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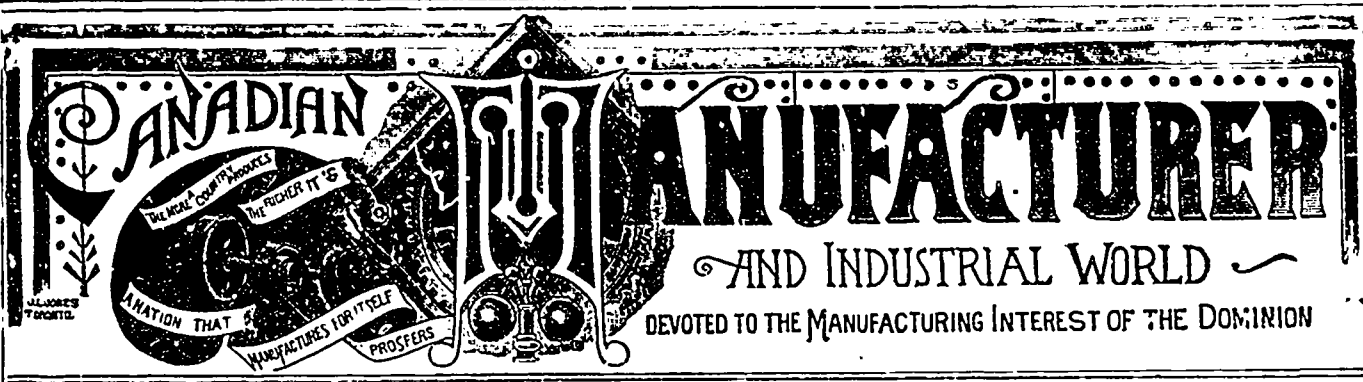
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Vol 45. TORONTO, DECEMBER 19, 1902. No. 12.

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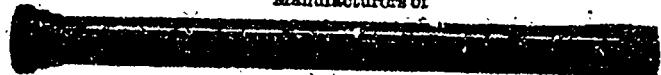
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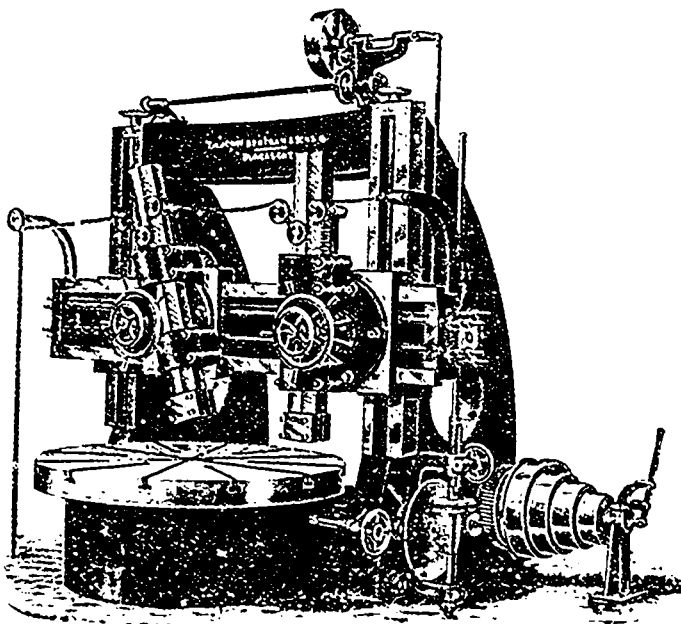
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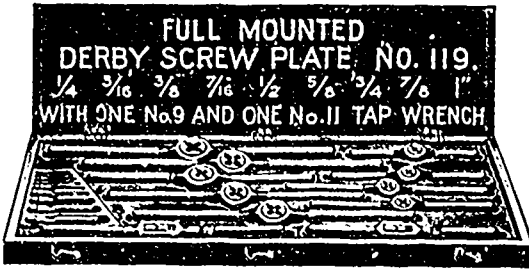
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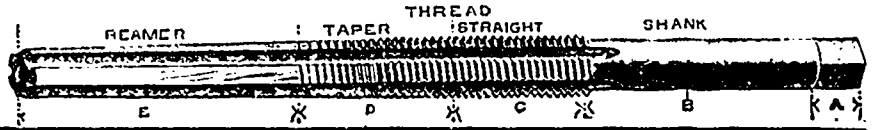
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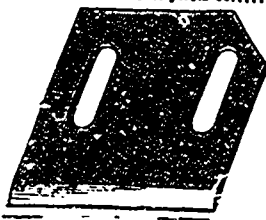
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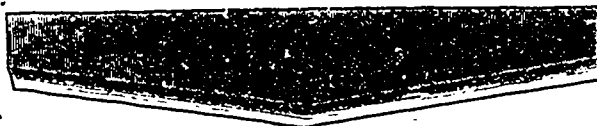
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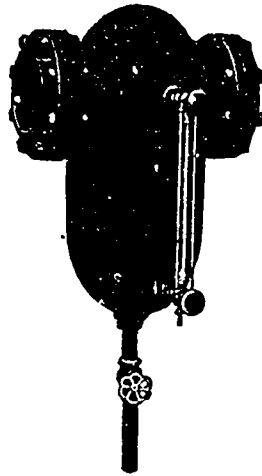
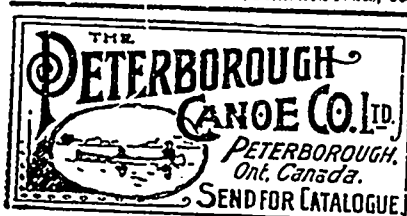
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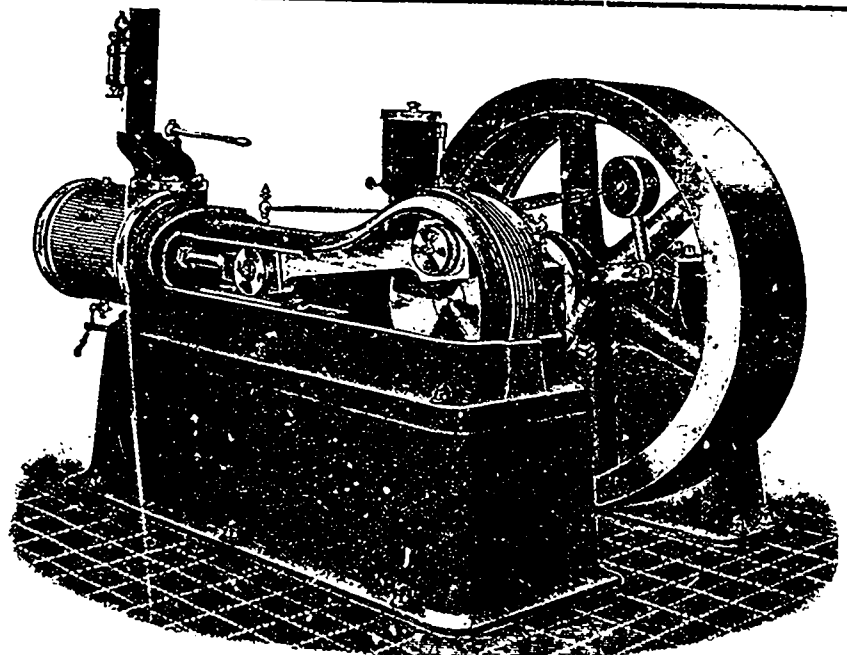
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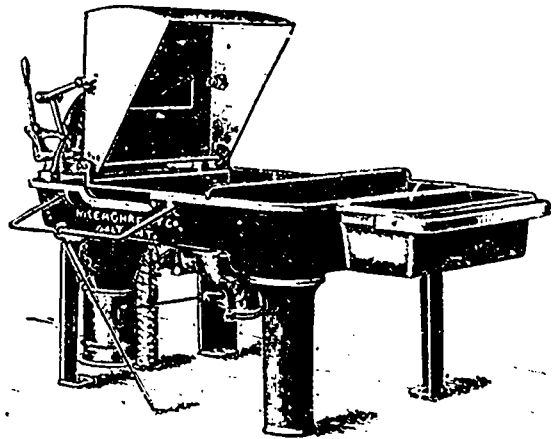
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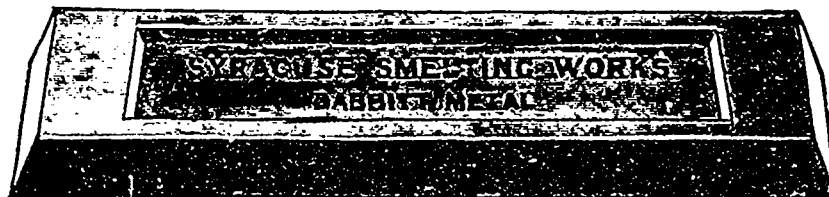
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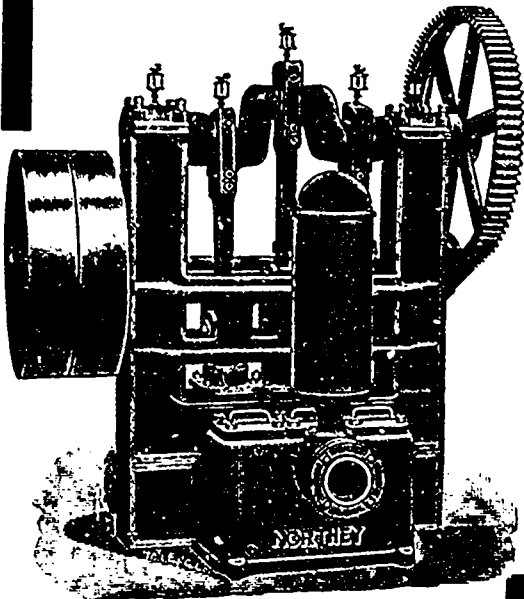
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Is a high class serviceable machine; it offers the best means of applying either steam, water or electrical power for pumping purposes. A special feature is the use of three cranks 120 degrees apart—ensuring a practically constant delivery. This pump, for Boiler Feeding, etc., and especially in connection with an electric motor, gives excellent results.

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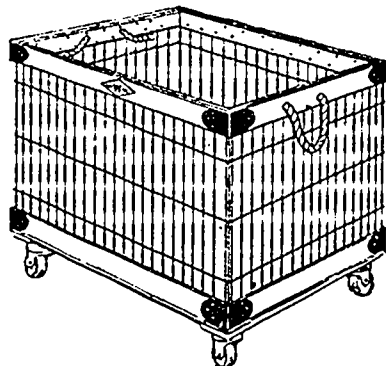
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McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.
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J. J. CASSIDY, - - Editor and Manager

TARIFF AMENDMENTS REQUIRED.

There are quite a number of articles enumerated in the free list of the Canadian tariff besides steel rails, such as wire rods, wire, etc., which should be transferred to the dutiable list. The nature of these is shown in tariff items 542, 585, 594, 597, 598, 600, 601, 602, 603, 625, 626 and 628. These articles are not now made in Canada to any considerable extent, if at all; and should the Government, at the approaching meeting of Parliament, not see their way clear to make the transfer, perhaps they would be willing to give an assurance to manufacturers that they would do so when they were prepared to enter upon the production of them, when the tariff would be made to give the necessary protection. We have knowledge that there are now a number of Canadian manufacturers who, with such an assurance, are prepared to go into the production of many of these articles.

Besides these, there are a number of other articles upon which it is most desirable that the tariff be amended. Canada is not only a large consumer of steel rails, but of structural steel also. Hitherto, and until very recently, all our wants in this direction were supplied from abroad, largely from the United States; and now that we are beginning to produce these articles at home it is very desirable that our fiscal policy in this respect should be similar to that of the United States, under which their iron and steel industries have assumed such immense proportions.

As we have stated, we have knowledge that some of our Canadian iron masters propose in the near future to begin the manufacture of several forms of steel besides rails, that is, if adequate tariff protection be extended to them. The encouragement now granted by the Dominion Government for the manufacture of iron and steel in Canada consists partly in bounty, which, under the law, is decreased each year, and which will be extinguished in 1907; and partly in the duties imposed in the tariff.

In proportion to the existing tariff as a whole, in the opinion of some of our manufacturers, the encouragement is fairly satisfactory except as herein alluded to. It would very naturally be fatal to the successful establishment of other lines not included in the protection we now have, if the Customs duties, which are intended to conserve the home market to our manufacturers, should be limited to the few lines hitherto made by them. The growing development of the country requires that lines of manufacture not hitherto attempted should receive at least as much encouragement as those already in existence, else the whole scheme of building up an iron industry of national importance would be severely

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crippled. In view of the encouragement already embodied in the tariff, and the beneficial results which are flowing from it, it should not be necessary to urge arguments to show the great value and importance of such an industry; and we believe that the only logical and possible course for the Government to pursue is to extend the provisions of the tariff from time to time as occasion may require, so as to afford the same ratio of protection as now to any new lines that may be undertaken by our manufacturers. These latter must, of necessity, go into the unoccupied fields as rapidly as capital can be secured, to the end that Canada may, as far as possible, supply her wants from domestic sources.

The existing systems of tariff and bounty encouragement are proving of the utmost benefit to Canada; but these operate only upon a few forms of iron and steel, in which steel rails, certain of the heavy forms of structural steel, and all the other articles herein alluded to, are not included; and our manufacturers are now at a point where proper legislation must be enacted, if these newer forms are to receive encouragement similar to that offered to cruder forms.

Having reference to the changes which we think should be made, we direct attention to the fact that at the present time structural steel weighing up to 35 pounds per lineal yard is dutiable at \$7 per ton; and it would seem to be the simplest way to effect the desired purpose to include all heavier sections now provided for in item 228 of the tariff in item 227, making the duty \$7 per ton throughout. The reason why the \$7 per ton duty was imposed upon structural steel weighing less than 35 pounds per lineal yard was because such material was, and had been for several years, manufactured in Canada, the Government recognizing the fact and protecting the industry to that extent. The same applies also to rails weighing less than 45 pounds per lineal yard, such rails for several previous years having been made in Canada, and for that reason were protected.

Steel rails for electric street cars and tramway purposes are now dutiable at 30 per cent., and the same rate of duty is imposed upon ordinary light rails weighing up to 45 pounds per yard; but all rails besides these, weighing over 45 pounds per yard are admitted duty free; and in this matter no logical reason can be shown why capital and labor employed in producing heavy rails should not receive the same protection and encouragement as the capital and labor employed in making rails for electric roads, or rails lighter than 45 pounds per yard.

Another feature in this connection is that there is an opening for the practise of fraud against the revenue in the importation of rails for electric roads in that rails for that

purpose are now being made much heavier than formerly. Rails imported for ordinary railroad purposes might very easily be sold for use on electric roads. It would be much simpler to adopt the American method of imposing a specific duty upon all kinds of rails, which would be in entire accord with the Canadian tariff as applied to light sections of structural steel. It would be well, then, to make the duty on all steel rails, and on all structural steel uniform at \$7 per ton. At present prices this would be about equal to an ad valorem duty of 30 per cent.

Another illogical provision of the existing tariff is with regard to the heavier sections of rails and shapes, and the fact may be pointed out that under it while the manufacturers of steel ingots and billets are given protection to the extent of \$2 per ton, if more capital and more labor are invested by them in the conversion of their products into the higher forms of rails and architectural sections, no corresponding protection is afforded.

Too much stress cannot be laid upon the fact that the encouragement granted in the way of Customs duties to Canadian producers of iron and steel is very largely for the purpose of protecting our home market from unfair competition, but steel rails are in the free list, leaving Canada open to be a slaughter market for the overproduction of other countries, as is too evidently and painfully the case in the recent large purchase of German rails by the Canadian Northern Railway Co.

STEEL RAILS AND THE TARIFF.

A startling announcement was made last week to the effect that the steel rail department of the Algoma Steel Co., at Sault Ste Marie, Ont., had been closed, immediately following which this explanatory statement was published in *The Globe*, purporting to have been sent out by Mr. F. A. Clergue, president of the company:

The rail mill has shut down, having filled all orders booked, which have amounted to something over 30 000 tons. The company hope to secure the Temiscaming Railway order on which to start up again. There being no duty on rails coming into Canada, the present slaughter price of German rails has enabled the Canadian roads to supply their requirements at prices less than cost at the Soo mills, owing to great difference in labor conditions. The Soo mills in every step of their processes, from the mines to the finished product, pay American wages, amounting on the average to 100 per cent. more than German wages. Canada is now sending abroad over \$5,000,000 annually for rails, of which amount more than \$4,000,000 would be expended in Canadian wages and materials, if these orders were given to the Soo mills. The Soo mills have cost over \$3,000,000, and over 500 men are thrown out of employment by their closing down.

Without doubt the erection of the Algoma mills was a direct result of the action of the Ontario Government, begun while Sir Oliver Mowat was premier, and continued through the administrations of Hon. Mr. Hardy and Hon. G. W. Ross. A bounty was promised upon the production of pig iron in Ontario, made from Ontario ores; and liberal concessions were made in other directions which have resulted, among other things, in the establishment of the Algoma works. It was only a few months ago that the rolling of the first steel rail ever made in Canada for use in railroad construction was announced in this journal; and the hope was entertained that thereafter no steel rails would be imported, except in excess of the capacity of domestic mills to supply. It is true that the Algoma mills have been actively in operation ever since that time until now in the production of rails; and it came as a

painful surprise a few days ago the announcement that the Canadian Northern Railway Co., an entirely Canadian concern, had placed a large order for steel rails with a German rail manufacturer, the reason given being that the cost of the German rails was less than the cost of Canadian rails.

This journal has always contended that no steel rail mill could ever be successfully operated in Canada as long as steel rails were admitted duty free. We would not care to assert that the Ontario Government, who have done so much to encourage the establishment of the steel rail industry in this province, nor the Algoma Steel Company, who have, as Mr. Clergue states, invested more than \$3,000,000 in their Sault Ste. Marie Works, were misled into doing what they had done; but in view of the fact that protective duties were imposed upon other heavy shapes of steel, they had reason to believe that as soon as a Canadian mill was prepared to roll steel rails, just so soon would an adequate protective duty be imposed upon the article. Had this been done, the Algoma mills would not have been closed, and the track of the Canadian Northern Railway would not be equipped with German rails. The statement is made in American, British and German papers that the prices obtained for German rails, when exported, are considerably less than prices obtained when they are used in the construction of German railroads. Were steel rails dutiable under the tariff, it would have been competent for the customs officers to value imported rails for customs purposes, at the fair and true market price in the country producing them, and that regardless of what might be actually paid for them by the importer; and that is one of the protections provided by the tariff against fraudulent valuations, and to prevent this being made a slaughter market for the products of low priced labor of other countries. That rule would work did an ad valorem duty prevail; but in case a specific duty prevailed, that duty would have to be added to the price paid the foreign maker, and that would most probably determine whether Canadian railroads would be built with German rails, the product of German cheap labor, while a most valuable Canadian industry lay in idleness, and Canadian workmen forced to face the inclemencies of the weather without occupation.

The situation is one of deep concern to every man in Canada, and it is to be hoped that as soon as the Dominion Parliament assembles, as it will most probably do in February, steel rails will be placed in the dutiable list of the tariff.

NOTE.—Mention is made elsewhere in these pages to the effect that the Algoma Steel Co. has been awarded a valuable contract by the Ontario Government for manufacturing rails for the Temiscaming railroad, now in course of construction, and by the Dominion Government for rails for the Intercolonial Railway.

CANADIAN FOREIGN TRADE—A COMPARISON.

At the recent Detroit National Reciprocity League conference, some facts and figures were introduced bearing upon the trade between Canada and Great Britain and Canada and the United States which are worthy of consideration. These facts are collated from the Dominion trade and navigation returns for the fiscal year ended with June 30, 1902, and show that the trade conditions during that year do not differ materially in character from the conditions of the immediately preceding years. The import percentage of total trade with Great Britain was 29.66 per cent. With the United States, without including precious metals in the exports, 72.81 per cent. With Germany 80.23 per cent. With France 83.27

per cent. This statement shows clearly that the trade of Canada with these countries, except Great Britain, left a heavy unfavorable balance against her.

Exports to Great Britain, the produce of Canada, \$109,347,000; imports from Great Britain for consumption, \$49,206,000; balance of trade in favor of Canada, \$60,141,000.

Imports from United States for consumption, \$120,814,000; exports to United States, Canadian produce, \$66,567,000, balance in favor of the United States, \$54,247,000; exports to the United States, not including precious metals, \$43,223,000; balance of trade against Canada, not including the export of precious metals, \$77,591,000.

The percentages of duties upon imports from the two countries are also worthy of consideration. The entries for 1902 for consumption were:

Great Britain—Dutiable goods entered for consumption, \$35,062,000; free goods, \$14,143,000; duty on total imports for consumption, 17.06; duty on total dutiable goods entered for consumption, 24.05.

United States—Dutiable goods entered for consumption, \$60,181,000, free goods, \$60,632,000; duty on total imports entered for consumption, 12.54; duty on dutiable goods entered for consumption, 25.18.

These details show that the proportion of free imports from the United States is much higher than from Great Britain, that the rate of duty upon total imports is nearly five per cent. less in the case of the United States than that of Great Britain, and that the rate of duty upon dutiable imports is but a fraction more than one per cent. higher in the case of the United States than in the case of Great Britain.

Exports of farm products, the produce of Canada, 1902—To Great Britain \$79,545,000; to the United States, \$7,027,000; to all other countries, \$8,028,000; total, \$94,601,000.

Imports of farm products for consumption, 1902—From the United States, not including raw cotton, \$15,487,000; from Great Britain, chiefly hemp, hides and wool, \$2,731,000; from all other countries, \$2,517,000.

Canada is the largest customer the United States possess for manufactures, and purchases manufactured goods of that country largely in excess of its purchases from all the rest of the world. A comparison between transactions in this line between Canada and Great Britain and Canada and the United States will show at a glance the vast importance of the Canadian market to the American manufacturing interests.

Imports of manufactures for 1902—From the United States, free goods, \$21,195,000, dutiable goods, \$48,341,000; total \$69,536,000.

From Great Britain—Free goods, \$7,988,000, dutiable goods, \$33,687,000; total \$41,675,000.

Excess of purchases from the United States over Great Britain, \$27,861,000.

United States increase of export of manufactures to Canada in 1902 over 1901, \$6,893,000.

Great Britain's increase of export of manufactures to Canada in 1902 over 1901, \$5,206,000.

Comparison of Canadian trade with Latin American trade: The United States exported to Mexico and the Central American States in 1902, \$45,924,000; to South America, \$38,074,000; to the West Indies, except Cuba and Porto Rico, \$17,020,000; total \$101,018,000.

Excess of United States exports to Canada over exports to Mexico, Central America and South America, \$36,816,000; excess of exports of the United States to Canada over exports to Mexico, Central America and South America, and the West Indies, except Cuba and Porto Rico, \$19,796,000.

THE BRITISH "CORN" TAX

A recent telegram from London states that the British revenue returns show that Sir Michael Hicks-Beach underestimated the receipts from the flour and grain registration duties, which are likely to exceed £3,000,000 sterling. This new source of revenue has been developed without increasing the cost of bread.

The Finance Act, 1902, levied an import duty on grain of 3d. per cwt., and on the milled products of grain of 5d. per cwt. The duty on maize was fixed at 1½d. per cwt., in order not to press too heavily on the poorer classes in Ireland who use it as food. Offals which are used as feeding stuffs for cattle pay a tax of 1½d. per cwt., and include the bran, pollards, germs, husks, culms, dust, or other similar by-products of grain. The articles classed as "grain" include wheat, barley, oats, rye, buckwheat, peas (not fresh), beans (not fresh), lentils, and rough rice. The milled products, which pay 5d. per cwt., include flour and meal containing over 50 per cent. of starch, of any of the dutiable grains. Arrowroot, starch, cassava powder, tapioca, potato flour, sago, malt, pearled barley, and whole and cleaned rice also pay a customs duty of 5d. Broken rice has a 4d. duty, and polished rice up to the present pays only 5d., which seems small when exporters are claiming 5½d. drawback. The clever smuggler under the present rules may import good polished rice with a sprinkling of husks at 3d., remove the latter and export the polished rice on drawback at 5½d.

In deference to that unpopular political cry of the "bread ax" one may search in vain in the Finance Act and Customs Regulations for the words "bread" or "biscuits." These articles are classed as "preparations of starch" at 5d. per cwt. At first it was proposed to tax various other grains, such as gram or chick pea, dholl or pigeon pea, dari or durra, millet, locust beans, linseed, cotton seed, tares, vetches, etc., but it is now settled that such imports are not dutiable.

Commercial Intelligence has been investigating the operation of the Corn Tax, and publishes some interesting facts regarding it. It gives a statement of facts connected with the administration of the customs of that part of the Finance Act of 1902 which levied an import duty on grain of 3d. per cwt., and on the milled products of grain at 5d. per cwt. Amongst the imports which, in some way or other, come within the wide scope of what is interpreted as "grain and the milled products of grain," are such articles as canned beans and pork, sweet-peas and other seeds of the gardener, fish food, fly paper, glazed writing paper, face powders, and even ship sweepings. On the other hand, it is curious to note that yeast, bottled peas, potatoes, millet seed, and many other cognate articles which contain starch or belong to the family of cereals, escape the customs net. Our contemporary gives details as to the operations of the tax in connection with over one hundred different articles. Naturally, the vexatious incidence of the tax leads to many attempts at evasion. Thus it is possible for the clever smuggler to import good polished rice (which should pay a customs duty of 5d.) mixed with a sprinkling of husks, which makes it only dutiable at 3d. It is easy, of course, after importation, to clean the rice and save two-fifths of the duty, or even re-export the cleaned rice on a drawback of 5½d.

Taken in detail, the far-reaching ramifications of the "corn duties" may be seen more clearly when dealing with actual importations:

Arrowroot pays duty at 5d. cwt.

Baby food is liable for flour, cocon, and sugar other than milk sugar.

Baking powder is taxed with the percentage of starch at 5d. Barley duty is 3d.

Beans, broad, pay 3d. duty when not fresh.

Beans and pork, canned, liable on proportion of beans in dry state.

Bean meal is taxed at 5d., except when rated as offals.

Bean husks liable to 1½d. duty, as offals.

Biscuits, in addition to sugar duty, pay on the proportion of flour at 5d. Currants and raisins are "extras."

Biscuit flour, or milk powder, escapes taxation as milk sugar, if no cane sugar is added.

Bread pays as preparations of starch at 5d., sugar and dried fruit as "extras."

Brewers' grains pay as cattle foods at 6d. or 1s. according to the amount of molasses present.

Bran is liable as offals at 1½d. when the starch does not exceed 50 per cent.

Cattle food as above, 6d. or 1s. per cwt.

Cereal foods pay 5d., or 2½d. if from maize.

Charcoal tablets pay on sugar or malt in proportion.

Chestnut flour contains some starch and sugar, probably natural to nuts.

Cereal coffee pays 5d. cwt;

Coffee husk meal escapes taxation.

Cocle seeds are free from duty.

Cocoa husk meal pays a cocoa tax of 2s. per cwt., although it is worked up with cheap cocoa preparations.

Corn, blighted, or ergot is imported free as a drug.

Corn, canned, is taxed 2½d. cwt. on dry corn as a "milled" product, instead of 1½d. as maize.

Corn flour is dutiable at 5d. if from wheat, but usually at 2½d. as maize product where husk is present.

Cotton-seed cake is free of duty when not mixed with sugar or dutiable grains.

Cotton-seed meal is also free as above.

Dextrine pays as starch at 5d.

Distillery refuse, like brewers' grains and cattle food, at 6d. or 1s. cwt.

Dholl or pigeon pea, is free of duty.

Ergot of rye is imported free as drugs.

Farina is taxed at 5d. cwt.

Fish food contains some starch which is taxed in proportion.

Flour pays duty at 5d. cwt.

Flour maize pays 2½d. cwt.

Fodder, cattle, is taxed at 6d. or 1s. according to amount of molasses and dutiable corn in the fodder.

Fowl food, which is composed of tares, refuse, wheat or barley, pays on percentage of wheat or dutiable corn in mixture.

Fly papers, when containing starch or sugar, are taxed accordingly.

Gelatine, as in printer's roller composition, usually contains 20 per cent. of sugar.

Gluten feed, maize, an offal for cattle, pays 1½d.

Glue from bones is admitted free.

Glue powder sometimes contains starch, and pays on proportion at 5d.

Glue for sizing is partly dextrine and is charged as a starch preparation.

Grape nuts, a cereal food, is charged the 5d.

Gram or pulse, or chick pea, is not charged as peas, but is admitted free.

Green corn, usually canned, is taxed at 2½d. as maize meal.

Groats are taxed as milled oats at 5d. cwt.

Homp cake is admitted free when neither sugar nor dutiable corn is present.

Horse gram is free.

Infants' food pays on amount of sugar (other than milk sugar), cocoa and flour in its composition.

Khang gram, khessary dholl and kuluth horse gram are free.

Lentils pay 3d. duty, but split lentils and split peas pay 5d. per cwt.

Linseed cake is free.

Locust beans are free.

Maize, as a concession to Ireland, pays 1½d. cwt.

Maize meal is taxed at half the duty of other meals, viz., 2½d, but maize starch and potato starch pay 5d.

Maize flakes, like maize meal, is charged 2½d. per cwt.

Malt pays 5d., but malt extract is charged 7½d. cwt., in respect to amount of malted corn used in preparing it.

Malt dust and malt culms are rated as offals at 1½d.

Malt foods generally pay 7½d. cwt., or one and a-half times the malt duty.

Malt extract must pay on the actual quantity of spirit present, and ¼d. per bulk gallon for the malt duty.

Maltine, used in preparing malt extract, pays on spirit and malt.

Maltose is taxed at 7½d. per cwt.

Malted milk pays a duty of 5d. per cwt.

Meals of dutiable grains pay 5d. when not offals, but maize meal pays only 2½d.

Millet seed is free.

Middlings under the present method of estimating the percentage of starch, are taxed only as offals at 1½d.

Molassine is a cattle food containing molasses, and pays 1s. duty.

Mustard flour usually contains 20 per cent. starch for corn duty.

Nuts and nut husks, ground, when containing no added sugar or starch, are free.

Nut meal for cattle, when containing no dutiable starch, is free of duty.

Offals for feeding cattle, when under 50 per cent. of starch, pay 1½d. cwt. The offals imported are, wheat barley, rye, rice, maize, oats and bean.

Oats, the duty is 3d. cwt.

Oatmeal, oats, rolled, and oat groats are taxed 5d.

Oilcake is free from added starch or sugar.

Paper imported has been found to contain starch and glucose. This arises from the fact that dextrine is used in "finishing" the paper. The starch and the dextrine on treating with acid are converted into glucose. Pure cellulose or cotton wool contains no starch, but yields about 5 per cent. of glucose when boiled with acid.

Paper finish, or dextine, is taxed as a preparation of starch at 5d. per cwt. on the percentage in the article.

Peas, dried, pay 3d. duty.

Peas, bottled, preserved in salt, free as fresh.

Peas, chick, are free.

Pollards pay duty as offals at 1½d. per cwt. when containing less than 50 per cent. of starch.

Potato flour, when in a finely divided state, pays duty as starch at 5d. There is no duty on potatoes.

Poudres and face powders generally contain 75 per cent. starch, which is dutiable.

Poultry food, being a mixture of tares or vetches with dutiable corn, like oats, the percentage of which pays 3d. per cwt.

Pudding of maize flour is 2½d. When sugar and cocoa are present the proportion of each duty is levied.

Rice, whole and cleaned, pays 5d. cwt.; when whole not more than 50 per cent., 4d.; and when not more than 10 per cent., 3d.; uncleaned rice, 3d.

Rice meal is usually imported as offals for cattle at 1½d., but no broken rice must be mixed with the meal.

Rice shudes are free.

Rye, 3d. cwt.

Remoulage, or bean offals, 1½d.

Seeds, like sweet pea, are taxed 3d. The Government botanist determines whether imported seeds are dutiable "grain" or otherwise.

Screenings, broken wheat and tares, pay on percentage of wheat at 3d.

Size or dextrine pays duty as a preparation of starch at 5d. on percentage used in manufacture.

Ships sweepings and warehouse sweepings pay tax as grain.

Starch is liable to the 5d. duty when no husk is shown by microscope. Starch from potatoes is also dutiable although potatoes are free.

Tares, urhur peas and vetches are free.

Wheat pays 3d. cwt.

Wheat germ meal for making brown bread, is charged the meal duty of 5d., because it is not used as an offal for feeding cattle.

Wheat middlings pay 1½d. as offals.

Wheat screenings, 3d. on percentage of broken wheat present.

Wheat offal, when containing less than 50 per cent. of starch, 1½d.

Yeast, free.

VENEZUELA.

A few years ago, Grover Cleveland, president of the United States, fanned up a little breeze in a matter in which Great Britain and Venezuela were the parties most directly interested. Thanks to the better judgment and forbearance of Great Britain no bloodshed resulted, but the incident left the impression upon the minds of the people of the pugnacious and quarrelsome South American Republic that it could twist the tail of the British lion with impunity, and, more than that, could treat Germany in the same manner. They have tried it, and are finding out that they have reached a point where forbearance has ceased to be a virtue. Another man is now president of the United States, and that country is now looking on—a mere spectator—at the threshing Venezuela is receiving at the hands of those whom she has so seriously offended.

The forbearance that more highly civilized nations have been showing to the effete republics of South America is phenomenal, and has lasted longer than might have been expected; and we can only look with amazement upon the foolishness of Venezuela, which is a fair representation of the other states, in deliberately ignoring the protests that had been made to her by Great Britain and Germany, and plunging into a war that can have but one ending. She was notified by the United States that no Monroe doctrine interference would be made in her behalf, but President Castro evidently believes, or hopes, that the spirit of Grover Cleveland still inhabits the White House at Washington. Poor fool, he is reaping the whirlwind resulting from Mr. Cleveland's little breeze.

Reference to the tergiversations of Venezuelan government in the past few years shows the mercurial temperament of the people. In 1858 the republic adopted a new constitution, and

in the same year enjoyed a revolution. Jose Castro was elected president in March of that year, and held office until August, 1859, when, through the revolution, he was succeeded by Pedro Gera. This latter patriot kept himself in office until 1861, when he was revolutated out, and Jose Paaz revolutated in, where he remained until June, 1863, when he was revolutated out and Juan Falcon revolutated in, where he remained but a few months, when a rival government was instituted at Puerto Cabello under General Cordero. Another revolution in 1865 brought General Falcon to the front as president, but he in turn, after three months of turmoil, was driven out of the country. In 1870 General Blanco fought his way to the presidential chair, or, as might be more correctly stated, to the throne of a dictator. Between 1870 and 1899 Venezuela suffered under the rule of eight so-called presidents. In this latter year Senor Palarzio was elected president, but before the expiration of the year he was revolutated out by General Crispo. One of the usual revolutions was in activity in 1894 in which the rebel forces were victorious, as a result of which a gang of adventurers obtained power, one of the outcomes of which were the infringements upon the rights of resident Britishers, Germans and Frenchmen, for which the country now finds its navy captured and its soil invaded by hostile foes.

Referring to the claims against Venezuela, which Great Britain and Germany are employing such strident means to collect, the Pittsburg Gazette alludes to the fact that there is only a hazy notion in the public mind, perhaps, of the nature of the claims that have caused Great Britain and Germany to engage in what is really a war with Venezuela, and a word of explanation is, therefore, proper at this time. The moneys due, about which all the trouble has occurred, are not owed to the British and German governments, but to citizens, or subjects of Great Britain and Germany, who invested their money under specific guarantees of the Venezuelan government in railways and other enterprises for the development of the country, and who also made a loan to the government amounting to \$10,000,000 on which no interest has been paid for four years. The British and German governments have taken up these claims on behalf of their citizens, and after failures to arrange for payment or any terms of settlement, determined to collect them forcibly by seizing ports of entry and collecting and appropriating the customs revenue to payment of the debt. There may be objection to this procedure on the part of persons who see in it an invasion of the sovereignty of a state that has been racked by revolution, and there is a great deal that could be said on that phase of the question. But will, in the end, be a good thing for the people of Venezuela to be brought face to face with their responsibilities in this rude manner. It may cure them of the habit of revolution, in which they have indulged for a long term of years, to their own hurt and to the injury of all who have dealings with them. Castro is an offender himself in that he came into power by means of revolution; and Venezuela has suffered ever since because of others who have been fired by his example to endeavor to succeed him by similar means. Through the later revolutionary period obligations to German and British investors have been evaded and revolution offered as an excuse, and there is little doubt that the claims would have been in time repudiated in whole or in part, or permitted by the Venezuelan government to lapse, had not force been used as a last resort. If the claims of the people of one nation could be gotten rid of in this way other investors would have no guarantee worth the paper it was written on. Present investments would, therefore, be

in peril, and Venezuela would be the final sufferer through refusal of foreigners to make investments to develop Venezuelan resources, something the unaided native population seems unequal to. If Venezuela is finally convinced that just claims cannot be repudiated by ignoring them, it may come to this that investments will be as safe in Venezuela as elsewhere, and the country will greatly benefit as a consequence. The prostration of the South American state before the two great European powers, while an unpleasant sight in some of its aspects, may result in its salvation and regeneration.

TRADE JOURNAL ADVERTISING.

Canadian manufacturers are fast coming to recognize the fact that constant and judicious advertising is one of the most potent factors in building up their business and establishing the reputation of their products. It has been solely through the medium of trade journals that thousands of English and American manufacturing concerns have established a world-wide reputation and built up a permanent business. The same is true, though in a less degree, of Canadian manufacturers, many of whom have in this way established enduring reputations. What has already been accomplished in this direction is well worthy of notice, but there are other concerns who do not recognize the value of liberally patronizing the trade journals specially devoted to their interests. Such journals are the natural channels through which manufacturers should make their announcements to those with whom they desire to do business.

In some instances manufacturers who have attained success imagine that they are so well known that they do not need to advertise. This is a mistaken idea, for it is the best and most favorably known who are the largest and most persistent advertisers. Another mistaken idea as to advertising held by some is that of expending their advertising appropriation upon circulars, a class of matter which is very generally consigned to the waste basket.

A business represented by printer's ink is one that lasts. Printer's ink is a medium that works while you work and while you sleep. It is a salesman who never tires and never quits; one of whom your competitors cannot rob you. Printer's ink constitutes one of the great arteries of commercial activity. It is the medium through which the world is made to know what you know and wish to have known about your individual business. No great commercial success has ever been achieved without the aid of this great disseminator of knowledge.

A prerequisite of successful advertising is absolute honesty in every statement made. To say the proper thing at the proper time and before the proper audience is the fundamental principal of successful advertising. To do this requires an experience more varied than many business men imagine. The advertising man must have a knowledge of the value of the mediums he desires to use. He must also have a knowledge of human nature, that he may know in what manner to present to his prospective customers the goods he desires to sell.

Trade journal advertising will, if properly placed, bring satisfactory results, and prove to be a potent factor in building up a reputation which will last. For 23 years this journal has been devoted to the interests of the iron, steel and other manufacturing interests of Canada. Quite a number of the concerns whose advertisements appear in it have been constant advertisers since its first issue. During this time they have grown from small concerns some of them to very large

proportions, and to their constant and liberal advertising they assign no small degree of their success. What they have accomplished can be done by others by adhering to a similar policy.

THE WATER-TUBE BOILER PROBLEM.

The report of the British Commission on the use of water-tube boilers for naval purposes will prove to be a most valuable document to every navy of the world. The high character of the Board of Experts who carried on the investigation, and the exhaustive and elaborate nature of the tests which were undertaken, says the Scientific American, render these conclusions practically final on this question. The committee admit the undoubted advantages of the water-tube boiler for naval purposes, and at the same time they point out the difficulties and risks attendant upon the use of it. They propose to find a way out of the dilemma by installing a combination boiler plant, to consist partly of cylindrical and partly of water-tube boilers, the cylindrical boilers to be used for cruising at ordinary speeds, and for the supply of the various auxiliary engines, while the water-tube boilers are to be considered as a reserve which is to be called upon only when extra speed is to be attained. The six new British cruisers of 22,000 indicated h.p. are to have a fifth of their equipment, or 4,400 h.p., in cylindrical boilers, and the remaining 17,600 h.p. in water-tube boilers. The wisdom of this decision cannot be disputed, for, as a matter of fact, the period or periods during which one of the modern fast cruisers or battleships makes use of all its boiler equipment to secure its maximum speed, are very short and infrequent. It is quite possible that in the case of some vessels they will not for twenty-four hours out of their whole life be driven at their maximum speed. Except for the first high-speed acceptance trial runs, there are no occasions in times of peace, save possibly for a brief spurt during naval manoeuvres, when the vessel is pushed to its full speed, and in war time the engines will probably only be called upon for their maximum effort for a few hours at a stretch. An additional advantage arising from this determination to reserve the water-tube boilers for high-speed runs is that, since their periods of service will be briefer, they need not be made so heavy as the present naval water-tube boilers, which have to be designed to fulfill the requirements of durability and capacity for continuous service. In fact, under the new arrangement the water-tube boiler can be designed more on the lines of those installed on the torpedo-boat destroyers, with a consequent saving in weight and space which will be of the greatest value to the naval architect.

EDITORIAL NOTES.

Canadian manufacturers of cereal foods, as well as Canadian millers and Canadian farmers, are interested in the "Corn" tax now being imposed upon imports of such goods by the so-called free trade British Government. The utmost ingenuity, carried in many instances to a most ridiculous extent, has been exercised in discovering ways to make the Canadian producer contribute to the British revenue. As far as this tax goes it vies with the most pronounced protective features of the American tariff.

A special meeting of the members of the Toronto Branch of the Canadian Manufacturers' Association, has been called to meet in this city on December 19, to consider the question of civic government. The question to be considered is a resolution to the effect "That the executive portion of the

Municipal Government should be separated from the purely legislative or administrative portion, and be placed in the hands of an Executive Board consisting of the heads of the principal departments." We are pleased to note that the Association is interesting itself in the matter of better government for the city.

A very marked expansion in the trade of Toronto is shown by the receipts at the custom house, which have increased every month of the present calendar year. The receipts for last month amounted to \$458,239.87, as against \$399,371.50 for November, 1901, an increase of \$58,868.37 for the month of this year. In the eleven months of the year the customs receipts were \$5,919,239. In the same period last year they were \$5,507,259 so that thus far the gain this year at Toronto is \$411,941.

The total payments by the Dominion Government for iron and steel bounties during the past fiscal year were \$791,089. The total claims presented by the seven companies producing iron and steel were \$947,361, but the balance, \$156,272, is withheld pending decisions as to the liability of the Government under the law.

Without going into the merits of the question in dispute between Venezuela, and Britain and Germany, the situation in the matter affords an opportunity to call attention to the measure of independence which a small and weak power can enjoy in this wicked world as it is constituted at present. Undoubtedly, Venezuela is wrong in this affair, but it does not think so. If it were a great power, it would refuse to be dictated to by either Britain or Germany, or both combined. It would have its alliances; and a British-German "demonstration" at one of its ports, or an attempt to take possession of its customs, would mean a great war. But Venezuela is a small power; and when Britain and Germany agree that it should take a certain course, and the United States agrees to keep out of the affair, it has no choice but to take it. Yet it is "independent." Now if two of the great powers should want Canada to do something which we did not want to do, would we be in as helpless a position? Most assuredly not. Britain would be at our back; and a hostile "demonstration" against Halifax would mean war with the British Empire. Yet we are not "independent." People who are shouting out for Canadian independence that we may feel our national manhood should think of these things.—Montreal Star.

Following quickly the action of the recent Detroit convention, or conference, of the National Reciprocity League, promoted and sustained by a number of American manufacturers who desire to obtain freer access to the Canadian market, comes a report from both Ottawa and Washington to the effect that efforts are being made looking to the re-assembling of the Joint High Commission. It will be remembered that the proceedings of the Commission were adjourned indefinitely when Sir Wilfrid Laurier announced that the Alaska boundary dispute should be the first question to be discussed and settled; and that no questions of trade reciprocity should be considered until after then. Sir Wilfrid voiced the sentiments of Canada, and it is not probable that either the British or the American Governments will swerve him from that position. Canada's proposition is that the Alaska boundary dispute be submitted to arbitration; and that arbitration must be had before any consideration whatever will be given to the consideration of any trade reciprocity propositions.

The London, England, Morning Chronicle, says that it is very clear that no more preference is to be expected from Canada. "Indeed," it says, "if the utterances of Hon. J. Israel Tarte are endorsed in the next appeal to the country, the present customs preference will be withdrawn and higher protective duties imposed." Well, what of it? With the exception of some lines of textile fabrics, the increased imports of which have most injuriously affected the Canadian industry, British manufacturers are far, very far in the rear of their American competitors in their sales to Canada, particularly in manufactures of iron and steel. If British manufacturers do not want to avail themselves of our tariff preference in their favor, why not withdraw it?

A man who knew what he was talking about, said:—"Many of the members of the labor unions may be appropriately likened to an old negro down in Kentucky, about whom the story was current years ago, that in prayer meeting one night he said:

"'Bredderin' and sistern', I been a mighty mean nigger in muh time. I had a heap er ups an' downs—'specially downs—since I jined de church. I stoled chickens an' water-millions. I cussed. I got drunk. I shot craps. I slashed udder coons wid muh razor, an' I done a sight er udder things, but thank de good Lawd, bredderin' an' sisterin', I aint' never lost muh religion.'

"There are, it will be found, many members of the unions who are guilty of all sorts of acts that reflect upon the standing and character of their organizations, and they are willing to admit them, but still, like the old darky, the unionist will thank God, he has never yet lost the union card."

During the next few years upwards of \$30,000,000 will be spent by the city council of Johannesburg on public improvements. Durban, Pietermaritzburg, Bloemfontein, Pretoria, Port Elizabeth, Kimberley and Cape Town are also going to lay out millions in the near future upon tramways, harbors, public buildings, etc. The rolling stock of the Government railways likewise needs to be improved. The imports of the Transvaal during the six months ending June 30 last were \$21,000,000, as compared with \$5,500,000 for the corresponding period of last year. Very soon imports to the Transvaal will exceed those to all other South African colonies combined. At present there are only three firms of any note doing business for Canadian houses in South Africa. If Canadian trade is to develop largely, the number of resident agents of push and energy must be largely increased.

A novel development in labor troubles is reported from New Jersey. It appears that the employees of a glass company struck, and as usual the strikers began to picket the factory to "persuade" those desiring to work not to do so. Usually the strikers are strong enough or numerous enough to have their own way in a little matter of this kind, even if they use rather strenuous persuasive methods. In this case the tables were turned. According to The Iron Age, the company employed an overwhelming force of armed guards, who not only drove the pickets away from the vicinity of the factory, but also drove them from the railroad station so that they could not meet incoming trains to "persuade" workmen arriving from other localities. Here was a pretty state of affairs. The strikers could not muster either sufficient numbers or sufficient courage to cope with the guards, and they have turned to the courts for relief. Upon application of the Glass Bottle Blowers' Association of the United States and

Canada, a State judge granted an order to show cause why an injunction should not be issued restraining the glass company "from interfering with the legitimate business" of the strikers, who maintain that they have the right to "persuade" workmen to leave or not to enter the company's employ. The action of the judge is not to be criticized, as it is his duty to inquire into an alleged wrong when a charge is made before him, but it will be very interesting to learn the conclusion of this remarkable episode. In view of the frequent lawlessness of pickets it will be regrettable if this effective method of dealing with them should be judicially denounced. On the other hand should an injunction be granted against the glass company what becomes of the outcry of labor unions against "Government by injunction?"

The chief object of the American Protective Tariff League, as set forth in its constitution, is to protect American labor by a tariff on imports which shall adequately secure American industrial products against the competition of foreign labor. This league was formed a number of years ago, ever since which time it has been fighting and struggling towards the fulfillment of its objects. It has no resting time—it never rests. It has no periods of between-elections inactivity. It is always at work, and the scope and extent of its work is limited only by the means at its disposal. A similar organization was brought into existence in Canada some twenty-seven years ago, having similar aims and objects in view, and, like death, had all seasons for its own in its struggle in the cause of tariff protection, until a few years ago, when it became "reorganized" and the character of Hamlet was omitted from the play.

The Montreal Witness has discovered deposits of pig lead in different parts of Canada. No doubt that paper will be discovering pig iron and other kinds of "pigs," but at the same time it is making itself ridiculous to all who know anything about metallurgy.

The teamsters of Toronto, having duly formed themselves into a "Union," have petitioned the City Council to pass a by-law specifying the number of hours which shall constitute a day's work. It is not clear why the matter should be appealed to the City Council, the supposition being that the "Union" was created for that very purpose. As with other occupations, the hours of labor is a matter for agreement between employer and employees, and, we imagine, entirely outside the duties of the City Council to control.

A press despatch from Washington states that a bill has been introduced in the House of Representatives authorizing the President to enter into a reciprocal agreement with Great Britain whereby bituminous coal mined in the United States may be shipped into Canada free of duty; and Canadian bituminous coal admitted duty free into the United States. There is too much red tape involved in the proposition. If the United States wants free Canadian coal, all there is to be done is to place the article in its free list. There is no need whatever to consult Great Britain in the matter.

The imports of all kinds of belting into Canada during the fiscal year 1902, according to the Trade and Navigation Returns, including leather belting, gutta percha, and rubber belting, cotton belting, etc., were valued at \$141,800, of which \$58,844 came from the United States and \$82,956 from other countries.

Industrial Canada, the official organ of the Canadian Manufacturers' Association, which is now declared to be a regular trade journal, has taken to publishing Yankee patent medicine advertisements.

CANADIAN INDUSTRIAL CENTRES. LONDON, ONT.

In addition to being the chief centre of population in Western Ontario, and one of the important railway centres of the Province, London has made remarkable progress along manufacturing lines during the past decade or two and to-day is one of Canada's most important industrial centres. In point of population London holds fourth place among the cities of Ontario. Its location on the Thames river is such as to afford excellent advantages for manufacturing purposes and at the same time ample railway facilities have been provided, the Grand Trunk, Canadian Pacific, Michigan Central, and Lake Erie & Detroit River roads all entering the city. In addition to the natural and artificial advantages for industrial operations possessed by London, the corporation and its citizens have pursued a most liberal policy in offering inducements to secure desirable industries, and in this they have met with well-deserved success.

The varied iron and steel, woodworking, textile and other industries of London give employment to six or eight thousand persons, and the capacity of the plants now in operation are constantly being increased while many new industries are being established each year. One of the leading establishments is that of the London Machine Tool Co., who operate one of the largest and best equipped machine shops in the city. The plant is supplied throughout with the most improved machinery, much of which was manufactured by the company. They are manufacturers of high grade machine tools and their products are in use all over Canada. The company employs about 100 skilled mechanics and are contemplating additions which will greatly increase their capacity.

The Electrical Construction Co., of London, is another concern which has made an enviable record in their line of work. They manufacture all types of electrical equipments and supplies, install complete power plants, lighting plants, and in fact do all kinds of electrical work maintaining branches at Toronto, Montreal, Halifax, Winnipeg and Vancouver.

One of the old and well-known industries of London is the J. C. McClary Mfg. Co., who manufacture a long line of stoves, hardware and similar products. The company is making decided improvements to its plant and are expending some \$50,000 in this work. Roderick J. Parke, the well-known consulting engineer, of Toronto, is in charge of the construction work.

The Stevens Mfg. Co. is another concern engaged in similar lines, this company also manufacturing plumbers' supplies.

Among the other iron and steel industries of London is the London Foundry Co., who operate a large foundry plant; the London Bolt & Hinge Works; the London Brass Works Co.; William Mallock & Co.; The Western Wire & Nail Co. and the Dennis Wire & Iron Co. All of these are well filled up with orders and are very busy.

Messrs. E. Leonard & Sons, proprietors of the London Engine & Boiler Works, are one of the best known industrial firms of London, having been in existence for many years, engaged in the manufacture of boilers, engines and other machinery. The London Engine Supply Co. are preparing to make a number of improvements in their plant. The London Fire Engine Co. are experiencing a heavy demand for their well-known fire apparatus. George White & Co. are quite extensive manufacturers of farm machinery, and Wartman & Ward are engaged in similar work.

Barton & Cornell are engaged in electrical work, and this company is making a number of improvements. The London Electric Co. also do a large business in all kinds of electrical work. The Spramotor Co., manufacturers of a patent painting machine, do a large business. The Wagener Ladder Co. is another of London's industries which does a large business throughout the country. The London Fence Machine Co. and the Lamb Fence Co. are also numbered among the thriving industries of London.

CAPTAINS OF INDUSTRY.

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

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

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

A wire from Edmonton, N.W.T., says: A meeting of the Board of Trade was held here yesterday to confer with Charles R. Law, promoter of the Edmonton and Pacific railway project, which is practically the same company as the North-West Colonization Co., of St. Paul, who propose building a railway to Athabasca Landing, thence west by Lesser Slave Lake and Peace river to Pine River Pass with a branch of 100 miles taking in the Grand Prairie district. Ten steamers would also be operated from Dunvegan, which would ply over 2,000 miles of river in connection with the railway. The road would cost \$12,000,000. Mr. Law stated the Colonization Co. was able to put in 100,000 settlers from the States. Edmonton was to be the terminal point, with headquarters situated here. The project needed the support of the Edmonton people and the member for Alberta. After some discussion the matter was laid over until a copy of the charter of the new company could be forwarded to the board.

The Algoma Steel Co's plant at Sault Ste. Marie, Ont., will go into full operation again on December 22. Mr. Clergue has just closed a large contract for rails for the government. Nearly 900 men are employed in the steel plant.

The Russell Wheel and Foundry Co., Detroit, Mich., has just completed a big contract for the Clergue interests at the Soo.

The city of Quebec is considering the matter of installing a filtration plant at a cost of \$150,000.

Windsor, Ont., is likely to secure an immense iron and steel plant, a company recently organized being negotiating with that corporation. The company is prepared to expend \$200,000 in a plant. The Mayor of the city can give further information.

The contract for supplying the 170 miles of copper wire which will be required for the transmission of the power from the North Vancouver power house to Vancouver, Westminster and other centres, has been awarded to the Eugene F. Phillips Electrical Works, of Montreal. The contract price for the wire is in the vicinity of \$35,000. The wire will weigh 150 tons, and will be delivered in three instalments, one-third in March, one-third in May, and the balance in June, 1903.

The Ontario Government has agreed to make a deal with E. F. Getchell and John F. Langan, of Chicago, on behalf of a syndicate of American capitalists by which a grant of 3,000,000 acres of land is to be made on condition that the syndicate spend \$15,000,000 in five years in establishing pulp mills, mining, lumbering, power production, colonization and railways. The land lies north of the Canadian Pacific Railway and about fifty miles west of the Government railway

now under construction from North Bay toward James Bay, and in the line of the new Grand Trunk transcontinental. The syndicate will undertake to settle not less than 10,000 people annually for the next ten years, and to spend not less in works than \$2,000,000 during the next two years. The land selected is well suited for all the proposed works.

Sir Sandford Fleming, one of the most eminent civil engineers in Canada, has been interviewed as to the prospects for traffic along the farther northern route of the projected Grand Trunk Pacific Railway. As he had explored the country very fully along all the transcontinental routes discussed in the late seventies, he knows the country well. He has this to say of the spruce: "The greater part of the vast region through which the new line might pass between Quebec and Port Simpson is wood land, and we have to-day a new value given to the timber which was undreamed of twenty-five years ago. The territory to be traversed is the natural home of pulp wood, and in this vegetable substance the unoccupied regions of Quebec and Ontario have an inexhaustible crop ready for harvesting. A crop of a perennial character which in extent, I venture to say, is unsurpassed in the North American continent, perhaps in the whole world."

It is said that the British Government is making or has made an arrangement with the Dominion Government for the lengthening of the Imperial dry dock at Esquimalt, near Victoria, B.C., to make it capable of docking a warship of 14,000 tons. This is due to the probability of the bringing of the large Japanese battleships to Esquimalt whenever they require to be docked.

The Syracuse Smelting Works, Montreal, inform us that owing to the large demand for their well-known Syracuse Babbitt metal and Columbia Phosphor tin, they have been compelled to run their plant over time, both day and night. They are therefore increasing their facilities for the production of these specialties which will enable them to hereafter fill all orders without any delay.

C. C. Pilkey's steam laundry at Portage la Prairie, Man., was destroyed by fire a few days ago. Loss about \$4,000.

Pneumatic Tools and Appliances ARE GREAT MONEY SAVERS.

Air Hoists,
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of Liquids or
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Pneumatic
Augers,
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Hammers,
Rammers,
Rotary Drills,
and Augers.
Reversible
Boring Machine,
Flue Cutters,
Rollers and
Welders,
Air Lift Pumps,
Jacks,
Paint Spreaders,
Bolt Nippers.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

The Ontario Felt Co., with head office at Dundas, Ont., has been incorporated with \$40,000 capital. The provisional directors are J. F. Morley, R. W. Morley and W. D. Morley.

The Williams Piano Co., Oshawa, Ont., has been granted letters of incorporation. The capital of the new concern, which will take over the business now carried on by the R. S. Williams & Sons Co., is \$250,000. The provisional directors are Robert Williams, Geo. A. Williams and Harry E. Williams.

The B.C. Junk and Hardware Co., has been incorporated at Victoria, B.C.

The Page-Hersey Iron & Tube Co., Limited, Guelph, Ont., is erecting an iron building 62x226 feet, a steel building 400x70 feet, and various smaller buildings in which will be placed machinery for making wrought-iron pipe, all sizes, $\frac{1}{2}$ inch to 12 inches. The president of the company is Randolph Hersey, of Montreal; vice-president, W. W. Near, of Montreal; secretary, H. Westoby, of Guelph; the board of directors, Messrs. S. T. Page, George H. Page, W. W. Near, R. Hersey, H. Westoby, D. Muhlfelder, and D. H. Friedman. The plant will be ready in part about May of next year.

It is reported that T. M. Kirkwood, of Toronto, has closed a deal whereby he will operate the rolling mills at Belleville, Ont., having been granted a bonus of \$5,000 per year for six years, and will roll 7,000 tons of merchant iron or steel per year, a forfeit of \$2,500 to be made if

the plant is not put in operation before April 1, 1903.

An entire saw mill outfit, including a fine portable engine and boiler, was shipped to Gustof Leidtke, Wilno, Ont., by H. W. Petrie, Toronto.

An announcement has just been made of the discovery of one of the largest iron ranges in Canada, and what will probably develop into one of the most important in America, in the Wahnapiac district, north of Sudbury, Ont. Chicago and Michigan capitalists, it is reported, who have interests in the iron range of upper Michigan, are interested in the discovery, and men who have spent a lifetime in mining are thoroughly of the opinion that it will develop into a great iron ore field.

A vertical 8 h.p. engine has been purchased by Church Bros., Orillia, Ont., from H. W. Petrie, Toronto.

The United States Board of General Appraisers has handed down a ruling placing zinc ore, calamine and zinc blend on the free list, under section 183 of the Dingley tariff, and thus Kansas, Missouri, and Texas smelter operators are free to enter the British Columbia field to purchase Canadian ore. The Slocan zinc owners expect to reap great benefits.

The Windsor Foundry Co., Windsor, N.S., has been incorporated with a capital stock of \$49,950, to acquire and carry on the business of the Windsor Foundry Co., manufacturers of stoves, ranges, heating apparatus, etc.

The Kilgour & Organ Co., Hamilton, Ont., have installed a 50 h.p. steam engine, purchased from H. W. Petrie, Toronto.

The Rota Filters, Limited, Windsor, Ont., has been incorporated with a capital of \$25,000 by J. A. Smith, F. S. Evens, and J. S. Murphy.

The Canadian Niagara Power Co. will extend their wheel pit to more than double its present intended capacity. The wheel pit is now about half finished, and is constructed to hold five turbines, each 10,000 h.p. The wheel pit, with the new extension, will accommodate six additional turbines of 10,000 h.p. each, making a total of eleven turbines, and 110,000 h.p. when finished. The tunnel or tail race has been constructed to enable it to discharge all this amount of water after passing through the turbines, or even more if necessary. The wheel pit when finished will be 540 feet long and 170 feet deep. The first section, which will produce 50,000 h.p., will be in operation before the second portion of 60,000 h.p. will be finished.

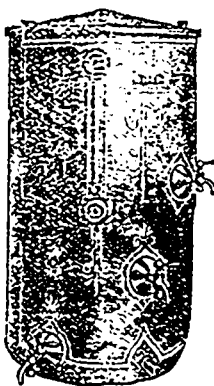
A 100 h.p. tandem compound Wheelock engine has been installed at Brussels, Ont., by H. W. Petrie, Toronto, to furnish power for the Brussels Electric Light Co.

The Mount Union Silica Brick Co., Mount Union, Pa., has, it is reported, received a contract to furnish all the Silica brick required by the Dominion Iron & Steel Co., of Sydney, N.S., during the coming year.

From \$1.00 to \$1.50 per day

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CROSS OIL FILTER



BODCAW LUMBER CO.,
STAMPS, ARK., Sept. 13, 1902.
BURT MFG. CO.,
Akron, Ohio.

GENTLEMEN, — We are very much pleased with the Filters bought of you and have saved from \$1.00 to \$1.50 per day with them right along. We use all the oil over again, which amounts to about ten gallons a day. The Filters work fine and we would not be without them.

Yours very truly,
BODCAW LUMBER CO.

That is what our Filters are doing every twenty-four hours of the day — saving money in large amounts and small, for manufacturing concerns, big and little, in every part of the world. Are you losing money by not owning one?

Let us send a Filter on 30 days' trial to prove that it will reduce your lubricating oil bills one-half. You may return it at our expense if not satisfactory.

THE BURT MFG. CO.,

Largest Mfrs. of Oil Filters in the World.

AKRON, OHIO, U.S.A.

A complete stock carried by the
FAIRBANKS CO., - Montreal.

BUFFALO IMPROVED VENTILATORS

FOR
SCHOOLS, CHURCHES, FACTORIES, FOUNDRIES
AND ALL INDUSTRIAL BUILDINGS



Impure Air, Smoke, Steam and Gases rapidly
and constantly withdrawn.

BUFFALO FORGE COMPANY, BUFFALO, N.Y.

The Crows Nest Pass Coal Co. has expended \$1,000,000 in improvements during the past year. The present daily output is 2,000 tons of coal and 600 tons of coke, which will be materially increased by improvements now under way.

The Canadian Chemical Co., Sault Ste. Marie, Ont., the Canadian branch of the American Alkali Co., has been re-organized and will make extensive improvements to their plant.

The Dominion Wrought Iron Co., has decided to locate at Orillia, Ont. The contract for a new factory 200x50 feet has been awarded and the plant will be put in operation by March 1, 1903. Messrs. J. B. Tudhope, W. H. Tudhope and Wm. Thomson, of Toronto are heavy stock-holders in the company.

The large wincey plant of the Sling-by Mfg. Co., Brantford, Ont., was destroyed by fire last week. Loss about \$50,000. 100 employees are thrown out of work.

The recent discovery of lead ore at South Harbor on Aspy Bay, Cape Breton, has been sufficiently developed to give some idea of its value. Analysis of the ore shows about 60 per cent. of lead with a low percentage of silver.

The Stonewall Jackson cigar factory at Montreal, was destroyed by fire last week. Loss about \$60,000.

The Canadian Portland Cement Co., Deseronto, Ont., through its managing director, F. G. B. Allen, have given notice of a 7 per cent. semi-annual dividend.

The Canadian Pacific Railway will erect a 400,000 bushel elevator at Port Arthur, Ont. The plans are being drawn by H. E. Vantele, engineer of bridges for the road.

The Ottawa Steel Casting Co., Ottawa, Ont., has been incorporated with \$250,000 capital. G. G. Roe, J. E. Askwith, J. H. Gervan, G. B. Norton, D. C. MacLaren, J. G. MacLaren, and A. J. McGibbon are the incorporators.

The Niagara Falls Machine & Foundry Co., Niagara Falls, Ont., will erect an addition to their factory.

The Woodstock Wood-Turning Co., Woodstock, Ont., of which William Craddock is manager, will erect five buildings, of which the manufacturing building, 30x100 feet is now under way. There will be a saw mill 24x80 feet, engine room 24x25 feet, dry kiln 30x30 feet, and store room and packing building 30x140 feet.

The J. C. Wilson & Co., Montreal, has been incorporated with a capital of \$1,000,000 to take over the paper and pulp mills and other business conducted by the partnership concern of the same name. Among the incorporators are W. W. C. Wilson, F. H. Wilson, and E. H. Wilson, of Montreal.

Messrs. Hubo Bros. have opened a machine shop in Toronto Junction, Ont.

The Hutton Patent Right Co., Owen Sound, Ont., has been formed to buy and sell patents and inventions.

CAMEL BRAND
BALATA
RUBBER

Linen Fire Hose,
Water and Steam Hose,
Packings, Etc., Etc.

THE STANDARD



COLD WATER PAINT

WEATHER PROOF, FIRE PROOF
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MILL SUPPLIES

Lubricating Oils and Greases
PAINT, PAINT OILS, ETC.

W. A. FLEMING & CO.

Montreal and St. John, N.B.

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MANUFACTURE "RATHBUN'S STAR" BRAND

THE LEADING CANADIAN PORTLAND CEMENT

Capacity of Works—500,000 Barrels per Year

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810-812 Front Street West,

Telephone Main 1379.

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ST. LAWRENCE PORTLAND CEMENT CO.,
2664 Notre Dame St. W.

Telephone Main 3987.

MONTREAL, QUE.

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The Rosella Hydraulic Mining & Development Co., of Victoria, B.C., has been incorporated and will develop mineral lands, water-power and timber lands; capital \$250,000.

The Woodworkers Union, Berlin, Ont., will erect a co-operative furniture factory at that place. The factory will be of brick, three stories high, and will employ 50 workmen.

It is reported that the Bertram Engine Works Co., Toronto, will build a large ship-building plant at Sandwich, Ont., the prime object being to build boats for the Canadian Pacific Railway Co. The proposed plant will cost \$1,000,000, and will consist of ship, boiler and engine works with dry docks and all facilities for repair work.

The Manitoba Cement Co., Winnipeg, Man., has been formed and will erect a plant at that place. Juslin Chancellor is president, and Wm. Whyte, as-istant to President Shaughnessy, of the Canadian Pacific Railway, vice-president, and W. Blackwood, secretary.

The Standard Ideal Sanitary Mfg. Co., will likely locate at Port Hope, Ont., where a bonus has been offered the company.

The organization of the Henderson Roller Bearing Co., Toronto, has been completed by the election of the following board of directors: Albert Ogden of Hoskin, Ogden & Hoskin, barristers; John J. Main, Superintendent Polson Iron

Works and Manager Heine Safety Boiler Co.; J. W. Jones of the Jones & Moore Electric Co.; John C. Eaton, vice-president of the T. Eaton Co., Ltd.; John Ferguson of the Excelsior Life Insurance Co.; Albert E. Henderson, Robert I. Henderson, Albert D. Watson, M.D., and Hiram Kitley, broker, director Colonial Type Co. The following officers have been elected; Albert Ogden, president; John J. Main, vice-president; Albert E. Henderson, secretary-treasurer; Robert I. Henderson, manager.

It has been decided by the Commission, with the approval of the Government, to award the contract for the rails for the first sixty miles of the Temiscaming and Northern Ontario Railway, and five miles of sidings to the Algoma Steel Co. The contract calls for 8,200 tons, 80 pounds to the yard. The price is \$32 per ton of 2,240 pounds, f.o.b., cars at North Bay, Ont.

The Canadian Heating & Ventilating Co. will likely locate at Owen Sound, Ont. The company proposes to erect a plant at a cost of \$100,000. The members of the company are Jas. A. Ellis and J. A. Harshaw, of Toronto, and J. H. McLaughlin, W. S. Middleboro and Christie Bros., of Owen Sound, Ont.

The Canadian Trinidad Co., with a capital of \$300,000, has been organized at Walkerville, Ont., by J. S. Lovell, W. Bain, R. Gowans and others, and will engage in the oil refining business.

The Silicate Brick Co., Ottawa, has been incorporated with a capital of \$50,000, and will erect a brick plant at that place.

General Purchasing Agent Buel, of the Dominion Iron & Steel Co., who is in Germany, has purchased about 300,000 fire brick for the new ovens to be erected at Sydney. The foundations for the ovens have been laid, and it is expected they will be ready for operation in about three months. Chief Engineer Holth, of the Steel Co. has gone to England, where he will contract for machinery for the rail mill.

A conspicuous part of a manufacturing plant or steamship is its smokestack, and it is important that it should be well protected by paint. The Joseph Dixon Crucible Co., Jersey City, N.J., is the maker of Dixon's silica-graphite paint, which is recommended for painting stacks.

Ottawa is to have another new industry dependent on mica mining. The new concern will be run by the Westinghouse Electric Co., of Pittsburg, Pa. The supply of mica will be procured from the Gatineau and adjacent districts, and probably from the Kingston district as well. At the start employment will be given to 200 men and girls, but the number will be greatly increased.

The works of the Canadian Oak Belting Co., at Brockville, Ont., were damaged by fire on December 13, loss some \$3,000.

THE DODGE IS A MONEY MAKER

THE DODGE WOOD PULLEY being much lighter than an iron pulley carries less weight on your shafting.

Its first cost is less—its cost of erection is less—it costs less to carry on the shaft—in this way the Dodge Wood Split Pulley is a money maker.

Dodge Wood Split Pulleys are perfectly made—the pulley rim is stronger than the wood from which it is made.

Dodge Wood Pulleys carry belts better than iron pulleys.

Dodge Pulleys fasten to the shaft with their compression fastening stronger than an iron pulley with a set screw.

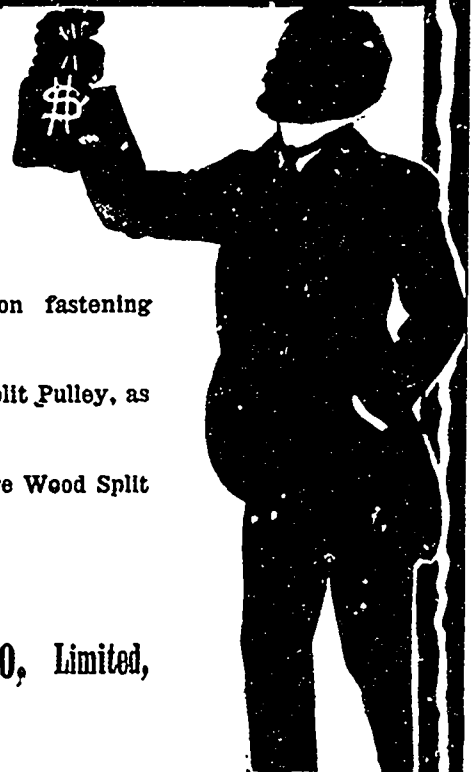
Then too the Dodge is perfectly balanced when fastened.

Shafting is not sprung out of line with the Dodge Wood Split Pulley, as with an iron pulley and its set screw.

Iron pulleys give perfect service in some places.

But where a wood pulley can be used, specify the Dodge Wood Split Pulley and you have the perfect wood pulley.

The Money Making Wood Pulley.



The Dodge Manufacturing Co. of Toronto, Limited,
TORONTO

John Sheriff's flour mill at Rockland, Ont., has been leased to Enlide Lavoie, of Ottawa, who will make extensive repairs to the building and machinery.

Tenders for the construction of the Manitoulin & North Shore Road, one of the Clergue interests, will be called for at once.

The receipts of the Toronto Street Railway for November, as given in the schedule issued by the City Treasurer, are nearly \$21,000 in excess of the receipts of November, 1901. The receipts during the past six Novembers are as follows:

	Receipts.	Percentages
November, 1902	\$152,271 75	\$12,181 74
November, 1901	131,486 75	10,518 94
November, 1900	128,132 13	10,250 57
November, 1899	102,535 38	8,202 83
November, 1898	100,204 95	8,016 40
November, 1897	89,447 45	7,155 79

The Altamont Farmers' Elevator Co., Altamont, Man., is being incorporated with a capital stock of \$5,000, and will build a grain elevator at that place.

The Empire Brewing Co., Brandon, Man., is being incorporated with a capital stock of \$100,000. J. A. Robinson, Peter Payne, Andrew Kelley, and John Hanbury of Brandon, are interested.

The Winnipeg Power Co., Winnipeg, Man., which expects within a year to supply commercial electricity to Winnipeg from the water of the Pinawa branch

of the Winnipeg river, is now preparing to go on with construction. The first buildings have already been erected, and it is expected that the total cost of construction with the plant will reach \$700,000. Machinery worth \$100,000 will be installed during the year.

The Victoria Gas Heater Co., Victoria, B.C., has been incorporated with a capital stock of \$25,000, to manufacture a gas burner invented by George Lund, that city.

The Sutton Lumber & Trading Co., has been incorporated at Victoria, B.C., with a capital stock of \$100,000, to build and operate saw mills for the manufacture of lumber, etc., in that province.

The Ucluelet Mercantile Co., has been incorporated at Victoria, B.C., with a capital stock of \$15,000, to build and operate a lumber mill in that place.

The Canadian Niagara Power Co. have awarded Escner, Wyss & Co. of Zurich, Switzerland, a contract for three 10,000 h.p. turbines to be installed in the Canadian wheel pit now in course of construction. It is understood that the new wheels will be similar in design to those installed by the Niagara Falls Power Co. in wheel pit No. 2, on the New York side. The turbines are to be delivered within a year.

The Ross-McLaren saw mills, about three miles above New Westminster, B.C. on the north bank of the Fraser, will be

put in operation again by their new American owners after nearly ten years of idleness. L. W. David, of Blaine, Wash., is one of the new owners, and the mills will be operated in connection with his mill at that place. Cedar logs will be cut into rough lumber and shipped to Blaine for finishing. In this way the export duty on logs will be avoided.

The Winnipeg, Man., Paint and Glass Co. is applying for a charter, giving power to engage in this trade at Winnipeg. Among the applicants are John Carr, James McDiarmid, E. Cass and John McDiarmid.

The Winnipeg, Man., city council will construct a railway to the city quarry, five miles west of the city, at an estimated cost of \$138,425.

The Department of Railways and Canals is about to call for tenders for 25,000 tons of steel rails for use on the different government roads.

Manufacturers of traction engines are still finding a large field for their specialties in South Africa, owing to the shortage in supply of draught animals. There are also openings for the sale of many portable houses, as building material is high and hard to obtain, while the increase in the population, owing to new arrivals, renders it imperative that some temporary means be found for housing them.

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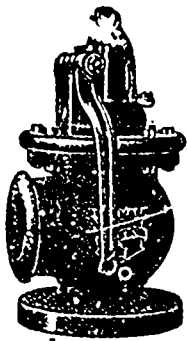
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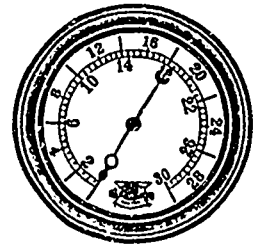


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A TRUTHFUL GAGE
IS THE
ONLY GOOD GAGE



The Buffalo Forge Co. have acquired the capital stock of the George L. Squier Mfg. Co. and the business of the two concerns will be merged. The Squier company manufacture plantation machinery for use in the sugar, coffee and rice regions. It is one of the largest concerns of the kind in the country. The business will go on as before.

The object of coal washing is to get rid of the impurities that are mixed in with the coal, and to purify it from all dirt so that it will be in the best possible condition for coking. The impurities that are generally mixed with coal are felspar, iron pyrites, thin bands of strong material in the coal containing threads and nodules of di-sulphide of iron, also bands or plates of shale, which are worthless material, and it is the object of an ordinary coal washer to remove the material. The small, or slack coal, says a writer in 'The Science and Art of Mining, would be of little value if the excess of stony material was not first removed, because it would choke the fire-bars with clinkers and reduce the intensity of combustion, and when this is washed, if it be of caking variety, it makes excellent coke.

The Copp Foundry Co., at Fort William, Ont., are considering the question of installing an electric motor in their shops with which to operate their plant.

At the Helen Mine, Michipicoten range, Ont., they have ceased shipments, with an output for the year of 350,000 tons. This is less than expected, on account in part of the difficulty of changing methods of mining during a shipping season. They are now 120 feet underground with a shaft, sunk on the edge of the old lake bed, which has been pumped

dry, and are driving into the ore there. Not far from the Helen mine the Clergue syndicate has found a large deposit of pyrites, running very high in sulphur, which they are now arranging to sell to sulphite works in the United States. A contract for a large annual shipment of this material is being made.

The Algoma Steel Co., of Sault Ste. Marie, Ont., has secured from the Dominion Government the contracts for the steel rails for the Temiskaming road and for the I.C.R., and these contracts will keep the company busy for some time.

The Wellington Colliery Co. has been incorporated at Victoria, B.C., with a capital of \$2,000,000, and will engage in the coal mining industry in that province.

The Dominion Oil Co., Chatham, Ont., has been incorporated with a capital of \$850,000, to develop oil fields near that city. The provisional directors are G. M. Fennel, M. J. Woodbridge, and Christopher Smith, of Chatham, Ont.

MOLYBDENITE AND ITS USES.

The reported discovery of molybdenite in Haliburton County, Ont., is only another evidence of the valuable and almost unknown mineral resources of this province, and in fact of the whole of Canada, which are still awaiting the stimulation of capital and enterprise to be turned to the uses of modern industry.

Molybdenite is a desulphide of molybdenum, containing 40 per cent. of sulphur and 60 per cent. of molybdenum. The mineral, like graphite, occurs, as a rule, in small, black, shining scales, sometimes hexagonal in outline, and with a bright metallic lustre. It is quite

soft and leaves a bluish-gray trace on paper. On porcelain it leaves a lead gray, slightly greenish streak. This faint greenish tinge, together with its property of giving a sulphur reaction when based with soda, furnish a ready means of distinguishing it from graphite, which it so closely resembles. Through alternations it sometimes passes over into molybdite or molybdic ocher, a straw-yellow to white ochereous mineral containing 33.3 per cent. of oxygen and 66.7 per cent. molybdenum.

This important mineral has quite a wide distribution, occurring in embedded masses and disseminated scales in granite, gneiss, syenite, crystalline schists, quartz and granular limestone. The mineral is found in Norway, Sweden, Russia, Saxony, Bohemia, Austria, France, Peru, Brazil, England, and Scotland, and throughout the Appalachian mountain region of the United States and Canada, and in various parts of the Rocky and Sierra mountains. On Quetachoo-Manicongau Bay in Quebec, the mineral occurs disseminated in a bed of quartz six inches thick, in form of nodules from one to three inches in diameter, and in flakes which are often 12 inches broad and a quarter of an inch thick.

The principal uses to which molybdenite have as yet been put is in the preparation of molybdates for the chemical laboratory. It is stated that a fine blue pigment can be made from it, which it has been proposed to use as a substitute for indigo for textile dyeing. The metal molybdenum is produced, but rarely and only as a curiosity, and its value is largely fictitious. Up to the present time there has been no constant demand for the mineral nor regular source of supply.

The Central Ontario Power Co., Limited

OF

PETERBORO, ONT.

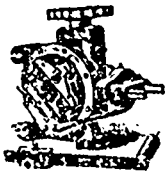
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Peterboro, with a population of 15,000, is seventy miles east of Toronto on main line of the Canadian Pacific Railway, the Grand Trunk Railway, and the Trent Valley Canal, and through its unequalled facilities has lately secured several immense industries, both Canadian and American.

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RELATIVE ECONOMY OF CENTRAL STATION AND PRIVATE POWER.

It is a matter of considerable interest to manufacturers located in the Niagara Falls power district, or in other similar power districts, to determine with what relative economy this power may be employed and to what extent in connection with their own power should be used.

In the first place, considering both economy and convenience, it is now generally admitted that in large plants having numerous buildings, electrical drive is essential. The superior economy of the central station, or Niagara power, aside from its cheapness, is particularly evident in fluctuating and peak loads. Such loads are found in most shops where large machines are continually being thrown on and off. With the private plant where it is necessary that it should be designed to meet the higher requirements of power, the efficiencies of the boilers, engines and dynamos at the average and low loads are much under the normal efficiencies at their rated capacities. In using central station powers no such decrease in economy occurs.

There are, however, other conditions which, within certain limits, effect a greater ultimate economy in the use of the private power plant. In all large factories it is necessary to have considerable boiler power for heating purposes alone, while most of them require throughout the year some steam for their various processes or tests. The efficiency of the boilers when used for such irregular duty is very low. By using them for generating power as well, they can be run at their full capacity by overloading at the peaks, and their average efficiency

greatly increased. Such a use is especially economical when power is developed in connection with the heating plant.

As an illustration of the economy to be obtained by the above methods of operation, we may mention the power equipment of one of the large engineering and manufacturing concerns in the city of Buffalo, N.Y., the Buffalo Forge Co. In the six shops comprising their plant and occupying an entire block in the central part of the city, electric drive is employed exclusively. Formerly, Niagara power alone was used on the drive, and the boilers used simply for testing and for heating the plant. The plant now installed is of sufficient size to enable them to utilize at all times the full steaming capacity of their boilers. The power thus developed is used in connection with that received from Niagara Falls. The boiler plant consists of a battery of two 125 h.p. return tubular Erie City boilers supplied with induced draft.

Furnishing power to the shops and supplementing the Niagara power are two 100 k.w. d.c. General Electric dynamos, each direct connected to a twelve and twenty by fourteen inch horizontal tandem compound Buffalo engine running non-condensing. A 30 h.p. air compressor belted to a single vertical engine, drives the pneumatic hoists and small pneumatic tools throughout the shops.

The offices and shops are heated by the hot blast system. By means of steam driven fans the air is drawn through the steam coils of the heater and distributed through galvanized iron pipes or ducts to all parts of the various buildings. By this arrangement a uniform temperature of 60 degrees in the shops and 70 degrees in the offices is maintained with great economy. The heaters, except in extremely cold weather, require only the exhaust steam from the power plant and their own engines. We see, therefore, that the cost of running both power plant and heating plant together is practically no greater than running either one alone, since the engine is capable of converting only about 10 per cent. of the calorific value of the steam into work.

Besides providing for the above uses, considerable boiler power is required at

times for the tests. These comprise running and power tests of engines from the smallest fan engines to 300 h.p. high-speed compound engines, tests of the various types of belted exhaust fans and blowers, and of electric and fan units direct connected to high speed engines. The demand for power in these tests is very irregular. While on occasions it may reach as high as 300 h.p., the usual peaks are about 150 h.p. and the average load about 80 h.p.

The average load on the boilers is about 300 boiler h.p. with peaks of about 450 boiler h.p. or loads from 120 per cent. to nearly 200 per cent. of the rated boiler horse power. Of particular interest in this connection is the great increase in capacity and the ultimate economy in operation of the boiler effected by the use of the high intensities of draft. The induced draft plant consists of a special 90-inch full housing bottom, horizontal discharge exhaust fan, exhausting from the smoke breeching and discharging into a short stack. It has an overhung blast wheel driven by a 5x4 $\frac{1}{2}$ inch direct connected single vertical engine capable of running the fan at speeds varying from 300 to 500 revolutions per minute and producing corresponding drafts of from one-half to two and one-fourth inches of water with the flue gas at a temperature of approximately 500 degrees F. A Foster regulator automatically governs the speed of the engine to produce the proper draft to maintain a constant steam pressure in the boilers. By this arrangement demands for steam are very readily met to double the rated capacities of the boiler without noticeable decrease in pressure and with no other attention than to proper firing and water supply. Nor does this high rate of driving, lower the efficiency of the boiler, as one might naturally suppose. With a ratio of heating surface to grate surface of forty-five to one, which is usual in boilers made at the present time, the loss of heat in the flue gas at double the rated performance is only about $\frac{1}{4}$ per cent. more of the total heat of the coal than at the rated capacity, while the radiation loss remains practically constant for all rates of driving and is therefore reduced from about 12 per cent. to nearly 6 per cent. of the

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total heat of the coal. This shows the total efficiency of the boiler to be about the same. If the maximum capacity of the plant were increased by doubling the number of boilers instead of increasing the performance by increased rate of combustion, twice as much coal would be required in keeping up steam throughout the twenty-four hours of the day. This, in plants having irregular loads for ten hours a day, amounts to a considerable portion of the coal bill, which we see, is greatly reduced by the resorting to higher rates of driving at the peaks and employing fewer boilers.

In the instance of such a manufacturing establishment as the above, it is seen that the power developed by utilizing at all times the full capacity of the boiler plant will cost far less than central station power. Each additional electric horse power within the capacity of the boiler will require but from two and one-half to three and one-half additional pounds of coal per hour. The additional cost of such power will therefore be only about \$.0044 per horse-power hour for coal, or only about \$.0053 including cost of maintenance and interest on cost of engines, dynamos, power house, etc. When generated in connection with the heating plant the cost of the additional power will be that of maintenance, etc., or \$.0008 to \$.0010 per horse-power hour plus \$.0005 for coal.

From these considerations it is evident that private power is the cheaper when generated in connection with the heating plant, also that economy is to be obtained by generating sufficient power to utilize at all times the full boiler capacity.

THE MILNER PETROLEA WAGON COMPANY.

The Milner Petrolea Wagon Co., which has recently completed its mammoth new plant at Petrolea, Ont., is destined to become one of the most important industries of its kind in this country. The plant is advantageously located between the tracks of the Grand Trunk and the Michigan Central railways, with sidings from both lines into the works. The main factory is 200x40 feet, two stories high, with two wings each 60x40 feet, two stories high. The

shipping warehouse is 85x50 feet, two stories high. There is also an iron-clad store house 100x30 feet. The buildings are of brick and built in the most substantial manner. The general and business offices are located in the main building.

In equipment the plant is thoroughly up-to-date, nothing but the most improved being considered in selecting the machinery. Two 75 h.p. water tube boilers made by the Stevenson Boiler Works of Petrolea, furnish the power to an 80 h.p. Leonard Corliss Engine, installed by E. Leonard & Sons of London, Ont., which also supplies the operating power to the machinery of the plant which includes more than sixty special machines.

Possibly the average reader has a faint idea of the complicated machinery which enters into the construction of wagons and trucks in a modern factory. Among the equipment of this company's plant may be mentioned hub-turning machines, hub morticers, spoke-turning and finishing machines, rim-bending machinery, axle-turning lathes, neck yoke and whiffletree-turning lathes, automatic spoke drivers, hydraulic presses for pressing spokes and boxes into the hubs. There are many other special machines and, like those already mentioned, they are automatic in operation and represent the height of perfection.

The capacity of the plant at present is ten heavy standard wagons per day and this will soon be increased to fifteen or twenty. At present the company employs 70 skilled workmen and will increase its force to 100.

The Milner Petrolea Wagon Co. was organized in March, 1902, and has made a remarkable record in placing its plant in operation at this early date. The company is composed of William English, Mayor of Petrolea, president; J. W. McCutcheon, vice-president; William Pratt, secretary-treasurer; James A. McKenzie, of the Oil Well Supply Co.; Robt. Jackson, of R. Jackson & Sons; and J. E. Armstrong, all of Petrolea, and Mr. Milner, who has had a wide experience in this line of work and is the inventor and patentee of the Milner-Petrolea wagon, and who is general superintendent of the works. The com-

pany has many orders for trucks and wagons on its books.

WE-FU-GO.

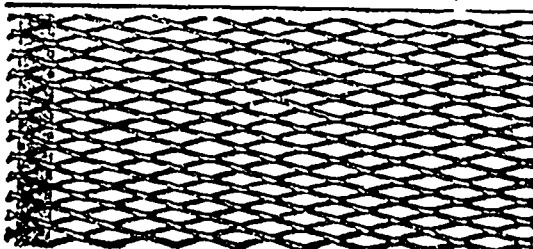
The Salem Iron Co., Leestonia, Ohio, have contracted with Wm. B. Scaife & Sons Co., Pittsburg, Pa., for a 2,500 h.p. We-Fu-Go water softening and purifying system.

The Salem Iron Co. have tried every possible method of water purification without success, and after going into the matter very carefully, have decided that the We-Fu-Go system will meet their requirements.

Among some other recent contracts which Wm. B. Scaife & Sons Co. have closed, both for the Scaife and We-Fu-Go systems, are the following:—Pittsburg Plate Glass Co., Elwood, Ind., 2,500 h.p.; Rochester & Pittsburg Coal & Iron Co., Dubois, Pa., 2,500 h.p.; Toledo Furnace Co., Toledo, O., 4,000 h.p.; Buffalo & Susquehanna Iron Co., Buffalo, N.Y., 6,000 h.p.; Edward E. Rick Co., Pittsburg, Pa., 500 h.p.; Pennsylvania Salt Mfg. Co., Wyandotte, Mich., 1,750 h.p.

WIRE-WOVEN-WOOD PRODUCTS.

The Wire-Woven-Wood Co. whose plant is located at 91 Richmond St. E., Toronto, and which company has recently added a line of trucks for warehouse and factory use to its well known line of wire-woven-wood products, is experiencing a heavy demand for this new line. For a long time there has been a demand for a light durable truck of the pattern now manufactured by this company, which is now prepared to supply at short notice a great variety of wire-woven-wood trucks. All wood parts of these trucks are from seasoned elm with frames re-inforced with inside strips and steel truck corners, three rows of galvanized wire weaving being used in their manufacture. They are furnished with or without rope handles and are equipped with patent roller bearing wheels, either four swivel or two stationary and two swivel, as desired. The plant of the company is thoroughly equipped with the most modern machinery, and quite a number of skilled workmen are employed in the new industry.



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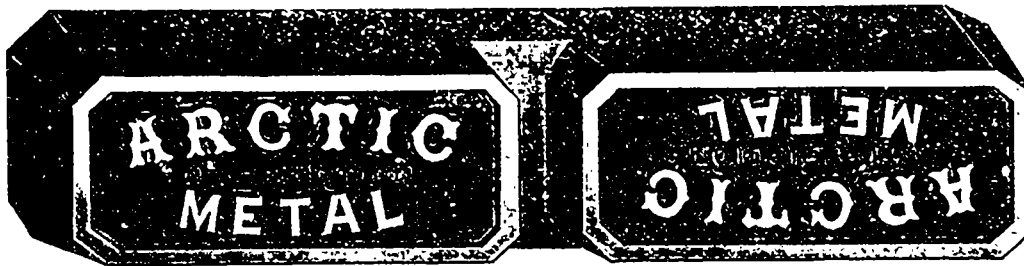
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 ...HAMILTON, ONT.

CONCRETE CONSTRUCTION.—Here and there throughout America a number of concrete buildings have been erected in the last two years, and they have proved to be great successes. Such structures, of course, are as near fireproof as possible. Their concrete floors have the same smooth surface that is seen in sidewalks. Only their window casings and sashes are of wood. In the construction of these buildings a great deal of false or temporary work must be done in order to mould the concrete. False floors and false girders in the form of boxes must be set up, and after the concrete has been moulded they must be torn down. Thus a concrete interior finish is more expensive than wooden floors, buttressed by great timbers, but, on the other hand, it is cheaper than steel, and it is more thoroughly fireproof than any other substance in the world.

The growing importance of the Portland cement industry in Canada gives a special interest to concrete construction which is now being extensively carried on throughout the country. Concrete is

destined to become the great building material in Canada.

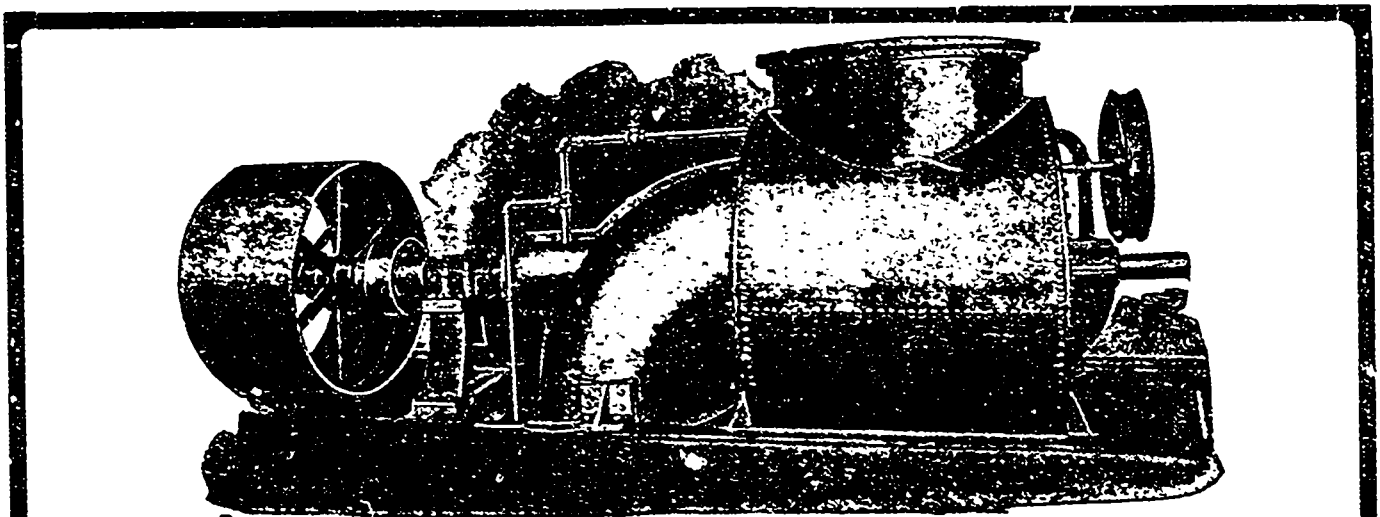
LIQUID AIR PLANT.—The new liquid air plant which has been installed in the Physics building of McGill University was the centre of a series of interesting experiments recently, when Prof. Cox demonstrated its utility for low temperature work to the satisfaction of a large number of interested spectators, among whom were Sir William Macdonald and many of the professors of the institution, as well as a number of specially invited guests.

The plant is located in the basement of the building and is one of the most perfect of its kind on the continent. Through its instrumentality it will be possible in future for the professors in the Applied Science Faculty of the University to conduct experiments requiring very low temperatures for their success. Hitherto this has been impossible. The new apparatus makes it possible for the experimenter to obtain a minimum temperature of 190 degrees below zero. At

this reading the oxygen is reduced to liquid form. It is also possible to freeze mercury until it becomes harder than a bit of lead—in other words harder than a bullet. The plant is probably the most interesting feature of the equipment of the Physics building, and will undoubtedly prove of great assistance to the professors and students in their work. It is the gift of Sir William Macdonald to the institution.—Montreal Star.

ANOTHER NIAGARA POWER SCHEME—In May last, by an Act of the Dominion Parliament, the Toronto and Niagara Power Co. was incorporated with a capital stock of \$3,000,000. The provisional directors were James Ross, of Montreal, and the following Toronto men: William Mackenzie, Henry M. Pellatt, Frederick Nicholls and Samuel G. Beatty, all well known capitalists.

Authority was conferred on the company to develop power, especially at Niagara Falls. As the leading members of the company were directors of electric railway companies, lighting companies



The above engraving represents a style of setting sometimes adopted in connection with our

CROCKER PATENT TURBINE

Under some conditions it is particularly well adapted to Pulp or Paper Mill use, also for operating Belt Driven Dynamos in Street Railway and Lighting Plants.

Remember, we undertake contracts for complete plants, built and installed, thus insuring to the purchaser uniformity, perfect adaptation of parts, and a single responsibility to be considered.

Our Bulletin No. 200 will interest owners of water power and prospective users. Free on request.

THE JENCKES MACHINE CO.,
 28 Lansdowne Street, SHERBROOKE, QUE.

BRANCH OFFICES
 81 York St., Toronto. 18 Victoria Sq., Montreal.
 Halifax, N.S. Rossland and Greenwood, B.C.

and manufacturing companies in Toronto, it was supposed that their main object in securing cheap power was to economize in the operation of these various enterprises, and that the newly formed company would be content to contract for large supplies from either the Canadian Niagara Power Co. or the Ontario Niagara Power Co. It was understood, indeed, to be negotiating for a long term contract with the Ontario Power Co.

But nothing appears to have come of these overtures, for it is now announced that the Toronto and Niagara Power Co. will generate its own electric energy. At all events, it has made application to the commissioners of Queen Victoria Niagara Falls Park for a concession within the park, upon which to build power works.

ELECTRIC LIGHTING IN CANADA.—The rapidly increasing use of electric lighting appliances in Canada is shown by the report of the Department of Inland Revenue for the last fiscal year. The fees for the inspection of meters were \$16 373.75, and for registration of companies \$5,055, making a total of \$21,428.75. The expenses of inspection were \$5,172.94, and there was expended on instruments the sum of \$4,088.74, leaving a net revenue of \$12,167.07. On July 1, 1902, the annual registration fees for electric lighting companies were reduced to \$5 for companies having installation of 500 lamps and under, \$10 for over 500 lamps and not exceeding 2,000 lamps, and \$25 in excess of 2,000 lamps. Of 12,276 electric light meters presented for inspection

12,022 were accepted as coming within the error tolerated by law, 152 were rejected and 102 were verified after first rejection. The Canadian Electrical News gives a tabulated report of the meters inspected in fifteen Canadian cities and towns, with the results of the inspections. Montreal presented 2,895 meters for inspection, and Ottawa came second with 2,036. Toronto followed with 1,069, and Quebec was fourth with 1,029. Inspecting electric meters is comparatively a new function for the Inland Revenue Department.

There are now registered in Canada 315 electric lighting companies, of which 200 are in Ontario, 49 in Quebec, 11 in New Brunswick, 24 in Nova Scotia, 3 in Prince Edward Island, 12 in Manitoba and the Territories, and 16 in British Columbia. The report of 1899 showed a registration of 276 companies, so that within three years 39 new companies have commenced business. The then existing companies have greatly extended their business, as the number of arc lamps operated increased during the three years from 10,960 to 12,884, and the number of incandescent lamps from 546,672 to 984,956. Estimating that one arc lamp is equal to ten incandescents, there were in use in 1899 the equivalent to 656,200 incandescents, and in 1902 the equivalent to 1,113,796 incandescents, an increase during three years of over 75 per cent. The comparison of meter tests shows that the meters are more efficient than they were three years ago, the proportion rejected on inspection having materially decreased.

OPPORTUNITIES.

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

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

892. A manufacturing company desires to hear from Canadian manufacturers of box shooks who can quote upon specialties for prompt delivery.

893. A London house asks for names of Prince Edward Island shippers of black oats.

894. A London firm wishes to get into touch with new flour mills opening in Canada.

895. A London firm engaged in the fruit trade is desirous of taking up Canadian-canned goods, fruits, etc., and has asked to be referred to exporters in the Dominion.

896. Particulars are required of Canadian firms in a position to export hickory pick and hammer handles; ash, pine, spruce and bass wood broom handles; ash hay-fork and rake handles, shovel stems and D handles; lawn mowers and hay forks.

COWAN & CO., of GALT, LIMITED

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ENGINE and MACHINE WORKS

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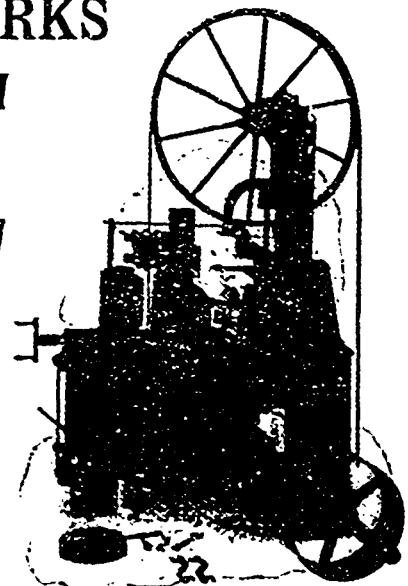
ENGINES, BOILERS

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No. 1.

BAND RE-SAW.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

INDUSTRIAL PUBLICATIONS

The Petroleum Iron Works Co., of Washington, Pa., has issued a 24-page illustrated pamphlet entitled "Fuel Oil Equipments." This pamphlet is designed to give information applicable to an ordinary steam plant, with cuts of a general nature showing how oil is used as fuel.

The Industrial Edition of the Montreal Witness recently issued contains a vast amount of valuable information about the industries of the Dominion.

"Dixon's Graphite Facings" is the title of a booklet just issued by the Joseph Dixon Crucible Co., of Jersey City, N.J., which contains considerable information regarding their foundry facing.

The C. C. Wormer Machinery Co., Detroit, Mich., have issued their new list No. 13, covering their stock of machinery new and second-hand for immediate delivery. Parties having machinery for sale, or desiring an exchange for larger or more modern, will find it to their advantage to write to the Wormer Co.

A special catalogue of high-grade gas and gasoline engines has been issued by the Columbus Machine Co., Columbus, Ohio.

The Jeffrey Mfg. Co., Columbus, Ohio, has issued a new catalogue of chain belting and steel cable, elevating and conveying machinery.

De Laval steam turbines are described in a bulletin just issued by the De Laval Steam Turbine Co., New York.

The Canada Corundum Co., Toronto, has issued a booklet telling about Craig Mine Crystal Corundum.

"The Competition of the United States with the United Kingdom" is the title of an interesting paper by John Waddell, D.Sc.Ph.D. of the School of Mining, Kingston, Ont., published originally in Popular Science Monthly for October, 1902, and just issued in booklet form.

The International Construction Co., Detroit, Mich., has issued a handy pocket manual of electrical and engineering tables. The little volume forms a valuable guide to all persons interested in these lines of work, and is an attractive advertisement for the firm.

The Detroit Oak Belting Co., Detroit, Mich., is sending to the trade a hardy pocket diary for the coming year.

The Stratford Mill Building Co., Stratford, Ont., has issued a catalogue giving prices and specifications of its pulleys, gearing and iron work.

The Guarantee Bond Co., Detroit, Mich., has issued an attractive prospectus of its work which will be of interest to manufacturers.

Bulletin No. 86 of the Cassela Color Co., New York, is entitled "Dyeings of Anthracene Chrome Brown Drepan Wool." The processes of using this well known coloring material are fully described, and samples of the work are shown.

The De Sano-Osborn Engineering Co., Toronto, has issued a neat announcement outlining the work which it is doing.

Mr. J. S. Pilling, general manager of

the Port Huron Air Tool Co., Port Huron, Mich., has sent the editor two exceedingly interesting volumes of poetic effusions and sketches of which he is the author, entitled "The Keel of the Kearsage" and "Tales of the Bramley Kite." Mr. Pilling, as might be inferred, is an "old salt" who for years was an intimate associate of the god Neptune, and the literary work which he did was evidently under his aquatic inspiration, while plowing the waves in the Kearsage. The transition from the quarter deck of a battle ship to the managerial office of an immense manufacturing concern shows

that there was no incompatibility of temperament involved.

The 1903 calendar of the American Steam Gauge & Valve Co., Boston, Mass., is one of the most attractive that has reached this office.

The Bourne-Fuller Co., Cleveland, Ohio, have sent us a remarkably handsome calendar for 1903, in which is reproduced the well-known painting of "The Blacksmith."

The Seaforth Engine & Machine Works, Seaforth, Ont., has issued a catalogue of the new Bell automatic engine.

The Milner Petrolea Wagon Co.

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**HIGH GRADE
FARM WAGONS,
TRUNKS, SLEIGHS,**

Etc., Etc.

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EXPERIENCE, SKILL AND MATERIAL THE VERY BEST

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AND SPECIALTIES

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MANAGING DIRECTOR.

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More SOLID LEATHER to the Foot than any belt made.

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FOR EXPOSED SITUATIONS

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Head Office and Factory, - MONTREAL.

Western Trade, - TORONTO STOCK DEPOT, 132 BAY ST.

MARKETS.

This Department of THE CANADIAN MANUFACTURER is devoted to the interests of the Hardware Trade.

THE CANADIAN MANUFACTURER is distributed to the Wholesale and Retail dealers in Hardware, to manufacturers of Agricultural Implements, of Iron and Wood-working Machinery, of Electrical Appliances, of Steam Engines and Boilers, to Engineers and Foundrymen, and to Dealers in Machinery and Steam Fitters' Supplies throughout Canada. There are more than 10,000 manufacturing concerns in Canada which use Steam as a Motive Power. We reach them all. Every recipient of this paper is a buyer of Hardware of one kind or another; and Advertisers will do well to bear this in mind.

Following are reports and observations relating to the markets of Canada and elsewhere, having reference to Hardware, Metals, Paints, Oils and such specialties as are usually handled by jobbers and dealers in such goods. Following these items will be found current market quotations on such goods, and the trade are requested to suggest to the publishers any improvements by which it is believed the quotations may be rendered as correct and valuable as possible.

TORONTO. December 19, 1902.

The rumors concerning the Consolidated Lake Superior Companies formed a leading topic of interest in local iron and steel circles during the past week or so. The booking of the rail contracts for the Temiskaming road and for the I.C.R. by these interests a few days ago, coupled with the announcements of Mr. Clergue, indicate a busy season ahead for Algoma Steel Co. Numerous other manufacturing interests are now enjoying a heavy business and many new companies will be ready for operations again the opening of the year. Coal and coke is still scarce here and manufacturers are experiencing some difficulty in obtaining raw materials. In the machinery and hard-

ware trade the demand continues, all the local dealers reporting heavy sales.

THE TORONTO MARKET.—Prices are substantially as last reported.

Barbed Wire—\$2.67½ to \$2.90 per 100 lbs.

Binder Twine—650 ft., 15c; 600 ft., 14c; sisal, 500 ft., 11½c.

Building Paper—Dry sheathing, 35c; tar sheathing, 45c.

Bolts and Nuts—Carriage bolts, common, \$1 list, 50 per cent.; carriage bolts, full square, \$2.40 list, 55 and 10 per cent.; carriage bolts, Norway iron, \$3 list, 55 and 10 per cent.; machine bolts, all sizes, 50 and 10 per cent.; coach screws, 66½ and 10 per cent.

Cement—Canadian Portland, \$2.80 to

\$3.20; Canadian hydraulic cements, \$1.35 and upwards.

Cut Nails—\$2.40 to \$2.50.

Galvanized Wire—Nos. 6, 7, and 8, \$3.20; No. 9, \$2.55; No. 10, \$3.50; No. 11, \$3.40; No. 12, \$2.70; No. 13, \$2.80; No. 14, \$3.80; No. 15, \$4.30; No. 16, \$4.55.

Green Wire Cloth—\$1.40 per 100 square feet.

Harvest Tools—60 and 10 per cent.

Horse Nails—"C" brand, oval, 40, 10 and 7½ per cent.; "M" brand, 50, 10 and 5 per cent. off; countersunk, 60 p.c.

Horseshoes—No. 2 iron shoes, light, medium and heavy, \$3.45, f.o.b.; snowshoes, \$3.70.

Iron Pipe—Black, 1 inch, \$5.20; galvanized, 1 inch, \$7.20.

Poultry Netting—2 inch mesh, 19 w.g., 60 per cent. off the list; 2-inch mesh, 18 w.g. and heavier, 50 and 10 per cent.

Rope.—Pure Manila, 15c; sisal 12½c; British Manila, 13c; lath yarn, 11½c to 12c.

Rivets and Burrs—Iron rivets, 60 and 10 per cent.; iron burrs, 55 per cent.; copper burrs, 30 and 10 per cent.; copper rivets and burrs, 45.

Smooth Steel Wire—Base price, \$2.60 per 100 lbs.; fine steel wire, 25 per cent.

Spades and Shovels—40 and 5 per cent.

Wire Nails—Base price, \$2.50 to \$2.55.

Screws—Flat head, bright, 87½ and 10 per cent. off the list; round head, bright, 82½ and 10; flat head, brass, 80 and 10 per cent.; round head, brass, 75 and 10 per cent.; flat head, bronze, 70 per cent.; round head, bronze, 65 per cent.

Old Material—Agricultural scrap, 60c;

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WILL SAVE ENDLESS WORK FOR FITTERS

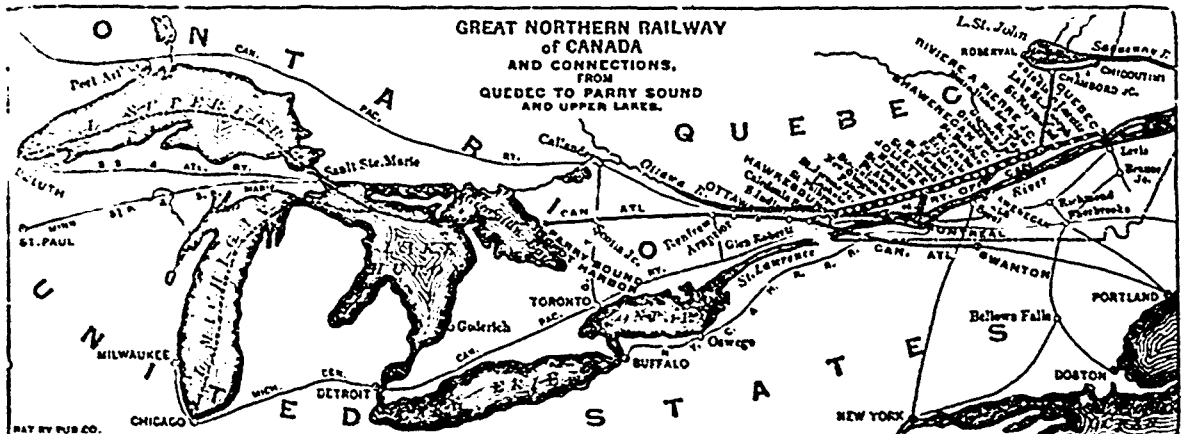
OUR TOOLS ARE OF NEWEST DESIGN THROUGHOUT

Power, strength, convenience and accuracy are to a high degree combined in their construction. Is such a combination interesting?

The R. McDOUGALL Co., Limited, - Galt, Canada.

THIS Road runs through the Forests of the Laurentian Mountains, and taps the greatest water powers of the country, and is being extended to Montreal and Ottawa.

EXCEPTIONAL opportunities for manufacturers are offered.



When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

machinery cast, \$14 to \$15; stove plate, \$10; No. 1 wrought, \$13 per ton; No. 2, \$4.50; new light scrap copper, 8c to 8½c; coil wire, scrap, 10c; light brass, 5c to 5½c; heavy yellow brass, 8c to 8½c; heavy red brass, 9½c; scrap lead, 2c to 2½c; zinc, 3c; scrap rubber, 6½c; good country mixed rags, 50c.

Antimony—9c per lb.

Bar Iron—Price for Common, \$2.05 up per 100 lbs.

Black Sheets—28-gauge, \$3.15; dead flat, 26-gauge, \$2.50.

Brass—Sheet and rod, discount 15 per cent.

Canada Plates—All dull, \$2.90 to \$3 per box; half-polished, \$2.85 to \$3.10, and all bright, \$3.75 to \$3.85.

Copper—Ingot copper at 13c per lb., and 22c to 23c for sheet.

Galvanized Sheets—\$4.30 to \$4.50.

Lead Pipe—Discount 35 per cent.

Pig Iron—No. 1, \$23; No. 2, \$22.50.

Pig Tin—31c to 32c.

Pig Lead—3½c to 3¾c.

Solder—Half and half, 20c; refined, 19c; wiping, 18½c.

Tool Steel—B. C. and black diamond, 10c to 11c.

Spelter—5c to 6c per lb.

Tin Plates—I. C., \$4.75 to \$5; cokes, \$4.25.

Terne Plates—\$8.50.

Tinned Sheets—7½c to 8c.

Zinc Sheets—6c to 6½c.

MONTREAL MARKET.—From now till the beginning of the new year the market will be very quiet. The whole market is firm, and trade is quite up to the average for this time of year. A few spring orders are coming in, but it will be a month or two till any considerable activity is occasioned by them. Meantime merchants are engaged in taking stock and getting things into shape for future trade. The market is steady so far as prices are concerned, there being no changes in the principal lines, save in bright iron and annealed wire, which has declined 10c, at \$2.20 a hundred, base price.

Following are the quotations to the retail trade:

Bar Iron—Base price, \$2.00 per 100 pounds.

Horse Nails—Discount of 57½ per cent. on oval heads, and 65 per cent. on countersunk heads; C brand, discount of 40, 10, 7½ per cent.

Wire Nails—\$2.55 in small lots, and \$2.50 for car lots, f.o.b. Montreal.

Cut Nails—\$2.45 for small lots, and \$2.40 for car lots.

Building Paper—Tarred felt, \$1.70 per 100 lbs.; 2-ply ready roofing, 85c per roll; 3-ply, \$1.10 per roll; carpet felt, \$2.25 per 100 lbs.; dry sheathing, 35c per roll; tar sheathing, 45c per roll; dry fibre, 50c per roll; tarred fibre, 60c per roll; O. K. and I.X.L., 65c. per roll; heavy straw sheathing, \$30 per ton; slaters' felt, 60c per roll.

Cordage—Manila, 14c per lb for 7-16 and large; sisal, 12c per lb., and lath-yarn, 11c lb.

Scythes—Cast steel, \$5; Clipper, \$6; Climax, \$6.50; concave, \$7; grain, \$10; bush, \$6.

Artistic = Sanitary = Durable

What more could be said
of an Interior Finish?

Our Metallic Ceilings and Walls

give the acme of lasting satisfaction for
all classes of buildings.

Such a multiplicity of decorative
designs—and such a perfection of best
workmanship in every detail—their
unequalled popularity is fairly earned.

You will be interested in the prac-
tical information at your service, in
our catalogue.

THE METALLIC ROOFING CO., Limited,
TORONTO MONTREAL WINNIPEG

Galvanized Wire—No. 5, \$3.70; 6, \$3.15; 7, \$3.15; 8, \$3.15; No. 9, \$2.65; No. 10, \$3.20; No. 11, \$3.25; No. 12, \$2.80; No. 13, \$2.90; No. 14, \$3.75.

Smooth Steel Wire—Bright iron and annealed on a base of \$2.50 per 100 lbs., f.o.b. Montreal, Toronto, Halifax, London, Hamilton and St. John. Net extras per 100 lbs. are as follows: Coppered wire, 60c; tinned wire, \$2; oiling, 10c; spring wire, \$1.25; best steel wire, 75c; bright, soft drawn, 15c; special hay-baling wire, 30c.

Fine Wire—The discount is 25 per cent.

Brass and Copper Wire—Discount, 52½ per cent.

Fence Staples—Bright staples sell for \$2.90 per 100 lb. keg, and galvanized at \$3, with an extra of 25c for 25 and 50 lb packages.

Harvest Tools—Discount of 60 per cent. and 10 per cent. off list prices for balance of 1902 and for season of 1903.

Black Sheets—\$2.40 for 8 and 16 gauge per 100 lbs.

Galvanized Iron—No. 28, Queen's Head, \$4.40; Apollo, 10½ ounces, \$4.40, and Comet, \$4.25, with 25c extra in less than case lots.

Ingot Tin—31c per lb.

Lead—\$3.25 per 100 lbs.

Terne Plates—\$7.50 per box.

Lead Pipe—7c for ordinary, and 8c for composition waste, with 37½ per cent. off.

Iron Pipe—Black pipe, ½, \$2.40 per 100 feet; ¾, \$2.65; 1, \$3; 1½, \$3.70; 1 inch, \$5.25; 1¼, \$7.40; 1½, \$8.90; 2 inches, \$12.40; galvanized ½, \$4; ¾, \$5.05; 1 inch, \$7.25; 1¼, \$10.10; 1½, \$11.15; 2 inches, \$16.70.

Coil Chain—No. 6, 12½c; No. 5, 10½c; No. 4, 10c; No. 3, 9½c; ¼ inch, 7½c per lb.; 5-16, \$5.05; 3-5, \$4.40; 7-16, \$4.20; ½, \$4; 9-16, \$3.95; ¾, \$3.70; ¾, \$3.65; 1, \$3.65; 1, \$3.65. In carload lots an allowance of 10c is made.

Sheet Zinc—In cask lots, \$5.50; in less, \$5.75.

Antimony—10c a lb.

Tinplates—\$4.25 for coke; \$4.75 to \$5.25 for charcoal.

Canada Plates—52's, \$2.70 to \$2.80; 60's, \$2.80 to \$2.90; 75's, \$2.80 to \$2.85; full polished, \$3.75, and galvanized, \$4.25 to \$4.35.

Tool Steel—Black Diamond, 8c; Jessops, 13c a lb.

Steel—Sleighshoe, \$2.20; tire, \$2.30; spring, \$3; reeled machinery, \$2.85, and toe calk, \$2.90.

Barbed Wire—\$2.90 per 100 lbs f.o.b. Montreal in less than car lots.

Horseshoes—Iron shoes, light and me-

dium patterns, No. 2 and larger, \$3.35; No. 1 and smaller, \$3.60; snowshoes, No. 2 and larger, \$3.60; No. 1 and smaller, \$3.85; X.L. steel shoes, all sizes, 1 to 5. No. 2 and larger, \$3.45; No. 1 and smaller, \$3.70; featherweight, all sizes, \$5; toe weight steel shoes, all sizes, \$6 25 f.o.b.

Benzine—22c a gallon.

Gasoline—24½c a gallon.

Coal Oil—Prime white, Silver Star, 19½c gal.; Acme water white, 21c; Standard Oil Acme, 23c; Astral, 24c.

Turpentine—Market is steady at 76c per gallon.

Oils—Linseed oil, raw, 72c; boiled 75c; black oils, 15c to 20c; engine and machine oil, 26 to 50c; cylinder oil, 40 to 80c; tanners' oil, 30c to 40c; harness oil, 60c; extra No. 1 hard oil, 73c; cod oil, 37c; seal oil, 60c; neatsfoot oil 80c; pure winter-bleached sperm oil, \$1.30; castor oil, English castor oil, 9½c a pound.

Putty—Putty in bulk, bbls., \$1.90; in bladders, per 100 lbs, in bbls., \$2.25; bladders, in boxes, \$2.40; tins, \$2.25 to \$2.65.

Glass—First break, per 50 feet, \$2.10; second break, per 50 feet, \$2.20; per 100 feet, third break, \$4.70; fourth break, \$4.95; fifth break, \$5.20; sixth break, \$5.70; seventh break, \$6.20.

Leads and Paints—White lead, Government standard, \$5 to \$5.25; exterior, \$4.75; No. 1 grade, \$4.65; No. 2 grade, \$4.50; red lead, pure, in casks, \$4.50; in kegs, \$4.75; No. 1, in casks, \$4.25; in kegs, \$4.50; pure mixed paints, \$1.20 gallon.

BRITISH PIG IRON MARKET.—Messrs. William Jacks & Co., 49 Leadenhall street, London, E. C., England, under date of December 5, 1902, quote as follows:

Since writing you last the firm that have had control of the stock of Warrants here have come to an agreement with the "shorts," and prices are now easier, especially for Middlesbro Iron. To-day's quotations are as follows:

No. 1 Gartsherrie, 64/6 per ton, f.o.b. Glasgow. No. 3 Gartsherrie, 58/9 per ton, f.o.b. Glasgow. Nos. 1, 2, 3 Cumberland Hematite 66/- per ton, f.o.b. Liverpool. Special analysis, 70/- per ton, f.o.b. Liverpool. Refined D.T.N. Hematite in small pigs, 85/- per ton f.o.b. Liverpool. No. 3 G.M.B. Foundry Middlesbro 49, - per ton, f.o.b. makers wharf, Middlesbro, including dues.

BUFFALO PIG IRON MARKET.—Office of Rogers, Brown & Co., Buffalo, N.Y., December 16, 1902.

Consumption seems to continue at high water mark without a let up. No new features have developed during the week. The market is firm at a lower range of prices for forward delivery. Consumers continue without exception to urge forward shipments. Some very large buyers have entered the market recently for prompt and nearby deliveries as well as forward. We quote on a cash basis f.o.b. cars Buffalo:

No. 1. Strong foundry coke iron, Lake Superior ore \$24.75
 No. 2. strong foundry coke iron, Lake Superior ore 24.25
 No. 1. Soft southern....\$23.75 to 24.75

ANNOUNCEMENT.—The Canadian General Electric Co., have sent out an announcement to the trade to the effect that, following their usual custom, at inventory time, they intend closing their main warehouse at Toronto from January 2 to 6 inclusive for the purpose of stock-taking; and that no shipments from that warehouse will be made during that period.

STOVE PRICES ADVANCE.—At the meeting of the Western Association of Stove Manufacturers in quarterly session at the Auditorium Hotel, Chicago, last month, a 5 per cent. advance in the price of stoves of all kinds was decided upon. A few of the members present favored a raise of 10 per cent., but compromised with the majority, and the 5 per cent. advance was established. The increase in the cost of coke, at least 50 per cent., and iron, 60 to 70 per cent., in the past three years, is the reason given by the manufacturers for taking this step.

Wm. T. Bonner, formerly connected with the Montreal office of Babcock & Wilcox, but who is now located in New York, took a prominent part in the recent meeting of the American Society of Mechanical Engineers held in New York.

JAS. DOUGALL & SONS

LIMITED

BONNYSIDE

Trade Mark.

Bonnyside Fire Clay Works,
 Bonnybridge, Scotland

DOUGALL

Trade Mark.

ALL KINDS OF

MANUFACTURERS OF

Silica and Fire Bricks for Steel and Iron Furnaces, Coke Ovens,
 Gas, Glass and Chemical Works.

Best Scotch Canister for Steel Furnaces and Foundries.

STOPPERS, NOZZLES and LINERS for Steel Pouring Ladles.

Our goods have been, and are in use by all the leading Steel Works, Forges, Iron Foundries, Glass and Chemical Works and Gas Companies. Reports from these and some leading Canadian customers on application.

Direct shipments by quickest routes on lowest through rates to all Canadian points. Quotations promptly given on receipt of specifications.

WRITE FOR ILLUSTRATED CATALOGUE.

Sales Agent { **R. E. H. BUCKNER,**
 TORONTO

ENGINEERS' CLUB SMOKER.—The Engineers' Club, of Toronto, held their annual smoker on the evening of December 10. The programme, consisting of music, speeches, recitations, etc., was arranged by Messrs. Norman M. McLeod, R. A. L. Gray, J. Alex. Culverwell and Roderick J. Parke. In addition to the members present about forty invited guests attended. Altogether the affair was a highly successful and enjoyable one.

WHAT CONSTITUTES PIG IRON.—The suit of the Dominion Iron & Steel Co. against the Canadian Government to collect the government pig iron bounty upon its liquid pig iron has been decided in favor of the company, which has just obtained judgment for the sum claimed, \$196,967.15. The case arose upon the construction of the Dominion Statutes 60-61 Vic., c. 6 and 62-63 Vic., c. 8, authorizing the Governor-in-Council to pay bounties on steel ingot, puddled iron bars and pig iron made in Canada. That is to say on steel ingots manufactured from ingredients of which not less than 50 per cent of the weight thereof consists of pig iron made in Canada, a bounty of \$3 per ton; on puddled iron bars manufactured from pig iron made in Canada, a bounty of \$3 per ton; on pig iron made in Canada, a bounty of \$3 per ton; on pig iron manufactured from ore, a bounty of \$3 per ton on the proportion produced from Canadian ore, and \$2 per ton on the proportion produced from foreign ore. The Dominion Iron & Steel Co. has four blast furnaces for making pig iron and ten open hearth furnaces for making steel at their works at Sydney, N.S. The company, like most manufacturers of pig iron and steel to-day, use the product of their blast furnaces while yet in a liquid or molten state for the manufacture of steel, the hot metal being taken direct from the blast furnace to the steel mill. A question having been raised by the government as to whether the company were entitled to the said bounties, as for the manufacture of steel from pig iron, the bounties were withheld pending the decision of the Exchequer Court. Judge Burbidge holds, in effect, that in the usage of the trade of the ironmaster and those familiar with the process of manufacturing steel from pig iron, the term "pig iron" includes that substance in a liquid or molten state as well as in its solid form. This judgment is of the utmost importance to the metal industries.

THE NATIONAL HARDWARE ASSOCIATION.—The Canadian Wholesale Hardware Jobbers' Association was represented at the recent meeting of the National Hardware Association in New Orleans by President Thos. B. Lee, of Rice Lewis & Son, Toronto, and Secretary James Hardy, of Messrs. Jenkins & Hardy, Toronto, who were presenting to the delegates as souvenirs a couple of miniature British flags, in the centre of which was a stick pin showing a Canadian maple leaf. These were keenly appreciated and were largely worn by the delegates.

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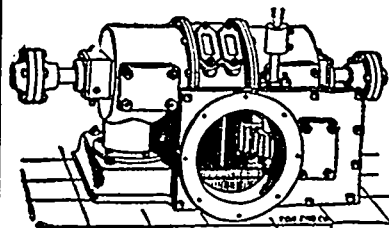
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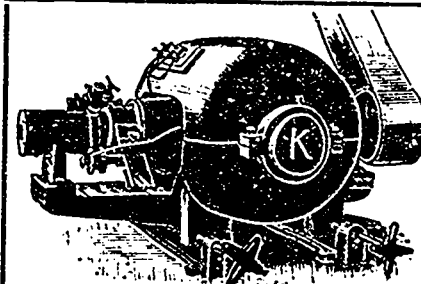
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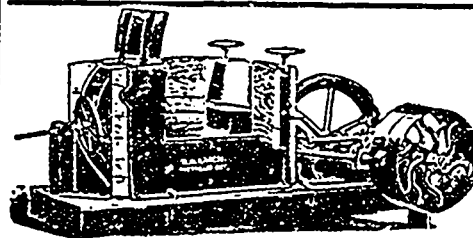
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chine shop practice during a generation past has been steadily in the direction of increased specialisation, the designs of machine tools have been correspondingly specialised; and this is, perhaps, the most obvious and striking feature in the modern trend, says Joseph Horner in Cassier's Magazine. Those who were trained in the firms of, say twenty-five or thirty years ago, see how vast is this change. Then, all engineers, with scarcely any exceptions, manufactured anything that was included in, or related to, a very extensive class of work, the only limitations which were imposed being those of capacity and of producing power. Many shops did not even confine themselves to any broad class of work, but tendered for whatever offered, whether engines, cranes, pumps, cocks, valves, water-wheels, gas-making plant, pipes, gear wheels, water tanks, penstocks, boiler fittings, machine tools, and so forth. This is no imaginary list, for the writer has himself had experience with all these, and more, in one firm.

But the old general shops of this type have gradually narrowed the sphere of their once diffused energies, finding themselves unable to compete with new firms who have from time to time laid themselves out for the manufacture of specialties of some one or more of these articles. First one branch then another has been dropped, and when goods have been wanted to fill up an indent the general firms have gone to the special ones and purchased them, or have sublet their contracts. The new firms that have arisen have not, as a rule, attempted such a general run of work, but have commenced with the manufacture of a single class of goods, thus beginning at that stage at which the older ones are arriving or which they have reached. The result is that the newer shops have laid down plant that is directly correlated to the class of work which they have undertaken, while the older ones are greatly hampered with a plant designed for general practice, and by which they are placed at much disadvantage with regard to facilities for economical production with their younger competitors.

The radical character of this profound change hardly seems to be yet grasped by the general manufacturer. With this growth of specialisation the machines not only have been, but will become, more highly differentiated.

ALUMINUM.—No 1 ingots for re-melting (99 per cent. pure) f.o.b. works, 35c. lb.; No. 2 ingots for re-melting (99 per cent. pure) 33c. lb.; nickel aluminium casting metal, 35c.; special casting alloy, 30c.

QUICKSILVER.—The New York price continues \$48 per flask for large orders, with a slightly higher figure for small lots. In San Francisco prices are steady, and the quotation is \$45.50 to \$46.50 per flask for domestic orders. For export orders \$44.00 per flask is quoted. The London price remains £8 15s. 0d. per flask, with the same figure quoted from second hands.

PLATINUM.—Market is \$19.00 per ounce in New York. London prices are about on a parity with our market. Chemical ware, best hammered metal from store, is quoted at 7 3/4c. per grain.

GLASGOW IMPORTING CANADIAN PIG IRON.—It is rather a curious state of affairs, that while Great Britain is exporting large quantities of pig iron to America, Glasgow is actually importing Canadian pig iron. A short time ago the steamer Hestia sailed from Sydney, C.B., with 3,500 tons of Dominion pig iron, shipment being in part payment of an old contract. It is to be noted, however, that the import movement in this country is lighter. The statistics for October showing that the total imports of pig iron, steel, iron and steel products in that month were lighter than in September; while iron and steel exports show an increase in September. A significant turn in the foreign trade.

BRITISH COAL AND IRON STATISTICS.—The official report recently issued in Great Britain on the mineral output of that country in 1901 shows smaller quantities and lower prices than in 1900. Coal shrank from 225,181,300 gross tons to 219,046,945 tons, and iron ore from 14,028,208 tons to 12,275,198 tons. The quantity of pig iron obtained by smelting the domestic ore diminished from 4,666,942 tons, valued at £19,596,910, in 1900, to 4,091,908 tons, valued at £12,826,622, in 1901. The maximum output of iron ore in Great Britain was attained in 1882, when 18,031,957 tons were produced from

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JOHN DRYDEN, Minister of Agriculture.

the home mines. For the next ten years an annual decline was shown, the lowest point being touched in 1893, when the production was only 11,203,476 tons. The apex of the subsequent improvement was reached in 1899, the output in that year being 14,461,330 tons. The iron ore imported from other countries to be smelted in British furnaces aggregated 5,548,888 tons in 1901, against 6,297,963 tons in 1900.

BRITISH COLUMBIA COAL FIELDS.—Considerable activity prevails in the Similkameen region of British Columbia. Among the concerns now operating in this field are the Vermillion Forks Mining and Development Co., and the Osoyoos & Similkameen Coal and Exploration Co. The coal from this field analyzes as follows: Carbon, 50 per cent.; of volatile matter, 35 per cent.; and 10 per cent. water and 5 per cent. ash. It makes an excellent domestic and a good steam coal. Under ordinary laboratory tests it has not yielded a coherent coke fit for metallurgical purposes, but by using one of the modern by-product type of ovens and coking under pressure this difficulty will be overcome.

MECHANICS' INSTITUTE OF MONTREAL.—At the sixty-third annual meeting of the Mechanics' Institute held in Montreal last week the following officers were elected: President, Mr. A. Mackey, re-elected; vice-president, Mr. C. Stevens, re-elected; treasurer, Mr. John Harper, re-elected; secretary, Mr. P. Collins, re-elected. A committee was appointed to consider the question of establishing a technical school in that city. Many of the manufacturers of Montreal are life members of the institute and are aiding in every way possible the project for the school.

MEETING OF ENGINE BUILDERS.—At the annual meeting of the Engine Builders' Association of the United States, held in New York on Monday and Tuesday, December 1 and 2, a number of interesting papers were read and considerable profitable discussion was indulged in by the members. The first day's session, at which the papers were read, was open to the public, but the transactions of Tuesday were behind closed doors. At the latter session matters relating purely to the business management of the various engine builders represented were discussed. The election of officers resulted in the selection of Wm. M. Taylor of Chandler & Taylor, Indianapolis, Ind., for president; C. A. Gates of the Russell Engine Co., Massillon, Ohio, for vice-president; F. P. Ide, A. L. Ide & Sons, Springfield, Ill., for secretary; and C. S. Bonsall, Buckeye Engine Co., Salem, Ohio, for treasurer. D. W. Robb of the Robb Engineering Co., Amherst, N.S., was the only Canadian representative at the meeting. The Buffalo Forge Co. was represented by J. L. Lyle.

AMERICAN MINING CONGRESS.—President J. H. Richards, of Boise, Idaho, has issued a call for a meeting of the executive committee for December 17, to be

held in Deadwood, S. Dak. The Black Hills Mining Men's Association has extended a special invitation to each officer of the American Mining Congress to attend the regular monthly meeting of the local association to be held on Dec. 18.

PEAT MACHINERY.—William A. Milne, Brown's Corners, Ont., has patented a mechanical peat drier. The machine consists of a cylindrical casing suitably rotated and journaled, of the beaters comprising arms secured to the shaft and longitudinal plates secured to the ends of the arms and having outwardly-projecting fingers or blades carried by the same and set so as to be parallel at their outer ends to the ends of the cylinder. The same inventor has perfected a peat collecting machine consisting of a supporting-car, a fan-casing carried thereby having a suitably driven fan, a suction-tube connected to said casing and having a flexible portion and a downwardly-turned outer end, and means for adjusting said suction-tube as to its radial and vertical position.

BRICKS IN SOUTH AFRICA.—U.S. Consul-General W. R. Bigham writes from Cape Town:

Bricks are among the most expensive articles in this city. I am informed that they are sold for £4 1s. 2d. to £5 1s. 2d. (\$22.50 to \$27.50) per 1,000, and they are so poorly made that they have to be plastered with stucco to keep them from being destroyed by the action of the weather. I have seen some very rough bricks, shipped from England, which are harder than those manufactured here. I have not been able to find out the price, but they are more expensive than those locally made. It seems to me that if some good brick manufacturers close to our coast, in New Jersey or Maryland, would investigate this matter, they would find a large margin for profit. Bricks here are usually 2½ inches thick, 4½ inches wide, and 9 inches long, although I have

seen some that are only 2 by 4½ by 9 inches. An American who uses a great many bricks in building ice plants in this and other cities in this colony, told me he could sell 1,000,000 bricks per week here if he had such hard vitrified bricks as are made in the United States, for these would not have to be plastered. Building is very much retarded on account of the shortage of brick.

DESIGN OF LEAD BLAST FURNACES.—Dr. M. W. Iles, in his treatise on lead smelting, page 40, states that his observation and experience point to the following dimensions as embodying the proportions of an ideal blast furnace for the reduction of silver-lead ore: Area at tuyeres, 48 by 144 inches; at feed floor, 7 by 13 feet; height of jackets, 41 to 48 inches; height of shaft from top of jackets to feed floor, 13 feet; height of charge (tuyeres to feed-floor), 16 to 17 feet; bosh of jackets, 10 inches; volume of crucible, 77 cubic feet; volume enclosed by jackets, 180 cubic feet; volume of shaft from top of jackets to feed floor, 1,243 cubic feet; total internal volume of furnace (up to the feed floor), 1,500 cubic feet. Such a furnace would have good reduction, great speed and long life; it would make but little fine dust and the slags would be good if the charge were correctly calculated and properly watched. With a blast of 3 to 4 pounds and tuyere openings of 3.5 inches, the smelting capacity per 24 hours would be 140 to 150 tons of ore, exclusive of fuel, limestone and slag, but inclusive of iron flux. The above dimensions give a hearth area (at the tuyeres) of 48 square feet and an area of 105 to 112 square feet at the top.

PROCESS FOR RESTORING BURNT TOOL STEEL.—An English patent has been taken out by Max-Hirschmann and Valentin Heilmeyer, of Nuremberg, Germany, on a mixture for the restoration of burnt steel, especially of burnt tool

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steel. The following proportions are taken as most suitable: 90 to 110 parts resin, 28 to 32 parts sulphate of copper, 18 to 22 parts bone dust, 13 to 18 parts borax, and 8 to 12 parts of common salt. This mixture is either produced in a finely granulated form, or is prepared as a fluid or solid mass. The process for the restoration of burnt steel consists in treating the piece of steel that is to be restored by bringing it to a red heat, whereupon the material is sprinkled over the surface of the steel. The coating thus formed unites with the steel, the process being assisted by a moderate warming of the sprinkled spot. The steel is then hardened in the usual manner, when, upon fracture, it is stated, its original fine close appearance is restored. It is stated that numerous trials have shown when steel has been restored in this manner that tools of extraordinary endurance can be produced. Even when the burning of the steel has gone so far that cracks can be seen, it is claimed the process can convert it into a condition for further and effective use.

THIS CANADA OF OURS—Canada has 17,000 miles of railway that cost nearly \$900,000,000. She has the longest continuous stretch of internal navigation in the world. She has 70 miles of canals, 10,000 post offices, 30,000 miles of telegraph wire, 18,000 public schools, 60,000 men in her lumber camps in winter, 17 universities, and over 50 colleges, only 15 per cent. of illiterates, a river over 2,000 miles long, 6,000,000

people, of whom nearly 90 per cent. are Canadian born and only three per cent. foreign born, the remainder being British born. Canada ranks fourth in the production of gold, has a million square miles of practically unexplored territory, and coal beds that will yield over four million tons annually for 5,000 years.

METHODS OF CLEANING PAINT.—An exchange gives several methods for cleaning painted surfaces. With a piece of clean flannel dipped in warm water and then squeezed nearly dry take up as much whitening of the best quality as will adhere. Apply this, rubbing the paint work moderately, and afterwards wash the surface with clean water, and rub it dry with a chamois leather. This method is better than the use of soap. It requires but half the time and labor, and leaves the surface clean and as good as new.

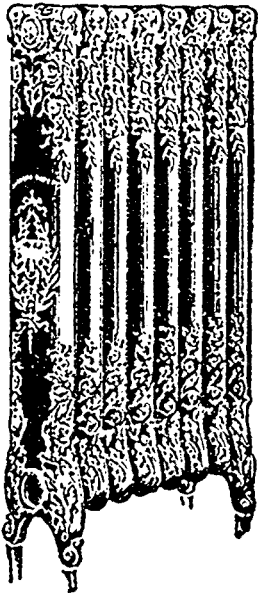
Another way is to dissolve half an ounce of glue and a bit of soap the size of a walnut in about three pints of warm water, and with a well-worn whitewash brush well scrub the work, but not sufficiently to take off the paint, and rinse with plenty of cold clean water, using a wash leather. Let it dry itself. Work done in this manner will often look equal to new.

Again, first take off all the dust with a soft brush and a pair of bellows. Scour with a mixture of soft soap and fuller's earth, and use lukewarm water. If there are any spots which are extra dirty, remove these by rubbing with a sponge dipped in soap and water. Commence the scouring at the top of the door

or wainscot, and proceed downward, and dry with a soft linen cloth. When cleaning paint it is always better to employ two persons, one to scour and the other to rub dry.

Still another. The best and easiest way to clean all paint work, either varnished or even the most delicate paint, is to use a soft flannel dipped in paraffin oil. Rub on all dirty finger marks or even all over doors or wainscoting. Then rinse with clean cold water, and you will be delighted with the result: can also be used for cleaning furniture with the best results.

CANADIAN COPPER PLANT.—A new copper plant is to be installed at Shawinigan Falls, if the co-operation of firms interested in the copper trade cannot be secured, in order to have the works established in Montreal. In mining engineering circles, the project is spoken of with strong approval. One of the principal authorities on the subject says that arrangements have been made with the management of the Canadian Pacific Smelter and the Granby Smelter for the partially developed copper to be brought down here, to go through the final process necessary before the manufactured copper can be put on the market. There are no copper works in Canada, and it is claimed that by a new electrolyde process patented by Mr. Milburn, the manufactured copper can be produced at a fraction of the cost at which it is manufactured in the United States, and it can consequently be sold at a profit at one-half the price that is now paid for it.



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SOUTH AFRICAN TRANSIT RATES.—In accordance with the regulations of the South African Customs Union, special transit duties are imposed upon certain goods passing through South African ports destined for the Transvaal or Rhodesia. The following are the rates of duty imposed, as reported by the Board of Trade Journal:

(If imported through Cape ports.)

Spirits and wines, 3 per cent. ad valorem, or 6d. per gallon, at option of importer.

Cigars 3 per cent. ad valorem, or 6d. per lb., at option of importer.

(If imported through Natal ports.)

Spirits and wines, of an original value of 16s. 8d. per gal. and upwards, 6d. per gal.

Of an original value under 16s. 8d. per gal. and upwards, 3 per cent. ad valorem.

Manufactured tobacco and cigars, of an original value of 16s. 8d. per lb. and upwards, 6d. per lb.

Of an original value under 16s. 8d. per lb. and upwards, 3 per cent. ad valorem.

Guns—double-barrelled, of an original value in Europe of £8 6s. 8d. or upwards, 5s. per gun.

Of an original value in Europe under £8 6s. 8d., or upwards, 3 per cent. ad valorem.

Guns—single-barrelled, of an original value in Europe of £4 3s. 4d., or upwards, 2s. 6d. per gun.

Of an original value in Europe under £4 3s. 4d. or upwards, 3 per cent. ad valorem.

Pistols—Of an original value in Europe of £4 3s. 4d., or upwards, 2s. 6d. per barrel.

FREE LIST.

Battery cloth, gauze, matting, sieving and screening.

Chain.

Cranes, elevators and sheers.

Crucibles and cupelling furnaces and cupels.

Electric cable or wire and posts for same, and their fittings; lamp-posts (electric) and their fittings; lamps and switches (electric) not including fancy or ornamental lamps, switches and fittings for indoor lighting.

Felt, covering.

Flour, wheat and wheat meal.

Furnaces for roasting minerals.

Gas-pipes, lamp-posts (gas) and their fittings, including lamps.

Guns of all descriptions.

Hose, steam-suction and armored, for use in connection with machinery, but not including garden.

India rubber for machinery and mining apparatus and appliances.

Lead foil.

Machinery, including spare parts, not enumerated in the free list attached to the Customs Union Tariff, not being for domestic use.

Moulds, ingot.

Mules and geldings.

Ores and minerals, crude.

Plates of iron and steel combined.

Potatoes and onions (not preserved).

Retorts.

Rivets, and bolts and nuts (metal).

Shafting.

Steel and iron chimneys (smokestacks). Tanks and vats, suitable and intended for mining purposes.

Tin and zinc, in blocks and discs.

Tramway equipment requisites, such to mean the following: Cars, trolleys, water tanks and turntables.

Valve hide.

Wire, bells and gongs; signalling for use in and about mines.

All other goods, wares or merchandise, not prohibited or included in the free list of the South African Customs Union Tariff, 3 per cent. ad valorem.

THE NEWFOUNDLAND-UNITED STATES TREATY.—The treaty between the United States and Great Britain regarding commercial relations between the United States and Newfoundland has been made public.

Article 1 provides that American fishing vessels entering Newfoundland waters can buy bait on the same terms as Newfoundland vessels. They can also touch and trade, buy and sell fish and oil, and procure supplies without other charge than the payment of the light, harbor, and Customs dues, levied on Newfoundland fishing vessels.

Under article 2, salted codfish, cod seal, and whale oil, unmanufactured whalebones, sealskins, herrings, salmon, trout, and salmon trout, lobsters, cod roes, tongues, and sounds, the produce of fisheries carried on by fishermen of Newfoundland, metallic ores, the product of Newfoundland mines, and untrimmed

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AIR
COMPRESSORS
GAS

slates shall be admitted into the United States free of duty. Unsalted or fresh codfish are not included.

On the other hand, Newfoundland is to admit free of duty from the United States a long list of articles, including the following:

Agricultural implements and machinery, imported by agricultural societies for the promotion of agriculture; cranes, derricks, fire clay and brick, rock drills, rolling mills, crushing mills, separators, drill steel machinery for mining, smelting machinery imported for mining and not for sale; brick machines, dynamite detonators, blasting powder and fuse, raw cotton and cotton yarn; corn, for manufacture of brooms; chair cane, unmanufactured; cottonseed oil, olive oil, boracic acid, acetic acid, preservative, imported by manufacturers for preservation of fish or fish glue; hemp, hemp yarn, coir yarn, sisal, manilla, jute, flax, and tow; Indian corn, oil cake, oilcake meal, cottonseed cake, cottonseed meal, pea meal, bran, and other preparations for cattle feed; manures and fertilizers, sulphuric acid, imported for the manufacture of manures; lines and twines used in fisheries; ores for flux; gas engines, protected by patent; plows, harrows, reaping, raking, plowing, potato digging and seed-sowing machines, imported for use and not for sale; engravers' plates of steel, engraving machinery and chemicals for use in engraving, engraving tools and process plates; printing presses, paper, types, and printers' ink, imported for use, and salt in bulk, imported for use in the fisheries.

These duties are to be levied on other imports from the United States:

Flour, 25c a barrel; pork, \$1.50 a barrel of 200 pounds; bacon and hams, tongues, smoked beef, and sausage, 24c. a pound; beef, pig's heads, hocks, and feet, salted and cured, \$1 a barrel of 200 pounds; Indian meal, 20c. a barrel; oatmeal, 36c. a barrel of 200 pounds; rice, 1c. a pound; kerosene oil, 6c. a gallon.

Newfoundland is to give to the United States as low duties on any article as she gives to any other country. The treaty, if ratified, is to remain in force for five years.

BUSINESS OUTLOOK IN CANADA.—Ocean navigation having closed at the Port of Montreal wholesale trade there has assumed its usual winter aspect and while there are not now the large quantities of freight coming forward for shipment, business has been quite active. The cold weather has stimulated the demand for heavy winter goods and the holiday trade is now in full swing and the outlook for a busy period the next two or three weeks is very promising. Country trade

which has been hampered by bad roads should show improvement now that conditions in that respect are improving. Payments this month have been fair. There have been comparatively few failures. There is a good demand for money and rates are firm.

At Toronto there has been more activity in general trade than for several weeks. The cold weather has caused a spurt in the demand for heavy goods and jobbers have been busy with sorting orders. The usual activity in other departments of trade which characterises the present season is now a considerable factor and this, with the excellent business done so far in spring goods, has made the outlook quite promising. There is a cheerful feeling in wholesale trade circles. Values of cotton and woolen staples, both domestic and imported, are very firm at recent advances.

At Winnipeg, trade has shown improvement. This is due partly to the approach of the holiday season and partly to the generally improved condition of trade throughout the province as a result of the big crops. Manitoba this season harvested 100 million bushels of all kinds of grain, including 53 million bushels of wheat which contained a larger proportion of No. 1 hard than ever before.

According to Bradstreet's business on the Pacific Coast and at numerous trade centres of British Columbia is fairly active. There is a good steady demand from provincial mining towns and from other centres of industry. The outlook for trade is bright.

AGAINST THE METRIC SYSTEM.—Scientific opinion is not all in favor of the decimal system of weights and measures. At the recent meeting in New York of the American Society of Mechanical Engineers, Mr. F. A. Halsey, one of the editors of the American Machinist, took strong ground against the proposed reform. He does not believe that a change in the law would for a considerable time change the practice of the people. He referred in confirmation of his opinion to the fact that, although the metric system has been legally established in Germany for many years, English measurements for pitch threads are still in use in that country. The only argument the speaker recognized as making for the introduction of the metric system was that it facilitated reckonings. As an instrument for actual measurement he considered that the English system, with its easier subdivisions, was the better instrument. It is well known that Mr. Herbert Spencer is strongly opposed to the abandonment of the English system; and many other scientific men take the same position.

CLASSIFIED INDEX.

Abrasives.

Canadian Corundum Wheel Co., Hamilton, Ont.
Petrie, H. W., Toronto.
Rice Lewis & Son, Toronto.
Williams, A. R., Machinery Co., Toronto.

Air Compressors

American Steam Pump Co., Battle Creek, Mich.
Canadian Rand Drill Co., Sherbrooke, Que.
Cooper, James, Mfg. Co., Montreal.
Darling Bros., Montreal.
Jenckes Machine Co., Sherbrooke, Que.

Aluminum

Syracuse Smelting Works, Montreal.

Angles, Beams and Girders

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

Antimony

Samuel, M. & L. Benjamin & Co., Toronto.
Syracuse Smelting Works, Montreal.

Architects

Neil, James M., Toronto.
Parke, R. J., Toronto.

Axles

Nova Scotia Steel & Coal Co., New Glasgow, N.S.

Babbitt Metal

Petrie, H. W., Toronto.
Samuel, M. & L. Benjamin & Co., Toronto.
Syracuse Smelting Works, Montreal.
Tullman, J. N., & Sons, Hamilton, Ont.

Bar Iron and Steel

Bourne-Fuller Co., Cleveland, Ohio.
Rice Lewis & Son, Toronto.
Samuel, M. & L. Benjamin & Co., Toronto.

Bolting and Supplies

Bristol Co., Waterbury, Conn.
Carrier, Laine & Co., Levis, Que.
Fleming, W. A., & Co., Montreal.
McLaren, D. K., Montreal.

Bobbins

Wilson Bros. Bobbin Co., Liverpool, England.

Bolt Taps

Butterfield & Co., Rock Island, Que.

Brass

Samuel, M. & L. Benjamin & Co., Toronto.
Tullman, J. N., & Sons, Hamilton, Ont.

Brass Foundries

Hamilton Brass Mfg. Co., Hamilton, Ont.
McDougall, R. Co., Galt, Ont.
McKinnon Dash & Metal Works Co., St. Catharines, Ont.
Tullman, J. N., & Sons, Hamilton, Ont.

Canada Plates

Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Samuel, M. & L. Benjamin & Co., Toronto.

Canoes

Peterborough Canoe Co., Peterborough, Ont.

Card Clothing

Riley, C. E., & Co., Boston, Mass.

Carts

Milner Petroleum Wagon Co., Petroleum, Ont.

Cast Iron Pipe

Canada Foundry Co., Toronto.
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.
Rice Lewis & Son, Toronto.
Montreal Pipe Foundry Co., Montreal.

Cement

Canada Portland Cement Co., Deseronto, Ont.
Hyde, F., & Co., Montreal.
Owen Sound Portland Cement Co., Owen Sound, Ont.

Channels

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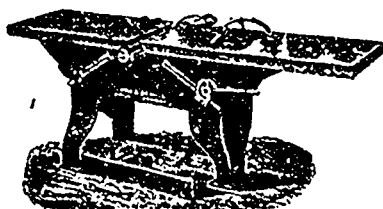
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Charcoal Pig Iron

Canada Iron Furnace Co., Montreal.
Deseronto Iron Co., Deseronto Ont.

Chemicals and Dye Stuffs

Bellhouse, Dillon & Co., Montreal.
Benson, W. T. & Co., Montreal.
Brunner, Mond & Co., Northwich, England.
Koller, John J. & Co., New York City.
Klipstein, A. & Co., New York City.
McArthur, Cornelle & Co., Montreal.
Schoellkopf, Hartford & Hanna Co., Buffalo, N.Y.
Winn & Holland, Montreal.
Wright & Dallyn, Hamilton, Ont.

Chemists

Archbold, Dr. Geo., Prescott, Ont.
Nell, J. M., Toronto.

Clothboard

Patent Cloth Board Co., Parry Sound, Ont.

Coal and Coke

Milnes, James H., & Co., Toronto.

Consulting Engineers

Parke, Roderick J., Toronto.
Stanyon Engineering Co., Toronto.

Conveying Machinery

Dodge Mfg. Co., Toronto.
Perrin, William R., & Co., Toronto.
Williams & Wilson, Montreal.

Copper Materials

Greening, B., Wire Company, Hamilton, Ont.
Samuel, M. & L. Benjamin & Co., Toronto.
Wire & Cable Co., Montreal.

Corundum.

Canadian Corundum Wheel Co., Hamilton, Ont.

Corundum Wheels.

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

Crucibles

Samuel, M. & L. Benjamin & Co., Toronto.

Detective Agencies

Noble's Dominion Detective Agency, Toronto.

Drills

Bertram, John, & Sons Co., Dundas, Ont.
Canadian Rand Drill Co., Sherbrooke, Que.
Cooper, James, Mfg. Co., Montreal.
London Machine Tool Co., London, Ont.
Petrie, H. W., Toronto.

Dust and Shavings Separators

Infillo Forge Co., Buffalo, N.Y.
McEachren Heating & Ventilating Co., Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Electrical Supplies

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

Electro-Plating

Brantford Plating Co., Brantford, Ont.
Reider Plating & Mfg. Co., Thorold, Ont.

Elevators

Canadian Otis Elevator Co., Toronto.
Darling Bros., Montreal.
Williams & Wilson, Montreal.

Emery

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

Engineers (Consulting)

Electrical Construction Co., London, Ont.
Neil, James M., Toronto.
Parke R. J., Toronto.
Perrin, Wm. R. & Co., Toronto.

Engineers (Electrical)

Canadian General Electric Co., Toronto.
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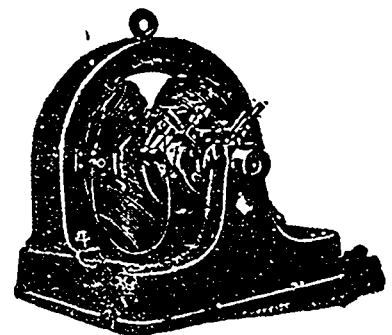
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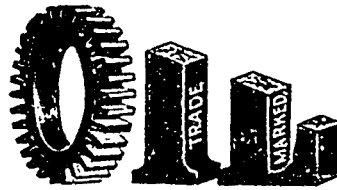
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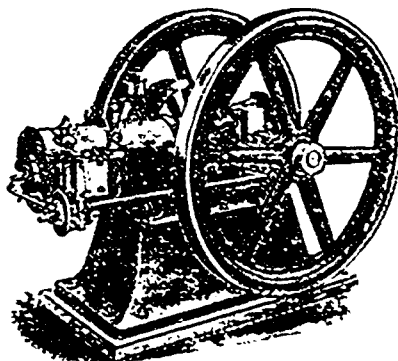
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Kerr Engine Co., Walkerville, Ont.
McEachren Heating & Ventilating Co., Galt, Ont.
Northey Co., Toronto.
Robb Engineering Co., Amherst, N.S.

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Buffalo Forge Co., Buffalo, N.Y.
Canadian Reine Safety Boiler Co., Toronto.
Cowan & Co., Galt, Ont.
Goldie & McCulloch Co., Galt, Ont.
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McDougall, H. Co., Galt, Ont.
Petrie, H. W., Toronto.
Robb Engineering Co., Amherst, N.S.
Stanyon Engineering Co., Toronto.
Williams, A. R., Machinery Co., Toronto.

Engravers

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

Exhaust Hoods

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

Factory Baskets.

Wiro-Woven-Wool Mfg. Co., Toronto.

Financial

Bradstreet's, New York City.
Dun, R. G. & Co., Toronto.
Neff & Postelwaite, Toronto.
South American Trade Journal, London, England.

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Burt Mfg. Co., Akron, Ohio.
Darling Bros., Montreal.
Perrin, Wm. R., & Co., Toronto.

Fire Brick

Buckner, R. E. H., Toronto.
Dougall, James, & Sons, Bonnybridge, Scotland.
Hamilton Facing Mill Co., Hamilton, Ont.
Hyde, F., & Co., Montreal.
Scioto Fire Brick Co., Sciotoville, Ohio.
Stanyon Engineering Co., Toronto.

Founders

Buffalo Forge Co., Buffalo, N.Y.
Canada Foundry Co., Toronto.
Cowan & Co., Galt, Ont.
Gartshore-Thomson Pipe & Foundry Co., Hamilton, Ont.
Karch, H. W., Hespeler, Ont.
McDougall, Tho R. Co., Galt, Ont.
Northey Co., Toronto.
Rehder Plating & Mfg. Co., Thorold, Ont.
Tallman, J. N., & Sons, Hamilton, Ont.

Foundry Facing

Hamilton Facing Mill Co., Hamilton, Ont.

Galvanizing

Brantford Plating Co., Brantford, Ont.
Ontario Wind Engine & Pump Co., Toronto.

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Dominion Motor & Machine Co., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Northey Co., Toronto.

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Canadian General Electric Co., Toronto.
Forman, John, Montreal.
Jones & Moore Electric Co., Toronto.
Kay Electric Dynamo & Motor Co., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Toronto & Hamilton Electric Co., Hamilton, Ont.

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Factory Inspectors.
Mineral Lands of Ontario.
Minister of Agriculture.

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Gartshore, John J., Toronto.
McEraw John, Machine Screw Co., Ingersoll, Ont.
Rice Lewis & Son, Toronto.
Samuel, M. & L. Benjamin & Co., Toronto.

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Dominion Radiator Co., Toronto.
McEachren Heating & Ventilating Co., Galt, Ont.
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Jenckes Machine Co., Sherbrooke, Que.
Northey Co., Toronto.
Perrin, Wm. R., & Co., Toronto.
Wilson, J. C., & Co., Glenora, Ont.

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Smith, Clark & Co., Port Elizabeth, Cape Colony

Iron and Steel Specialties

Armstrong Mfg. Co., Bridgeport, Conn.
 Bourne-Fuller Co., Cleveland, Ohio.
 Brown & Co., Paris, Ont.
 Dodge Mfg. Co., Toronto.
 Karch, H. W., Hespeler, Ont.
 Laurio Engine Co., Montreal.
 McDougall, R. Co., Galt, Ont.
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.
 Rice Lewis & Son, Toronto.
 Samuel, M. & L. Benjamin & Co., Toronto.

Lamps—Electric

Forman, John, Montreal.
 Packard Electric Co., St. Catharines, Ont.

Lathes

Bertram, John, & Sons Co., Dundas, Ont.
 London Machine Tool Co., London, Ont.
 McDougall, R. Co., Galt, Ont.
 Petrie, H. W., Toronto.
 Williams, A. R., & Co., Toronto.

Lubricating Oils

Imperial Oil Co., Petrolia, Ont.
 Queen City Oil Co., Toronto.

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Worth & Martin, Toronto.

Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.
 Butterfield & Co., Rock Island, Que.
 Goldie & McCulloch Co., Galt, Ont.
 Morrow, John, Machine Screw Co., Ingersoll, Ont.
 Petrie, H. W., Toronto.
 Worth & Martin, Toronto.

Machine Tools

Bertram, John, & Sons Co., Dundas, Ont.
 Petrie, H. W., Toronto.

Malleable Iron Castings

Frost, Wm. H., Smith's Falls, Ont.
 McKinnon Dash & Metal Works Co., St. Catharines, Ont.
 Ontario Malleable Iron Co., O-hawa, Ont.
 Walkerville Malleable Iron Co., Ltd., Walkerville, Ont.

Metal Specialties

Brantford Plating Co., Brantford, Ont.
 Rehder Plating & Mfg. Co., Thorold, Ont.

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Armstrong Mfg. Co., Bridgeport, Conn.
 Cooper, James, Mfg. Co., Montreal.
 Cowan & Co., Galt, Ont.
 Darling Bros., Montreal.
 Fleming, W. A., & Co., Montreal.
 Gartsshore, John J., Toronto.
 Goldie & McCulloch Co., Galt, Ont.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Hay, Peter, Galt, Ont.
 Jenckes Machine Co., Sherbrooke, Que.
 Karch, H. W., Hespeler, Ont.
 Laurio Engine Co., Montreal.
 London Machine Tool Co., London, Ont.
 McDougall, R. Co., Galt, Ont.
 Morrow, John, Machine Screw Co., Ingersoll, Ont.
 Petrie, H. W., Toronto.
 Rice Lewis & Son, Toronto.
 Samuel, M. & L. Benjamin & Co., Toronto.
 Spence, H. & Co., Hamilton, Ont.
 Wilson, J. C. & Co., Glenora, Ont.

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 Electrical Construction Co., London, Ont.
 Forman, John, Montreal.
 Jones & Moore Electric Co., Toronto.
 Kay Electric Dynamo and Motor Co., Toronto.
 Toronto & Hamilton Electric Co., Hamilton, Ont.
 United Electric Co., Toronto.

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Worth & Martin, Toronto.

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 Morton Co., Toronto.

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

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Burt Mfg. Co., Akron, Ohio.

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 Cassella Color Co., New York City.
 Fleming, W. A., & Co., Montreal.
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Brantford Plating Co., Brantford, Ont.
 Rehder Plating & Mfg. Co., Thorold, Ont.

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Cooper, James, Mfg. Co., Montreal.
 Jenckes Machine Co., Sherbrooke, Que.

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 Hyde, F., & Co., Montreal.
 Owen Sound Portland Cement Co., Owen Sound, Ont.
 Rathbun Co., Toronto.
 St. Lawrence Portland Cement Co., Montreal

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Central Canada Power Co., Peterboro, Ont.
 Great Northern Railway of Canada, Quebec.

Power Plants—Equipments

American Steam Gauge & Valve Mfg. Co., Boston, Mass.
 Buffalo Forge Co., Buffalo, N.Y.
 Canadian General Electric Co., Toronto.
 Cooper, James, Mfg. Co., Montreal.
 Electrical Construction Co., London, Ont.
 Goldie & McCulloch, Galt, Ont.
 Jenckes Machine Co., Sherbrooke, Que.
 Jones & Moore Electric Co., Toronto.
 Kay Electric Dynamo & Motor Co., Toronto.
 Northey Co., Toronto.
 Perrin, Wm. H. & Co., Toronto.
 Phillips, Eugene F. Electrical Works, Montreal.
 Robb Engineering Co., Amherst, N.S.
 Stanyon Engineering Co., Toronto.
 Sturtevant, B. F., Co., Boston, Mass.
 Toronto & Hamilton Electric Co., Hamilton, Ont.
 United Electric Co., Toronto.
 Wilson, J. C., & Co., Glenora, Ont.

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Wickramanayaka, J., & Co., Kolutara, Ceylon, India.

Pulleys

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

Pulp and Saw Mill Sites

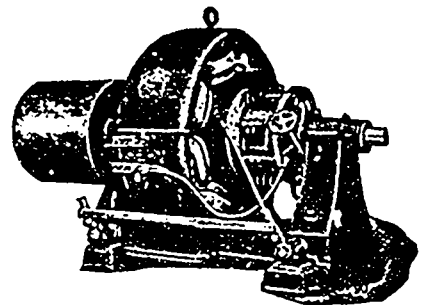
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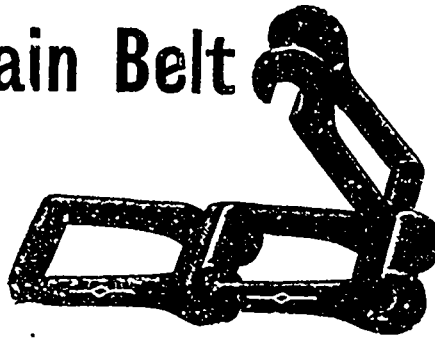
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Big Four Route,
Chicago & North-Western Ry., Toronto & St. Paul, Minn.
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Railway Supplies

Algoma Steel Co., Sault Ste. Marie, Ont.
Canada Switch & Spring Co., Montreal.
Gartshore, John J., Toronto.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Phillips, Eugene F., Electrical Works, Montreal.

Rivets

Bourne-Fuller Co., Cleveland, Ohio.

Roofing

Eastern Granite Roofing Co., New York City.
Metallic Roofing Co., Toronto.

Rubber Goods

Gutta Percha & Rubber Mfg. Co., Toronto.

Shafting

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

Shear Knives

Hay, Peter, Gall, Ont.

Shoots

Bourne-Fuller Co., Cleveland, Ohio.
Samuel, M. & L. Benjamin & Co., Toronto.

Silica Brick

Buckner, R. E. H., Toronto.
Dougall, James, & Sons, Bonnybridge, Scotland.

Sleighs

Milner Petrolca Wagon Co., Petrolca, Ont.

Steam Gauges

American Steam Gauge & Valve Mfg. Co., Boston, Mass.

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

Steam Pumps

American Steam Pump Co., Battle Creek, Mich.
Darling Bros., Montreal.
Goldie & McCulloch Co., Gall, Ont.
Northey Co., Toronto.
Williams, A. R., Machinery Co., Toronto.

Steam Separators

Darling Bros., Montreal.

Steam Valves

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

Steel Rails

Algoma Steel Co., Sault Ste. Marie, Ont.
Drummond, McCall & Co., Montreal and Toronto.

Steel Shafting

Darling Bros., Montreal.
Jodge Mfg. Co., Toronto.
Laurie Engine Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Wilson, J. C. & Co., Glenora, Gal.

Stocks and Dies

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

Tags

Morton Co., Toronto.

Tees

Bourne-Fuller Co., Cleveland, Ohio.

Textile Manufacturers

Canadian Colored Cotton Mills Co., Montreal.
Cattle, James, A., Montreal.
Dominion Oil Cloth Co., Montreal.
Hamilton Cotton Co., Hamilton, Ont.
Morrice, D. Sons & Co., Montreal.
Parker, A. S., New Toronto, Ont.
Reiche & Co., Bradford, England.
Smith Wool Stock, Toronto.
Storey, W. H., & Sons, Acton, Ont.

Tin

Samuel, M. & L. Benjamin & Co., Toronto.

Tin Plates

Samuel, M. & L. Benjamin & Co., Toronto.

Tool Steel

Bourne-Fuller Co., Cleveland, Ohio.

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Trucks

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Slingsby, H. C., Montreal.
Wire-Woven-Wood Mfg. Co., Toronto.

Turbines

Jenkes Machine Co., Sherbrooke, Que.
Wilson, J. C., & Co., Glenora, Ont.

Valves

American Steam Gauge & Valve Mfg. Co., Boston, Mass.

American Steam Pump Co., Battle Creek, Mich.
Canada Foundry Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Kerr Engine Co., Walkerville, Ont.
Williams, A. R., Machinery Co., Toronto.

Ventilators

Buffalo Forge Co., Buffalo, N.Y.
Darling Bros., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

Wagons and Carriages

Hore, F. W., & Son, Hamilton, Ont.
Milner Petrolca Wagon Co., Petrolca, Ont.

Weaving Machinery

Karch, H. W., Hespeler, Ont.
Riley, C. E., & Co., Boston, Mass.

Wire and Wire Rope

Greening, B. Wire Co., Hamilton, Ont.
Samuel, M. & L. Benjamin & Co., Toronto.
Wire & Cable Co., Montreal.

Wire-Woven-Wood Baskets.

Wire-Woven-Wood Mfg. Co., Toronto.

Wood-Working Machinery

Carrier, Lalne & Co., Lewis, Que.
Clark & Demill, Galt, Ont.
Cowan & Co., Galt, Ont.
Karch, H. W., Hespeler, Ont.
London Machine Tool Co., London, Ont.
McEachren Heating & Ventilating Co., Galt, Ont.
Petrie, H. W., Toronto.

Zinc

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MAIN FACTORY—BRADFORD, ENG.

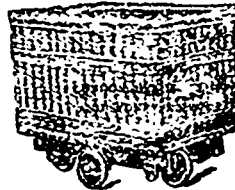
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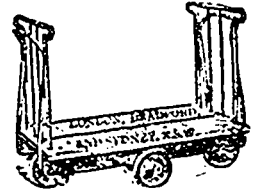
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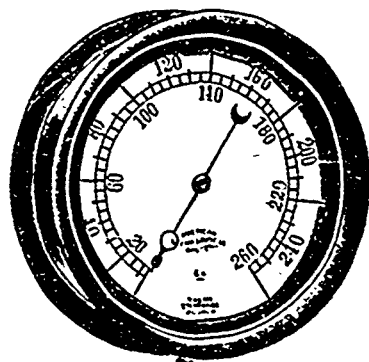
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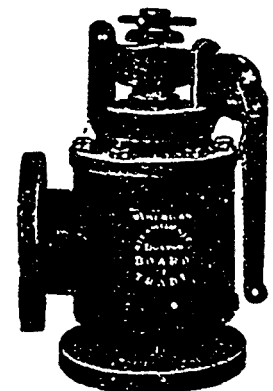
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