incorporated with a capital of \$200,000, to manufacture lumber, pulp, etc. The provisional directors include R. W. Gibson, J. A. Johnston, Winnipeg, and E. A. Banbury, Wolseley, N.W.T.

The Arden Cement Block & Building Co., Lansdowne, Man., have been incorporated with a capital of \$20,000, to manufacture cement blocks, sewer pipes, brick, etc. The provisional directors include J. A. Gillhuly, Robt. Lamb, and J. S. McGorman, Arden, Man.

The Dominion Steam Heating Co., Winnipeg, Man., have changed their name to The John Plaxton Co., Limited, and have increased their capital from \$24,500, to \$50,000.

The Gordon-Mitchell Drug Co., Winnipeg, Man., have been incorporated with a capital of \$150,000, to manufacture drugs, medicines, etc. The provisional directors include J. C. Gordon, W. J. Mitchell and H. E. Mitchell, Winnipeg.

The Tredair Rubber Co., a United States incorporation, will establish branch works in Winnipeg, Man., under the management of H. F. Blair, of that city.

W. D. Dunlop, president of the Dunlop Co., Limited, is building a \$30,000 business block at Yorkton, N.W.T.

The Regina Brewing & Malting Co., Regina, N.W.T. will erect a brewery at a cost of \$20,000.

The Regina Planing Mills Co., Regina, N.W.T., will construct a planing mill and sash and door factory.

Messrs Czerwinski & Grant, box manufacturers, Winnipeg, Man., have had plans prepared for a new brick and stone box factory.

The Manitoba Government will build a new court house at Morden, Man.

Mr. J. McK. Dickson, Edmonton, N.W.T. is on his way to England to purchase machinery for a flax and linen mill. He says that the country about Edmonton is especially fitted for the growth of flax, and will produce an unlimited quantity, which, with proper handling, will become a very valuable by-product.

Messrs. Murdock Bros., Brandon, Man. have let contracts for the erection of a large, three-story warehouse.

Plans will be prepared at once for a Normal school to be built by the Manitoba Government in Winnipeg, at a cost of \$50,000.

The Summerland Supply Co., Summerland, B.C., whose sawmill was recently destroyed by fire, are erecting a large sawmill and installing wood-working machinery. The power is to be generated from the water of Trout creek. This water is being carried in flumes through a tunnel in the mountain to supply the turbine wheel at the mill. The power to be generated at present will be 120 h.p., and the daily capacity of the mill 20,000 feet.

A contract has been let for the construction of a large wharf at Britannia Beach, Howe Sound, B.C. on which will be built a large ore bin on the northern side of the wharf, a gridiron will be built to receive scows which may rest there for

loading or unloading irrespective of the stages of the tides. A concentrator will also be erected at the Beach, the ore being brought from the mine by means of an aerial tramway three and a half miles long.

The B.C. Standard Mining Co., will enlarge the carrying capacity of the aerial tramway from their Hunter V. mine, situate near Ymir, B.C., so as to admit of the daily output of ore being increased to about 200 tons.

It is expected that the Rosland Power Co.'s new concentrator at Trail, B.C. will be completed shortly. The mill will have an initial capacity of 200 tons per 24 hours, but the arrangement is such that by duplicating certain machines the capacity of the works can be nearly doubled without enlarging the present buildings.

The City Engineer, Vancouver, B.C., is preparing plans for seven new septic tanks, to cost about \$20,000.

The Kootenay Engineering Works, have installed a six foot lathe, boiler-rolls and a key-seating machine at their Nelson, B.C. plant.

Manager Boscowitz, of the Victoria theatre, Victoria, B.C., has had plans prepared for interior improvements to cost \$30,000.

A large distillery will be erected at a cost of \$75,000, at Sapperton, near New Westminster, B.C. Wm. Braid and Robt. Kelly, Vancouver, B.C. are interested.

The White Bear Co., Rosland, B.C., have placed an order with the Canadian General Electric Co., for two 75 and one 30 h.p. motors. The machines are to be used in the company's Elmore oil concentrator.

A concentrator and smelting plant will be erected at the Velvet and Portland mines, Rosland, B.C.

A new custom house will be erected at Nanaimo, B.C.

A matter of great importance is the proper ventilation of kitchens in hotels and restaurants. Not only is it important to the welfare and comfort of the chefs, but very often to the other occupants of the building, as it often happens that odors from the kitchen escape to other parts, very often up through the elevator shaft to rooms on the upper floors. Usually the kitchen is low studded and the odors arising from cooking makes the room almost uninhabitable, especially in the warm weather. It has been found that natural draft through brick chimneys is not sufficient to take away all the odors without leakage through other parts of the building. Proper ventilation can only be obtained by the employment of some artificial means which will always be entirely independent of the weather. The air must be exhausted and fresh air take its place. This is readily accomplished by the Sturtevant fan system of ventilation. The kitchens of the hotels in New York, such as the Waldorf-Astoria, and many others throughout the country are ventilated by the Sturtevant fan system. In one case, it was found by test without the use of the fan system when the thermometer was 90 degrees outdoors the tem-

perature within 6 feet of the kitchen ranges was between 120 degrees and 135 degrees. After the fan was in operation with an outside temperature of 90 degrees the temperature in the kitchen the same distance away from the ranges was only 92 degrees.

Among the interesting exhibits connected with the Department of Mines and Metallurgy at the St. Louis Exposition will be a coal-testing plant operated under the direction of the United States Geological Survey. The tests will be conducted not for the purpose of determining the relative value or merit of different coals, but primarily for the purpose of demonstrating the most economical methods for their utilization. The work possesses a peculiar interest from the fact that the United States government has not heretofore attempted to make a uniform and comprehensive examination of the mineral fuels of that country.

The Chicago Pneumatic Tool Co., Chicago, Ill., inform us that their President, Mr. J. W. Duntley, who is now in London England, has reported having booked orders for 275 pneumatic machines of different sorts, 50 of them being rock drills to go to Johannesburg, South Africa, 25 are compressors for European concerns, 35 railway speed recorders for Germany, also 9 large D. S. C. compressors for the Pennsylvania Railroad. Their compressor factory at Franklin, Pa., is running to its fullest capacity on compressor work and is barely able to keep pace with the rapidly growing business in this line; and their tool factories at Cleveland, Ohio and Detroit, Mich., are running to their fullest capacity to meet the demands made upon them. The business the company are receiving certainly seems to indicate that business in a general way is improving wonderfully.

The authorities in charge of the immense 300,000 h.p. plant at the St. Louis Exposition, have installed a large No. 3 Cross Oil Filter, manufactured by the Burt Mfg. Co., Akron, Ohio. It is entirely fitting that the oil filter that is recognized as standard by the United States and British governments, and by nearly every other prominent country on the globe, should receive the same recognition from the Exposition managers. Those who visit the fair and are interested in the mechanical features of it should take the opportunity of seeing the Cross Oil Filter in practical operation. Besides the filter used by the Exposition authorities, it has also been ordered by the C. H. Bradley, Co., Pittsburg, Pa., the Buckeye Engine Co., Salem, Ohio, and the De Laval Steam Turbine Co., Trenton, N.J. in connection with their exhibits.

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FUEL.

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

Among the prominent fuel concerns who have developed considerable Canadian trade is the Ohio & Michigan Coal Co., of Detroit, Mich., of which Mr. J. P. Cumiskey is general manager. The company operate five mines in the Ohio coal fields and handle considerable Pennsylvania coal, the latter being shipped to Canada via Buffalo, N.Y. The Canadian shipments from their Ohio mines are made via Detroit. They are also important operators in the lake trade and are large shippers of coke. Mr. Cumiskey has been identified with the Canadian coal trade for about 15 years. Mr. John H. Alexander, of Windsor, Ont. is Canadian sales agent for the company.

At a recent meeting of the committee of the Toronto branch of the Navy League attention was called to statements made by Capt. Otto Sverdrup, in his recent publication, "New Land." Capt. Sverdrup, who had been with Nansen in the latter's search for the pole, recently made a voyage up Baffin Bay to the islands lying west of Greenland, and north of Canada, known as Ellesmere Land. In his account Capt. Sverdrup incidentally reports the discovery of extensive coal deposits there.

In Mr. Fielding's proposed tariff changes the needs of the Ontario oil refiners are met by a reduction of one half in the duty on crude oil, while the Ontario oil producer is compensated with a bounty on his production. The price of oil should fall at once to the consumer. Crude oil, or fuel oil, is an important item in the expense of many of our Ontario and Western manufacturers, and so is bituminous coal; but Mr. Fielding does not cheapen the cost of coal to Ontario consumers.

Tenders were opened last week for coal for the city of Toronto other than that for waterworks, and the contract was awarded to the Standard Fuel Co., as follows; Scranton grate, \$6.03; large egg, stove and nut, \$6.24; Pittsburg and coarse slack, \$2.98; Stratville, \$4.09; Blossburg, \$5.30; long hardwood, \$7.30 per cord; cut and split, \$7.50; long pine, \$5.60; cut and split, \$6.

As a result of the tariff changes, the price of coal oil to retailers has been reduced 2½ cents per gallon in Montreal and some other places.

A public meeting was held at Faneuil Hall, Boston, Mass., a few days ago at the instance of President H. M. Whitney, of the Chamber of Commerce, on the petition of 35,000 business men to pass resolutions favoring reciprocity with Canada. Action by congress on this matter is desired by the Massachusetts business interests in order that Nova Scotia coal may be imported to better advantage.

William Johnson & Sons, of Leeds, England, will exhibit a complete briquette plant in full operation in connection at the St. Louis Exposition. The process is intended to illustrate the possibility of utilizing bituminous, semi-anthracite and

MANUFACTURER,

lignite products of which from 30 to 50 per cent is ordinarily worthless.

The Dominion Coal Co., has closed a contract with the Boston and Maine Railroad for 75,000 tons of bituminous coal at \$2.58 per ton delivered.

The Boone, Iowa, Gas Co., are using water gas tar, manufactured at the plant, for fuel, in place of coal. The new fuel has been tried and answers every purpose. The tar made by the company is kept in a large tank, holding 5,000 gallons. From this tank an ordinary hand pump forces the tar into a 40-gallon tank in the boiler room. Thence the tar runs into a large pipe, thence into a small one. Inside the small pipe is a smaller one holding steam which is used to force the tar into the furnace in which, a few red coals are kept. The tar makes a brilliant blaze and a white heat. If the furnace is kept going all day from 60 to 75 gallons of tar are used. The new fuel means a saving of money labor and time, and so far has proved successful.

The Montreal & Ottawa Peat Co., with head office at Ottawa, Ont., have been organized to manufacture peat fuel.

Stoppages of work are frequently more far reaching in their consequences than the chief participants may imagine. It has occurred, perhaps, to few that the strike at the Sydney Steel Works, if it continues any length of time, may interfere with an important experiment planned to be carried out, the present shipping season, namely, that of sending coal from Cape Breton, more specifically, from the mines at Inverness, to points in Ontario reached by canal. "How," it may be asked, "will the strike at Sydney interfere with an experiment to be conducted from Inverness." The answer is soon given. In order to make it possible to send coal to Lake points, there must be something to bring back, and there are not many things to choose from. The only products available at the present time as return cargoes are iron ore and wheat. Indeed, it may be said, iron ore is the only product for which use can be found, as there are no big mills or elevators in Nova Scotia. To send coal without return cargoes would be impossible. That freight charges would render it so. The Inverness Railway & Coal Co., had arranged to send some 30,000 tons of coal to the Lakes, and bring back cargoes of ore for the Steel works at Sydney. If the strike continues there will be no demand for the ore. Or, if the Steel Company would assent to bank it, there might be difficulty and delay in discharging cargoes. The experiment is of great importance to the coal trade of the province. The coal to be carried is intended for the use of the Northern Pacific, and if it was shown that coal could be carried at a profit, then it could be claimed that the unanswered problem, of "How to get coal to Ontario," had been partially solved. We say partially, for the experiment would not be conclusive, as while all the companies have coal to dispose of, all have not like the Inverness people, ore of their own to carry back. Stellarton, N. S. Mining Record.

A liquidator has been granted by the

Supreme Court of Nova Scotia for the Canada Coal & Railway Co., more familiarly known as the Joggins Mines Co. Under the winding up order granted, Mr. James Rodger, representing the Gault interests, was appointed to the position. The present corporation was formed some 12 years ago, and has never paid a dividend. The seam is thin and the fire-clay band is thick, and to these natural difficulties was added the burden of heavy fixed charges and gross capitalization.

The Canadian Coal Mining Co., operating in New Brunswick, have applied for a charter to build a railroad from their mines to the Intercolonial Railway. The distance is eight miles.

The Crow's Nest B.C. Pass Coal Co., have decided to install an up-to-date system of fire protection at their collieries and have placed an order for 6,000 feet of standard 2½ cotton rubber lined fire hose, together with nozzles and other necessary appliances. The total amount of hose will be equally divided between the Morrissey, Fernie and Michel mines.

The Eureka Coal & Brick Co., of Estevan, N.W.T., have installed an improved brick manufacturing plant.

The annual coal contract of the Consumers' Gas Co., Toronto, has been awarded to the Pittsburg Coal Co., Pittsburg, Pa.

The directors of the Tusket Coke Co, Yarmouth, N.S., have persuaded the management of the Halifax and Yarmouth Railway to experiment with their product on the line to Barrington, N.S. The coke is made from peat at Tusket, N.S., and is claimed that it is better than coal for engines.

During the month of May the coal shipments of the Dominion Coal Co., from the International Pier, was 195,000 tons. This is a record shipment, when it is considered that during the first two weeks of May the shipping was quite dull, though during the latter part of the month the shipments were exceptionally brisk at the pier. It is expected that the coal shipments from the pier for the present month will greatly exceed that of May.

The exportation of Canadian Coal to the United States for the nine months ending March 31, 1904, was 1,046,388 tons, as against 1,470,854, for the corresponding period of 1903. Canadian imports of anthracite coal from the United States for the 9 months ending March 31, 1904, aggregated 1,235,361 tons, a gain of 533,426 tons over the corresponding period of 1903. During the same time Canada imported from the United States 3,275,475 tons of bituminous coal, a gain of 630,347 tons over the nine months of the previous year.

The work of pumping out the Joggins, N. S. mines has commenced and will only be a matter of a few days when coal will be raised.

The Intercolonial Coal Co., Westville, N.S., are to put in a new and larger air compressor to supply the requirements of No. 4 slope.

A new colliery company, known as the Nova Scotia Collieries, Limited, with a capital of £200,000 has been formed. The

company have acquired 3,840 acres, or 6 square miles of coal lands in Cape Breton, N.S.

The Fundy Coal Co., near Amherst, N. S., are to increase their plant to a capacity of 1,000 tons per day. The company controls 10 square miles and are working a seam with an average thickness of 6 feet.

Dr. G. C. Martin, the geologist who investigated the Alaska coal deposits in the summer of 1903, has reported that coal, very closely approaching true bituminous coal, has been found in quantity at the foot of the Chugach mountains. Dr. Martin also reports a seam 20 feet in width, of a semi-anthracite on Carbon Creek. The tests made show it to be closely allied in heating power as well as in the low percentage of ash with the famous Pocohontas coal of Virginia.

The Crow's Nest, B.C., collieries, during the year 1903, mined 589,888 tons of coal, of which 340,337 tons were sold as such, and 249,511 tons were converted into coke, producing 149,764 tons of that commodity.

The Ottawa Board of Trade has been canvassing the various cities and towns throughout Ontario and Quebec to ascertain the views of the local boards upon the resolution which was passed at Ottawa recently, petitioning the Dominion Government to remove the duty on soft coal. The replies seem to indicate that the resolution is generally approved by business interests.

The International Coal & Coke Co., Coalman, N.W.T. are now shipping about 150 tons of coal per day. A force of men are at work on the coke ovens preparing foundations and getting in material for the bedding of the ovens.

The Frank Mine of the Canadian-American Coal & Coke Co., at Frank, N. W. T., have their main entry in a distance of 6,500 feet reaching a vertical depth of over 1,200 feet. The quality of the coal now mined and the amount of the output is greater than it was before the disastrous slide, which about a year ago completely closed all operations.

FUEL IN BRITISH COLUMBIA.

From the annual report of the Minister of Mines of British Columbia for 1903 just issued, it appears that the quantity and value of coal and coke produced in that province in the years named was as follows:

	1902.		1903.	
	Quantity	Value	Quantity	Value
Coal tons	1,397,391	\$4,192,182	1,168,191	\$3,501,582
Coke do	123,015	610,075	165,543	827,711

The coal-mining industry was greatly retarded last year by prolonged strikes, both on Vancouver Island and on the mainland, but notwithstanding the production shows but a small decrease when the amount of coal converted into coke is considered. There were mined in 1903 1,450,663 tons of coal, and of this total output 1,168,191 tons were sold as coal, while 282,469 tons were converted into coke, of which latter there were produced 165,543 tons. In 1902 there were 673,524 tons, or about 75 per cent. of the coal produced by the Vancouver Island collieries,

sold in California. But the use of oil as fuel has lessened the demand in California for coal, which was quickly realized by the British Columbia collieries, so that in 1903 only 400,713 tons were shipped from Vancouver Island, representing only 45.2 per cent. of the total product from these collieries. The local market, however, consumed 42,400 tons more coal in 1903 than the previous year, largely owing to the erection of two new smelters on the island. In 1902 the Vancouver Island collieries sold for consumption in British Columbia 4,000 tons of coke and exported 12,000 tons, while this year the total production of 15,779 tons was consumed at home, as well as 3,719 tons taken from the stock on hand. The Crow's Nest collieries, during the year 1903, mined 589,888 tons of coal, of which 340,337 tons were sold as such, and 249,511 were converted into coke, producing 149,764 tons of that commodity.

The report shows that during 1903 a total of 527,114 tons of coal and 141,504 tons of coke produced in British Columbia were sold in Canada, 546,723 tons of coal

and 27,758 tons of coke exported to the United States, and 2,725 tons of coal exported to other countries.

INDUSTRIAL PUBLICATIONS.

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

The prize list for the Canadian National Exhibition, otherwise known as the Toronto Industrial Exhibition, to be held in Toronto August 29 to September 6, has been issued, and is an exceptionally handsome and well-printed production. There are 250 classes, covering practically every industry known to Canada worthy of encouragement, and calling for \$35,000 in prize money. In several departments considerable changes have been made, and the premiums added to. The famous Black Watch Band will play three times each day during the entire period of the

exhibition. A number of other decidedly superior attractions have also been arranged for. Copies of the prize list can be had on application to J. O. Orr, manager, 70 East King street.

The Joseph Dixon Crucible Co., Jersey City, N.J., have sent us a brochure relating to "Graphite as a Lubricant, Scientifically and Practically Considered With Notes upon its Manifold Usefulness as an Accessory for Engineers," and engineers and machinists will make no mistake in studying the information it contains.

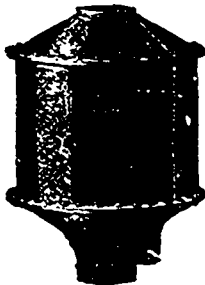
We have before us the annual report of the Canadian Press Association of the forty-sixth meeting of the Association held at Toronto February 4 and 5 last, including the journal of proceedings, constitution and by-laws, list of officers and members, etc.

The Advance Machinery Co., Toledo, Ohio, have just issued an attractive booklet on Wetmore Glue Tank Heaters. More than 3,000 manufacturers are using this labor-saving appliance which is fully

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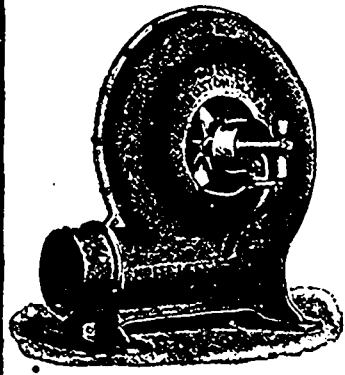
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illustrated and described in the catalogue which will be sent free on application.

The Canadian Year Book for 1904, the seventh year of its publication, has just been issued by Alfred Hewett, 50 Adelaide street east, Toronto. It is simply invaluable as a book of reference for anything that concerns Canada, and the greatest attention has been paid to accuracy. Governments of the Dominion and of the different Provinces, politics, tariff, sporting and athletic records, militia lists, exports and imports, fish and game regulations, banks and branches, postoffices with nearest railways, members of Parliament and of the different Legislatures, regulations pertaining to different departments of Government, rifle shooting, agriculture, principal events of 1903 in chronological order, trade, legal directory—these are a few of the matters covered by the Canadian Year Book. The book is embellished with pictures of the Dominion and of the different Provincial Cabinets. Those who had occasion to use the work in other years appreciated its value and will welcome the new edition.

"Something Pneumatic" is a monthly magazine devoted to the interests of pneumatic appliances and their motive power, published by Chicago Pneumatic Tool Co. The current number contains a number of views of important buildings and factories in different cities in which the company is interested. The magazine also contains the text of the opinion handed down by Judge Hazel of the United States Circuit Court, Southern District, State of New York, sustaining the Moffet drill patent owned by this company, and holding the Philadelphia-Keller drills to be infringements of the first and second claims thereof, and directing the entry of a decree for an accounting of profits and damages and injunction prohibiting the further manufacture, sale or use of such drills. The opinion of the court is published in full for the information of all parties interested.

Messrs. H. Alabaster, Gatchouse & Co., publishers of the Universal Electrical Directory, 4 Ludgate Hill, London, E.C., England, announce that the 1905 edition of that Directory is in course of preparation for its 24th annual issue in January next.

The Jeffrey Mfg. Co., Columbus, Ohio, have sent us their Bulletin No. 8 relating to the Electric Locomotives for Gathering Purposes made by them. The general features of these locomotives are shown in the various illustrations in the bulletin. The use of them has, we are told, many advantages. It reduces the wear and tear on the roadbed. The gathering of coal is performed with more regularity, causing less confusion, and the air of the mine, on account of the absence of mules and horses, can be kept purer.

We are in receipt of "Transactions of the Canadian Institute," Volume VII., Part 3, for March, 1904. Articles appearing in the book have reference to Sawdust and Fish Life: The Bacterial Contamination of Milk and its Control; The Chemistry of Wheat Gluten; The Nah-ano and their Language, and the Palaeochemistry of the Ocean in Relation to Animal and Vegetable Protoplasm.

The Cassella Color Co., 182-184 Front Street, New York, branches at Philadelphia, Boston, Providence, Atlanta and Montreal, have issued a neat little book of 71 pages, giving valuable instructions for the employment of their dyestuffs in garment dyeing, based upon experience collected in practical working. This book, "Garment Dyeing," should be in the possession of every garment dyer. A copy may be had by writing to the firm.

"Protection and Prices, and the Farmers' Home Market" by Watson Griffin, comprises a number of articles published as editorials in Industrial Canada during the year 1903 and the first five months of 1904, and refer to the conditions existing in Canada during that period.

Dixon's Ticonderoga Graphite Grease, and Dixon's Graphite Cup Greases, are the titles of a couple of dainty little brochures relating to the subjects indicated by the names, sent us by the Joseph Dixon Crucible Co., Jersey City, N.J.

The Canadian Co-Operator is a monthly magazine published by the Co-Operator Publishing Co. at Whitby, Ont., the first issue of which has just reached this office.

A change of management has been effected in our esteemed contemporary The Western Builder, of Milwaukee, Wis. Mr. E. M. Maxwell, who has been the publisher of the paper for the last year has relinquished his interest in it, it having been purchased by Messrs. F. O. Thomson and H. J. Knappen who will hereafter direct its management.

We have from the British Foreign Office, London, Diplomatic and Consular Reports as follows:—Trade of Consular District of Rostov-on-Don, Russia, for 1903; Trade of Chin-Kiang, China, for 1903; Trade of Havre and district, France, for 1903; Trade of Smyrna and district, Turkey, for 1902-3.

The Jones Magazine for June, devoted to the interests of the Jones Stoker, and published by the Jones Under-Feed Stoker Co., Toronto, has reached us.

LE CANADA POUR LES CANADIENS

Canadian Westinghouse Co., Limited, Bureaux Generaux, Hamilton, Canada, annonce: Nous croyons qu'il vous interessera d'apprendre que nous sommes a construire un grand etablissement a Hamilton pour la fabrication d'appareils electriques de toutes sortes. Cet etablissement sera un supplement important au commerce canadien. Son equipement avec les machines des ameliorations les plus recentes donnera de l'emploi a plus de mil hommes; les memes methodes et les memes attentions aux details, qui ont ete un succes dans l'operation de notre fabrique d'Air Brake, durant les sept dernieres annes, domineront dans la direction de nos nouvelles usines.

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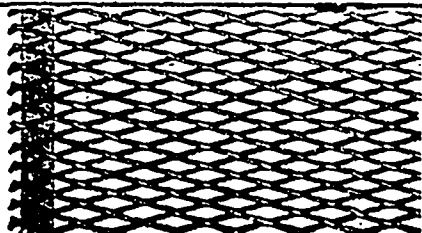
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Stop building heavy and expensive brick, terra cotta, or solid concrete arches. Get our prices on factory wall and roof work. We sell material, furnishing full working-drawings, and foreman's instructions. Or we submit estimates and undertake contracts.
You will save money by instructing your practical man to correspond with our engineer. Ask him to send rough drawing with accurate measurements, before building or making alterations.

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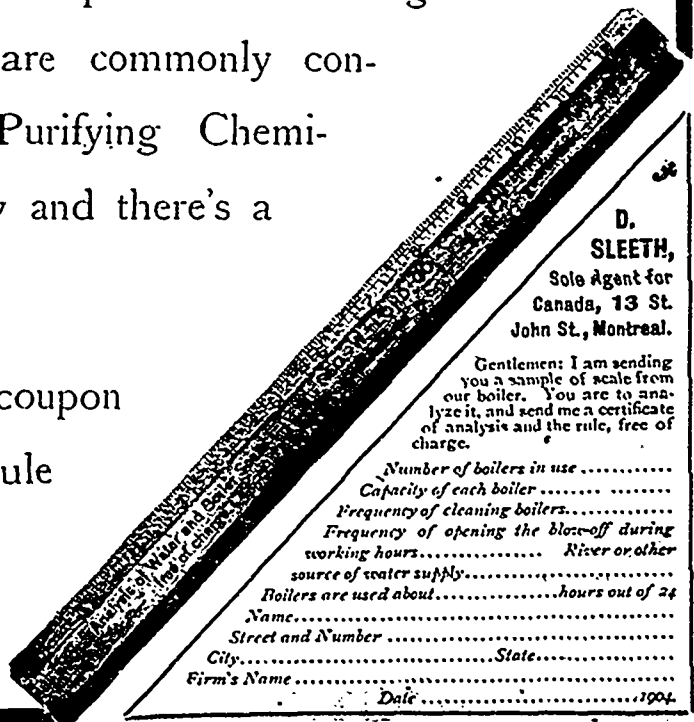
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FREE FOR YOUR NAME

We want the name and address of every engineer, and in order to get them we will send a finely finished, beveled edge, inch and metric rule, one foot long, absolutely free to every engineer who will send us the coupon properly filled out, together with a sample of the scale from his boiler.

We want the opportunity of explaining the difference between Lord's Water Purifying Chemicals and ordinary boiler compounds. Although entirely different, they are commonly confused. Lord's Water Purifying Chemicals always do their duty and there's a reason for it.

Send the scale and coupon to-day, and receive the rule by return mail.



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Sole Agent for
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John St., Montreal.

Gentlemen: I am sending you a sample of scale from our boiler. You are to analyze it, and send me a certificate of analysis and the rule, free of charge.

- Number of boilers in use
- Capacity of each boiler
- Frequency of cleaning boilers
- Frequency of opening the blow-off during working hours..... River or other source of water supply.....
- Boilers are used about.....hours out of 24
- Name.....
- Street and Number
- City.....State.....
- Firm's Name.....
- Date.....1904.

Quoique nous ayons l'intention de n'employer que des ouvriers canadiens et que des matériaux du pays, tous nos appareils seront construits exactement d'après les dessins, le génie mécanique et les méthodes manufacturières employés par les célèbres compagnies Westinghouse de Pittsburg, Pa. Nous aurons le bénéfice des heureux résultats de leur longue expérience en génie mécanique, dessins et fabrication.

Les appareils électriques "Westinghouse" sont reconnus comme étant les meilleurs de l'univers. Ils ont rencontrés immédiatement dans tous les pays du globe un succès sans précédent. Les usines de la compagnie Westinghouse en Angleterre et en France ont été depuis leur établissement tenues constamment activés en leur pleine capacité.

Avec votre co-opération nous croyons que la "Canadian Westinghouse Co." obtiendra le même succès. Nous avons une confiance établie dans l'accroissement et l'agrandissement futur du Canada, et, avec votre assistance nous sommes confiants de pouvoir aider matériellement à fournir au pays la suprémacie industrielle auquel il a droit en raison de ses vastes ressources et de l'avantage de sa position géographique.

Nous sommes maintenant en état de remplir promptement tout ordre pour appareils électriques de toutes sortes, depuis les plus grands transmetteurs de pouvoirs, aux détails les plus minimes. Les informations sont sollicités et ils recevront l'attention soignée de nos divers bureaux de ventes.

THE LAKE SUPERIOR CORPORATION.

Mr. C. D. Warren, president of the Lake Superior Corporation (otherwise known as the Clergue Industries), at Sault

Ste., Marie, Ont., who attended the organization meeting of the Corporation in New York last week, states that with the exception of a few formal matters which required to be adjusted, the way is absolutely clear to the resumption of operations at the Soo with a total working capital of \$4,000,000.

The personnel of the Board of Directors is as follows: President, Charles D. Warren, Toronto; vice-presidents, Charles E. Orris, banker, New York; Thomas J. Drummoud, Drummond, McCall & Co., Montreal; John T. Terry, jr., vice-president of the Mercantile Trust Co., New York; directors, Francis F. Reeves, president of the Girard National Bank, Philadelphia; J. Tatnall Lea, president of the First National Bank, Philadelphia; Chas. S. Hinchman, formerly largely interested in the iron industries of Philadelphia; Dumont Clarke, president of the American Exchange National Bank, New York; George B. Tyrrell, capitalist, Orange, N. J.; F. H. Clergue, Sault Ste. Marie; N. W. Rowell, K.C., Toronto; Edward O. Trowbridge, capitalist, New Haven.

Mr. Warren says that no decision will be reached as to who will be the general manager of the company until the executive Committee visit the works at the Soo and look over the ground. The members of this committee are: Chas. E. Orris, John T. Terry, J. T. Lea, F. B. Reeves, T. J. Drummond and Chas. D. Warren, ex-officio.

The head office of the company, Mr. Warren says, will, in all probability be in Toronto.

Referring to the resumption of operations, every plant will be started. The first attention will be given to placing the steel rail mill in order, and the company will be manufacturing finished rails at an early date. The management has some large orders in view, but no contracts have been entered into as yet.

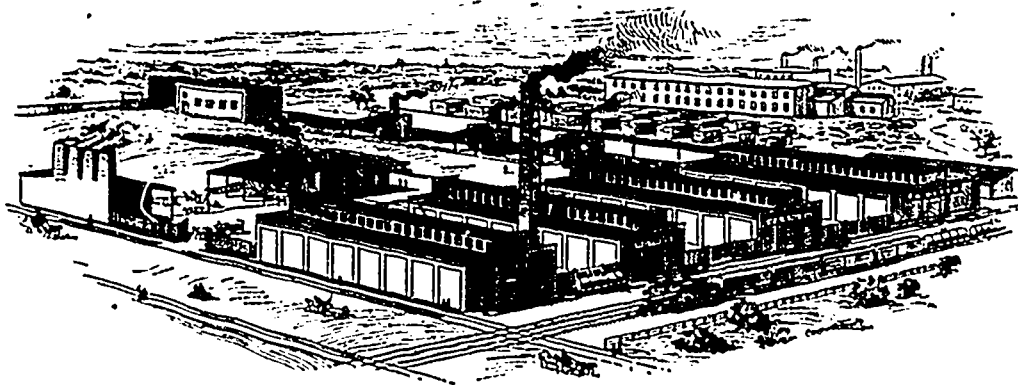
PERSONALS.

Mr. Judson H. Clark has been appointed Provincial Forester by the Ontario Government as a preliminary step in the establishment of a Department of Forestry in connection with the Crown Lands Department. Mr. Clark, is now engaged in the Bureau of Forestry at Washington, but will assume his new duties in August.

The staff of factory inspectors for Ontario has been completed by the appointment of Mr. Arthur W. Holmes to the vacancy caused by the retirement of Mr. Jas. R. Brown. Mrs. Jas. R. Brown has been appointed a second female factory inspector to assist Miss Carlyle.

Mr. J. G. Scott, manager of the Quebec & Lake St. John Railway, has gone to England to finance for the construction of the La Tuque branch of that road which is to run from a point 80 miles up the main line to the head of the St. Maurice River and reach the La Tuque Falls which have a water power capacity of 90,000 h.p., double that of the Grand Mere.

The Canadian Rand Drill Co., have removed their Montreal office to the Imperial Bank Building.



It is nearly Half a Century

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

Our experience belongs to those who use and sell Berry Brothers' Varnishes.

Safest goods to handle, surest and most reliable goods to use.

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Large manufacturer wanted!

We will offer to such an one locating at
Peterboro',

Abnormally Cheap Power,

on account of the natural developed
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The Municipal Corporation offers

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PETERBORO'

Is located on the main line of the Canadian Pacific Railway—is on the Grand Trunk Railway and the Trent Valley Canal, and has now a population of 15,000. Is located in the heart of Canada, 70 miles east of Toronto on the way to Montreal.

The Trent Valley Canal (now half completed) will place Peterboro' on the highway between "Britain's Granary" and Europe. It is Nature's Short-Route Grain-Carrying Waterway.

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J. A. CULVERWELL, Managing Director.

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It takes a good coke to make good castings. We
are selling

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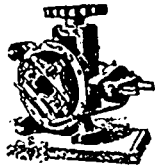
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UP IN THE CUPOLA.

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IRON, STEEL,
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 For Hand or Power. Save Time and Labor.

No. 0 Machine 1 to 2 inches. No. 1 Machine 1 to 3 inches.
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400 Individual Cars.



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MINERS and SHIPPERS

Best grades, Domestic, Steam, Gas and Smithing Coals. Shipments to Canadian trade direct from the mines, Buffalo or Detroit, and by Lake.

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COAL

COAL JAS. H. MILNES & CO. COKE

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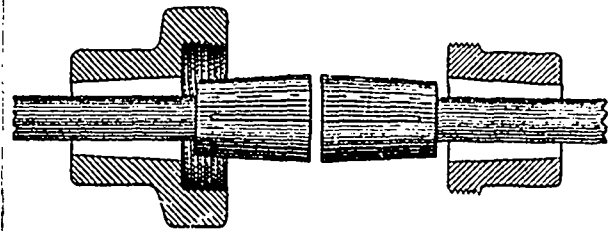
THE

GEO. B. MEADOWS

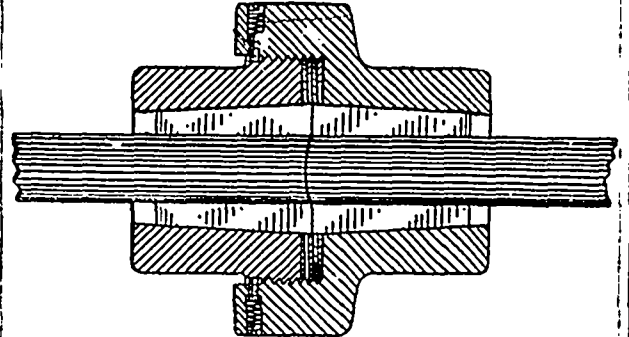
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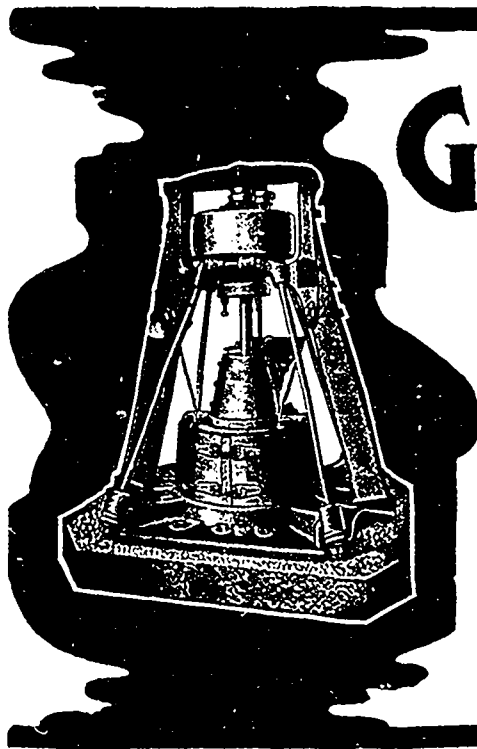


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Martins Creek Portland Cement Co., Martins Creek, N. J.
Wolverine Portland Cement Co., Coldwater, Mich.
Bronson Portland Cement Co., Bronson, Mich.
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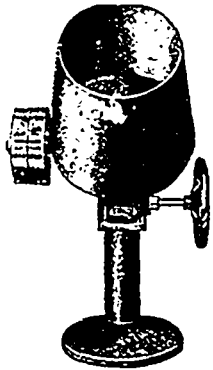
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Steam Power.

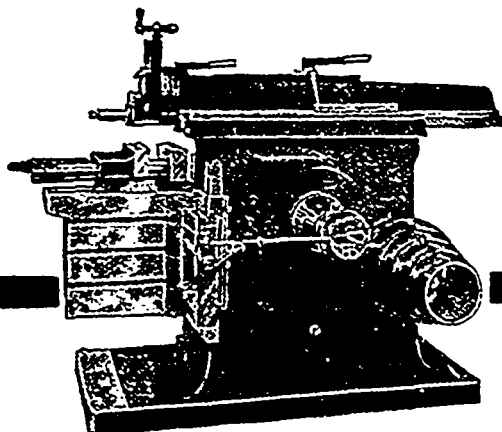
To produce power costs money, and it is surprising how much more money is expended to produce steam power than is absolutely necessary.

Either too much coal is burned or steam that is made is allowed to go to waste. These two facts alone are sufficient to cause many a loss. There need be no loss.

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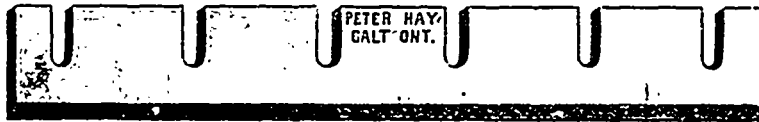
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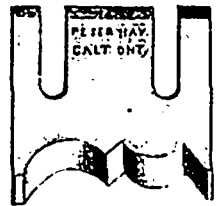
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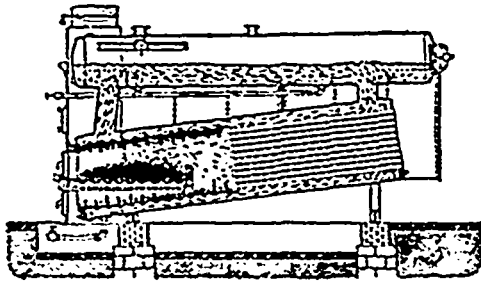
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— OF —

Valuable Woolen Mills

Pursuant to the order of the High Court of Justice, bearing date 26th April, 1904, for the winding up of Canada Woolen Mills, Limited, sealed tenders will be received by the undersigned at his Chambers at Osgoode Hall, Toronto, up to the 23rd day of June, 1904, for the mill properties and supplies of the Company.

The following are the properties:

1. WOOLEN MILL at Hespeler, in the County of Waterloo.
2. WOOLEN MILL at Waterloo, in the County of Waterloo.
3. WOOLEN MILL at Carleton Place, in the County of Lanark, known as the Gillies Mill.
4. WOOLEN MILL at Carleton Place, known as the Hawthorne Mill.
5. Site of Woolen Mill at Lambton, in the County of York.

Tenders must be sealed and addressed, "J. S. Cartwright, Esq., K.C., Osgoode Hall, Toronto," and marked, "The Canada Woolen Mills, Limited—Tender for property," and each tender must be accompanied by a certified cheque for \$2,000, which will be returned in the event of the tender being rejected.

Tenders may be made for the purchase of all the properties en bloc, or for each separate property. Tenders for the supplies and tools in process of manufacture shall be made separately.

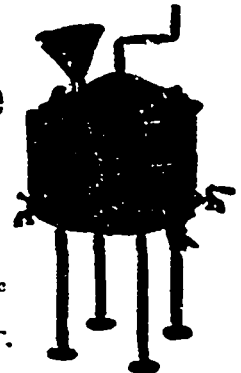
Full particulars and permission to inspect the properties may be had from George Davidson, liquidator of the said Company, 108 Wellington Street West, Toronto, or from Messrs. Cassels, Cassels & Brock, 119 Wellington Street West, Toronto, his solicitors.

Dated at Toronto this 31st day of May, A.D. 1904.

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OF THE

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BY TENDER.

Pursuant to the winding up order made by the High Court of Justice in the matter of the Boston Wood Rim Company, Limited, and of the winding up act and amendments thereto, tenders will be received at the office of the Master-in-Ordinary, Osgoode Hall, Toronto, up to eleven o'clock in the forenoon of the twenty-third day of June, nineteen hundred and four, for the purchase of all the stock in trade, manufactured and unmanufactured, machinery, patent rights and good will of the Boston Wood Rim Company, Limited.

Tenders may be made for same in one parcel or for any of the following parcels:—

Parcel 1—All the stock of art woodwork, manufactured or in process of manufacture, and the machinery, plant, tools and raw material, lumber, etc., used in the manufacture of same.

Parcel 2—All the stock of sanitary woodwork, manufactured or in process of manufacture, and the machinery, plant, tools and raw material, lumber, etc., used in the manufacture of same.

Parcel 3—All the stock of wood rims, manufactured or in process of manufacture, and the machinery, plant, tools and raw material, lumber, etc., used in the manufacture of same.

Parties tendering will appear before the said Master-in-Ordinary, at his Chambers, Osgoode Hall, Toronto, on the twenty-third day of June, nineteen hundred and four, at eleven o'clock forenoon, when the said tenders will be opened.

The purchaser shall pay a deposit of 20 per cent. of the purchase money to the liquidators or to their solicitors, and the balance without interest within thirty days thereafter. Tenders to be subject to the standing conditions of the court.

The plant will be operated by the liquidators until the twentieth day of June next, and tenders will be subject to shorts and longs on the final stock taking after the tender is accepted.

The lowest or any tender not necessarily accepted.

Lists, subject to the above, of the stock and machinery may be inspected at the office of the liquidators, the National Trust Company, No. 22 King Street East, Toronto. Any intending purchaser may inspect the assets upon the premises, corner of Hayter and Terauley Streets, Toronto.

Further information may be obtained from the liquidators, the National Trust Company, or from McMURRICH, HODGINS & McMURRICH, Solicitors for the liquidators, 102 Bay Street, Toronto.

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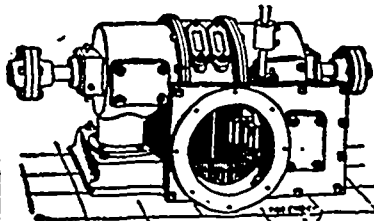
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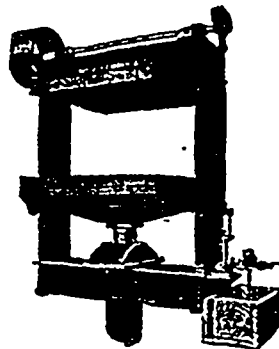
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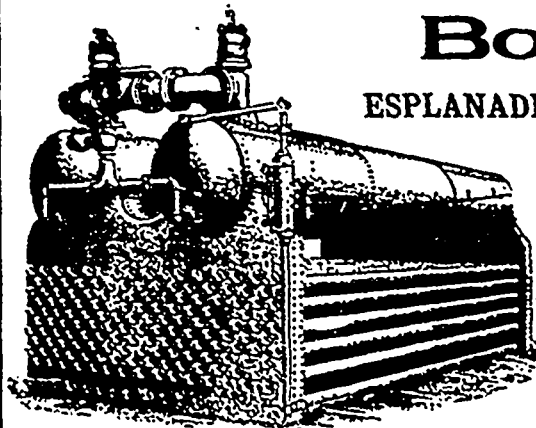
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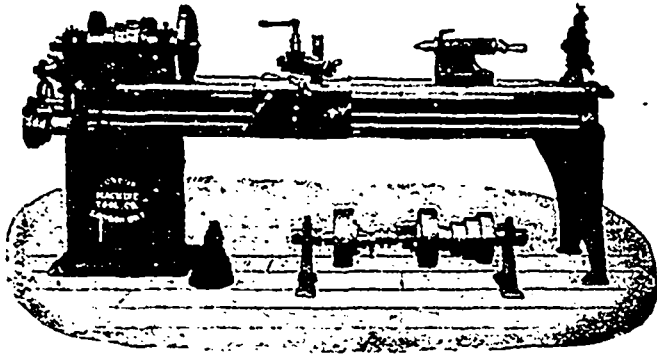
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Vancouver, B.C.	Winnipeg, Man

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Lubricant for Commutators.

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Ours will wash off the goods in process of
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Original Makers. Samples Sent.

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Manufacturers of Screws, Studs and Pins
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Electrical Works, etc.

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Target); Creosote (Dead Oil); Car-
bolic, Naptha, Disinfectants,
Refined Tar.

Also Naphthalines (all qualities)
Cyanides (Prussiates of Potash
and Soda) and Ammonia
Salts.

CLASSIFIED INDEX.

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Drills

Bertram, John, & Sons Co., Dundas, Ont.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
London Machine Tool Co., London, Ont.
Petrie, H. W., Toronto
Pittsburgh Shafting Co., Detroit, Mich.
Shaw, Willis, Chicago, Ill.

Drills (Pneumatic and Rock)

Canadian Hand Drill Co., Sherbrooke, Que.
Chicago Pneumatic Tool Co., Chicago, Ill.
Jeffrey Mfg. Co., Columbus, Ohio.

Drills (Twist)

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

Drop Forgings

Globe Machine & Stamping Co., Cleveland, Ohio.

Drop Forging Dies

Globe Machine & Stamping Co., Cleveland, Ohio.

Dry Kiln Apparatus

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

Dust and Shavings Separators

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

Dye Stuffs and Chemicals

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

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

Packard Electric Co., St. Catharines, Ont.

Electric Mine Locomotives

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

Electrical Repairs

Volta Electric Repair Works, Toronto.

Electrical Supplies

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

Elevators and Conveyors

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

Elevator Insurance

Canadian Casualty & Boiler Insurance Co.,
Toronto.

Emery and Emery Wheels.

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

Engineers (Cement).

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

Engineers (Chemical.)

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

Engineers (Civil)

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

Engineers (Consulting)

DeLano-Osborn Engineering Co., Toronto.
Electrical Construction Co., London, Ont.
Hunt, Robert W. & Co., Chicago, Ill.
Kelsch, R. S., Montreal.
Marion & Marion, Montreal.
Morgan Construction Co., Worcester, Mass.
Parke, R. J., Toronto.
Perrin, William R. & Company, Limited, Toronto.
Simpson, T. T., Deschenes, Que.
Vogel, C. H., Ottawa.
Volta Electric Repair Works, Toronto.
Von der Osten, E. & Co., Toronto.
Wentz, R. F. Engineering Co., Toronto.

Engineers (Contracting)

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

Engineers (Electrical)

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

Engineers (Mechanical)

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

Engineers (Mill and Hydraulic)

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

Engineers (Mining)

Buhl Malleable Co., Detroit, Mich.
Hoye, Thos. & 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

Babcock & Wilcox, Limited, Montreal.
Bertram Engine Works Co., Toronto.
Canada Foundry Co., Toronto.
Canadian Heine Safety Boiler Co., Toronto.
Cooper, Estato lato James, Montreal.
Corbett, R. B., Brooklyn, N.Y.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Hyde Bros. & Co., Pittsburg, Pa.
Leonard, E. & Sons, London, Ont.
McDougall, John, Caledonian Iron Works Co.,
Montreal.

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

Engravers

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

Exhaust Fans

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

Exhaust Heads

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

Factory Sites

Central Ontario Power Co., Peterboro, Ont.

Food Water Heaters

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

Fires

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

Financial

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

Filters (Oil)

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

Filters and Filtering Systems (Water)

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

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Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburgh, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Pennsylvania Fire Brick Co., Lock Haven.
Seloto Fire Brick Co., Selotville, Ohio.
Wynn, W. H. & Co., West Decatur, Pa.

Fire Escapes

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

Forges and Blowers

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

Founders

Canada Foundry Co., Toronto.
Cowan & Co., Galt, Ont.
Gartshore-Thomson Pipe & Foundry Co., Hamil-
ton, Ont.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Karch, H. W., Hespeler, Ont.
McDougall, John, Caledonian Iron Works Co.,
Montreal.
Sinclair, G. S. & Sons, Warton, Ont.

Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

Fuel Economizers

Babcock & Wilcox, Limited, Montreal.

Furniture (Lodge, Opera and School)

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

Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

Galvanizing and Tinning Machinery and Furnaces (Wire)

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

Gas and Gasoline Engines

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

Gas Producers

Morgan Construction Co., Worcester, Mass.

Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

Gauges (Steam)

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

Gauges (Water)

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

Generators

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.

Government Notices

Factory Inspectors.
Minister of Agriculture.

Graphite

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

Grease Cups

Penberthy Injector Co., Windsor, Ont.

Grinding Machinery

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

Grinding Pans

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

Hand Traveling Cranes

Morgan Construction Co., Worcester, Mass.

Hardware

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

Heating and Ventilating Apparatus

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

Hoists (Chain and Pneumatic)

Canadian Hand Drill Co., Sherbrooke, Que.
Chicago Pneumatic Tool Co., Chicago, Ill.
Cooper, Estato into James, Montreal.

Hose (Fire and Pneumatic)

Chicago Pneumatic Tool Co., Chicago, Ill.
Gutta Percha & Rubber Mfg. Co., Toronto.
McLaron, J. C. Belling Co., Montreal and Toronto.

Hydrants

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

Hydraulic Accumulators

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

Hydraulic Cranes

Morgan Construction Co., Worcester, Mass.

Hydraulic Machinery

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

Industrial Plants

Von der Osten, F. & 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.
Bourne-Fuller Co., Cleveland, Ohio.
Brown & Co., Paris, Ont.
Bühl Malleable Co., Detroit, Mich.
Canada Foundry Co., Toronto.
Cleveland Twist Drill Co., Cleveland, Ohio.
Karch, H. W., Hespeler, Ont.
Leslie, A. C. & Co., Montreal.
Lysaght, John, Limited, Bristol, England and
Montreal.
Meadows, Geo. B., Wire, Iron & Brass Works Co.,
Toronto.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Petric, H. W., Toronto.
Petroleum Iron Works Co., Washington, Pa.
Pittsburgh Shafting Co., Detroit, Mich.
Rice Lewis & Son, Toronto.
Ryall Machine Screw Co., Montreal.
Sinclair, G. S. & Sons, Warton, Ont.

Injectors

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

Iron and Steel Inspection

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

Lamps—Electric

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

Lathes

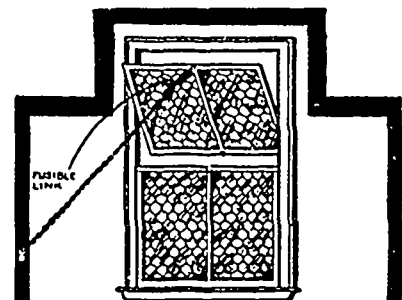
Bertram, John, & Sons Co., Dundas, Ont.
Cowdroy, C. H., Machine Works, Fitchburg, Mass.
London Machine Tool Co., London, Ont.
Petric, H. W., Toronto.
Williams, A. R. & Co., Toronto.

Lathes (Wood-Working)

Cowan & Co., Galt, Ont.
Goldie & McCulloch Co., Galt, Ont.
"Oliver" Machinery Co., Grand Rapids, Mich.
Petric, H. W., Toronto.
Williams, A. R., Machinery Co., Toronto.

Lubricators

Penberthy Injector Co., Windsor, Ont.

**FIRE-PROOF
GLASS WINDOWS.**

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SHODDIES, Etc.**

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Furnaces, and general
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WM. BARBER & BROS.

Georgetown, Ont.

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Envelope and Lithographic Papers, etc.

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Oakey's Flint Paper and Glass Paper.
Oakey's Emery Paper, Black Lead, Etc.

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Skillful Manufacture, Sharpness, Durability,
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London, England.

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JOHN FORMAN

650 Craig Street, MONTREAL

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Machinists.

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

Machinists' Supplies

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

Machine Tools

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

Malleable Iron Castings

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

Mechanical Draft

Babcock & Wilcox, Limited, Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Metal Gates

Page Wire Fence Co., Walkerville, Ont.

Metal Shears

Morgan Construction Co., Worcester, Mass.

Metal Stamping

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

Metallurgists.

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

Mill Machinery and Supplies

Armstrong Mfg. Co., Bridgeport, Conn.
Buhl Malleable Co., Detroit, Mich.
Cleveland Twist Drill Co., Cleveland, Ohio.
Cooper, Estate late James, Montreal.
Cowan & Co., Galt, Ont.
Darling Bros., Montreal.
Fleming, W. A. & Co., Montreal.
Gartshore, John J., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Grey, 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.
Jeffrey Mfg. Co., Columbus, Ohio.
Karch, H. W., Hespeler, Ont.
Leonard, E. & Sons, London, Ont.
London Machine Tool Co., London, Ont.
Morrow, John, Machine Screw Co., Ingersoll, Ont.
McDougall, John, Caledonian Iron Works Co.,
Montreal.
McLaren, D. K., Montreal and Toronto.
"Oliver" Machinery Co., Grand Rapids, Mich.
Penberthy Injector Co., Windsor, Ont.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Rice Lewis & Son, Toronto.
Robb Engineering Co., Amherst, N.S.
Ryall Machine Screw Co., Montreal.
Sinclair, G. S. & Sons, Warton, Ont.
Spence, R. & Co., Hamilton, Ont.
Wilson, J. C. & Co., Glenora, Ont.

Minors' Lamps

Anton, John & Son, Monongahela, Pa.

Mining Machinery

Buhl Malleable Co., Detroit, Mich.
Canadian Hand Drill Co., Sherbrooke, Que.
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Twist Drill Co., Cleveland, Ohio.
Cooper, Estate late James, Montreal.
Corbett, R. B., Brooklyn, N.Y.
Gartshore, John J., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co.,
Montreal.
Perrin, William R. & Company, Limited, Toronto.
Petrie, H. W., Toronto.
Shaw, Willis, Chicago, Ill.
Williams, A. R. Machinery Co., Toronto.

Motors and Dynamos

Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
Corbett, R. B., Brooklyn, N.Y.
Electrical Construction Co., London, Ont.
Forman, John, Montreal.
Jeffroy 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.,
Toronto.

Oils and Lubricants

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

Oil Cloth

Dominion Oil Cloth Co., Montreal.

Oil Cups

Ponberthy Injector Co., Windsor, Ont.

Paints and Colors

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

Paper Manufacturers

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

Patents

Budden, Hanbury A., Montreal.
Case, Egerton R., Toronto.
Fetherstonhaugh & Co., Toronto.
Marion & Marion, Montreal.
Patent Exchange & Investment Co., Toronto, Ont.

Pattern Makers' Machinery and Supplies

"Oliver" Machinery Co., Grand Rapids, Mich.

Pattern Shop Equipments

"Oliver" Machinery Co., Grand Rapids, Mich.

Perforated Metals

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

Personal Accident

Canadian Casualty & Boiler Insurance Co.,
Toronto.

Phosphorizers.

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

Pig Iron

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

Pipe (Riveted, Iron and Steel)

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

Pipe Threading Machines

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

Pipes and Tubes

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

Plaster

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

Plates

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

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Plumbago

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

Pneumatic Tools

Canadian Rand Drill Co., Sherbrooke, Que.
Chicago Pneumatic Tool Co., Chicago, Ill.

Pointer Rolls (For Rods and Wire.)

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

Portland Cement

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

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Goldie & McCulloch Co., Galt, Ont.
Kerr Engine Co., Walkerville, Ont.
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Petrie, H. W., Toronto.

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Purifying and Softening Systems (Water)

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Gartshore, John J., Toronto.
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Phillips, Eugenio F., Electrical Works, Montreal.

Roamers

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Stanyon Metallic Furniture Co., Toronto.

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

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

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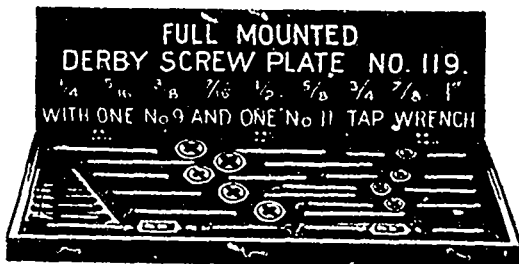
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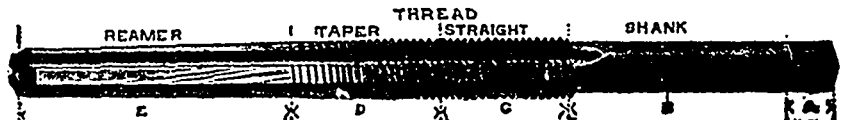
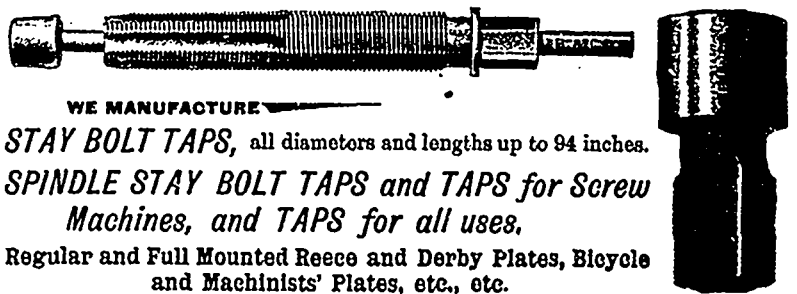
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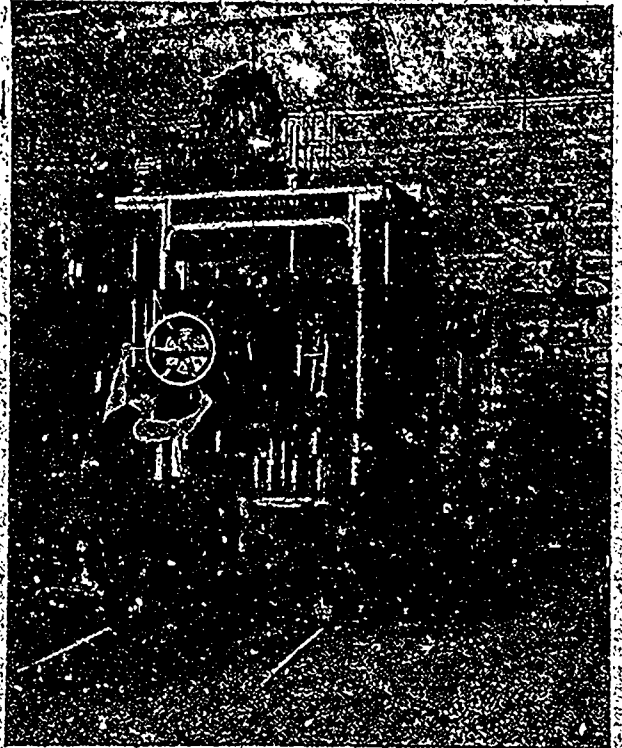
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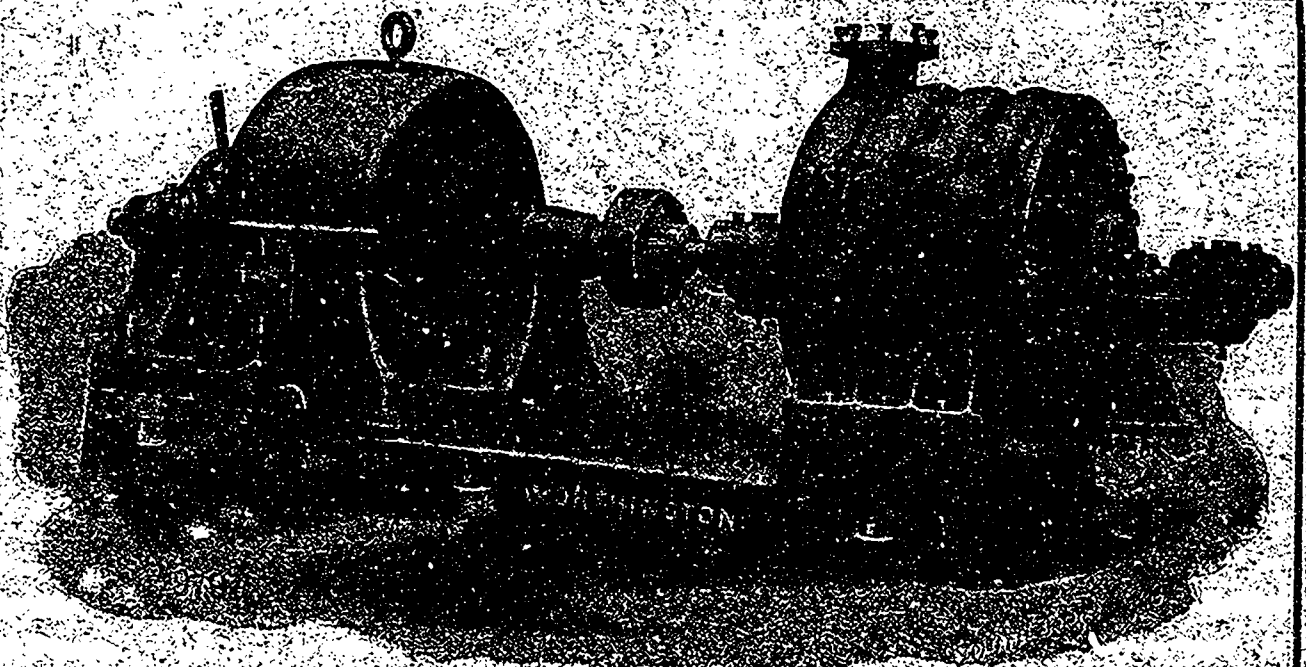
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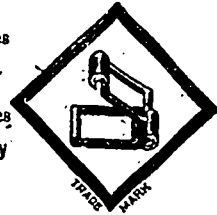
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