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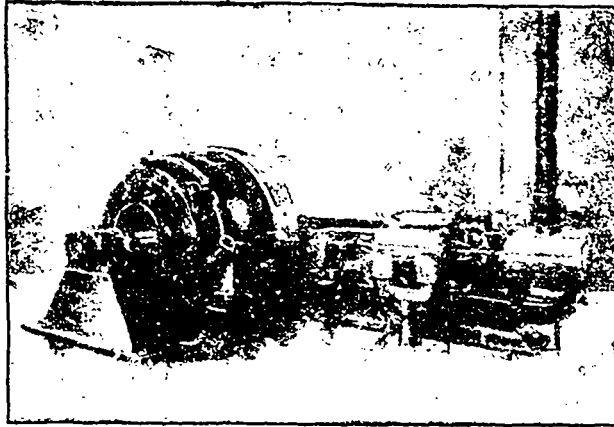
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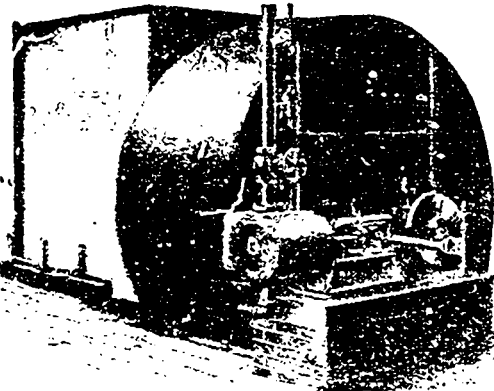
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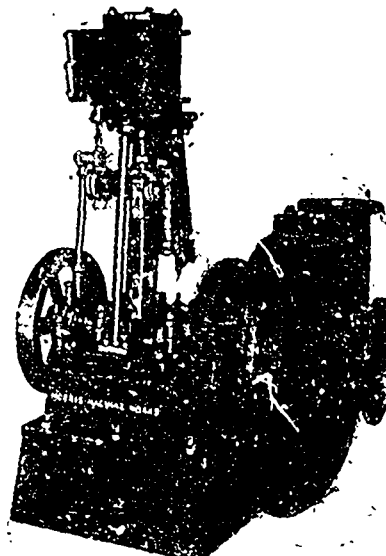
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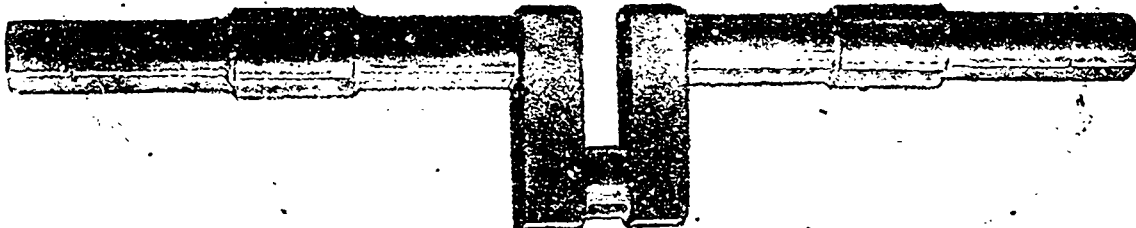
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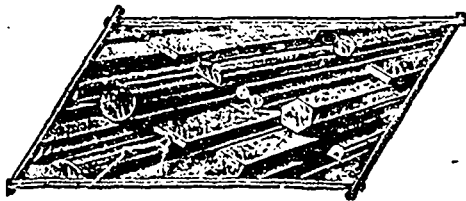
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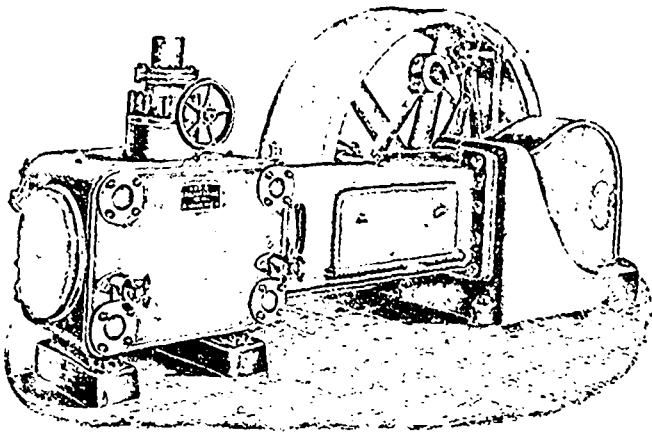
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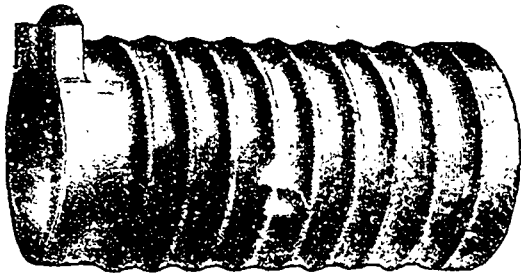
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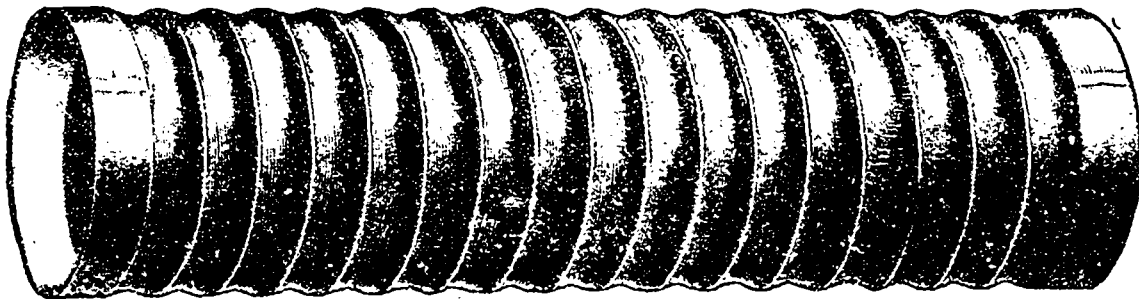
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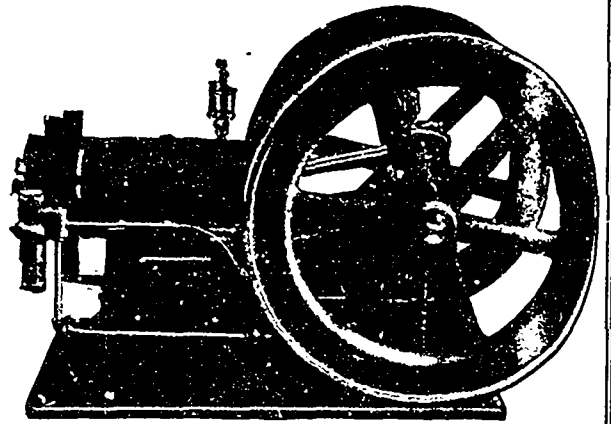
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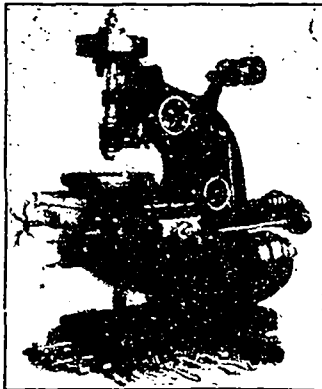
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We make  
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And can show you the proper equipment for any work

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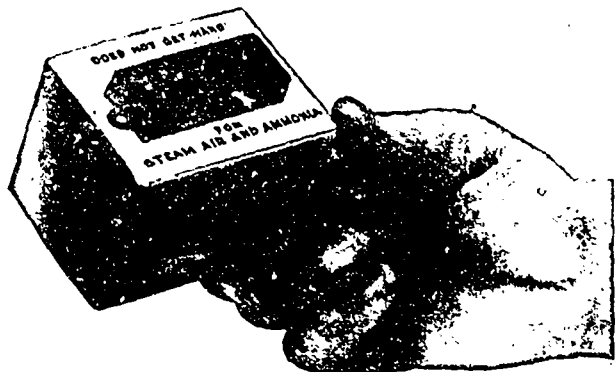
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Limited  
GALT ONTARIO



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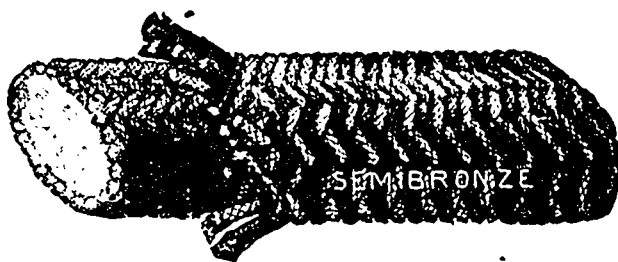
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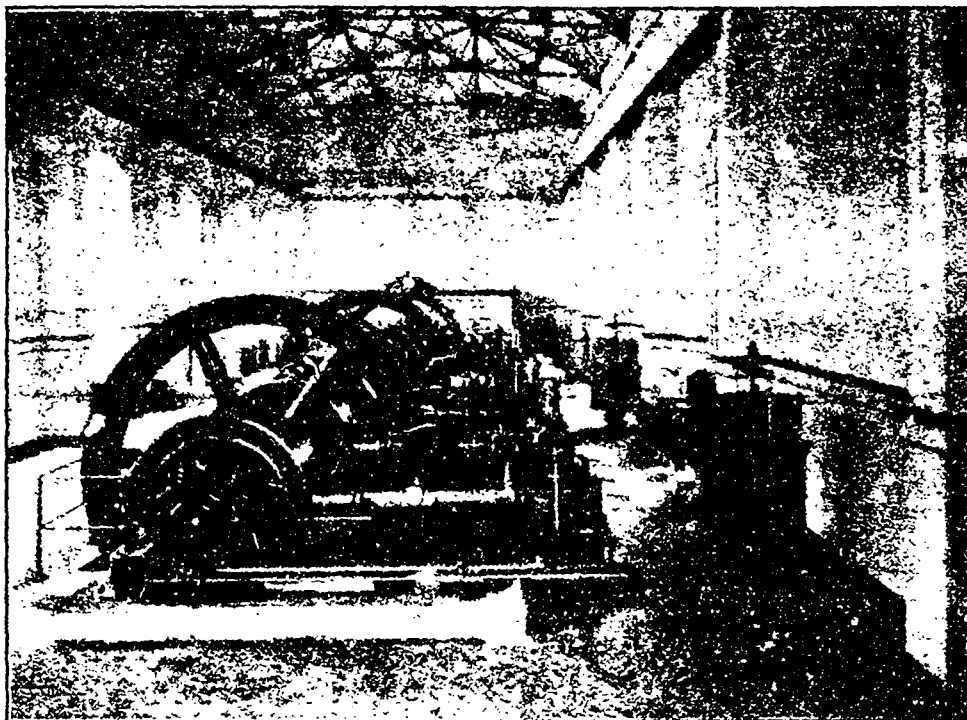
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Total Power already installed over 200,000 H.P.

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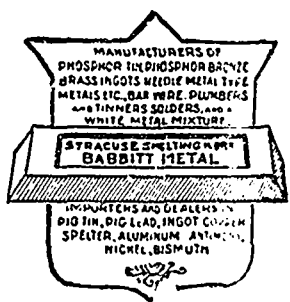
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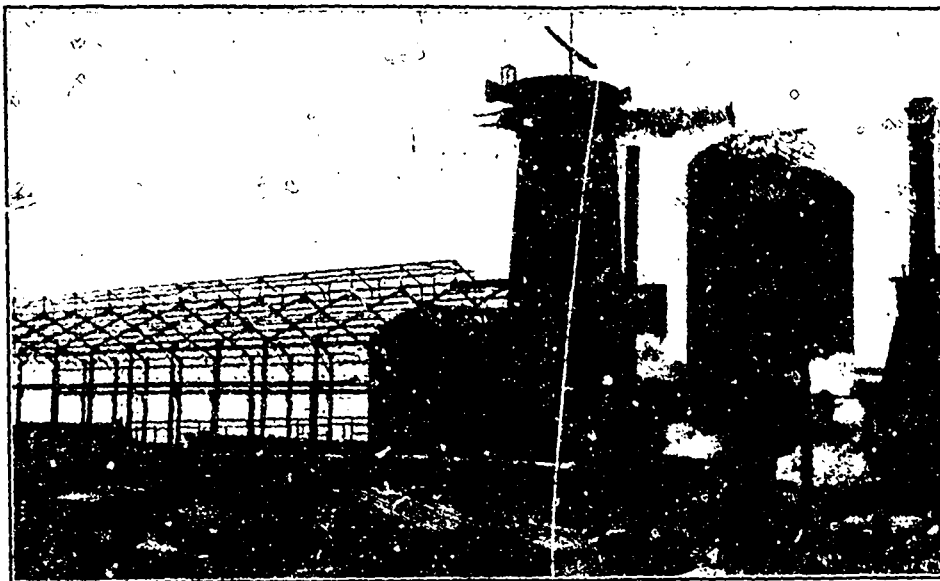
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THE PATENTS AND LICENSES IN  
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PIG  
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BASIC  
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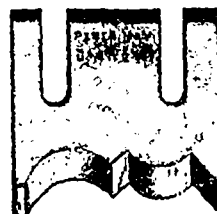
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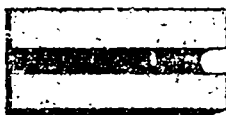
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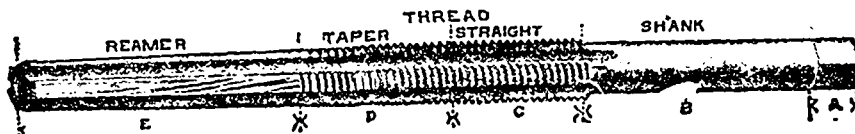


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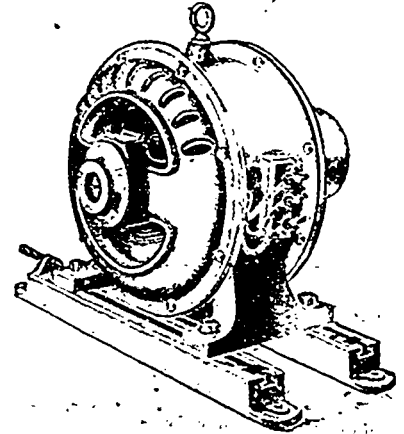
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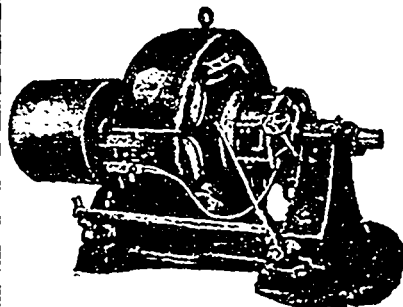
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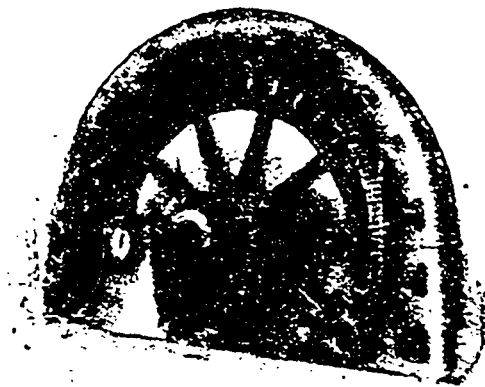


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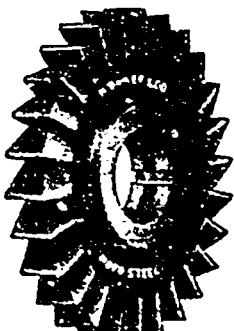
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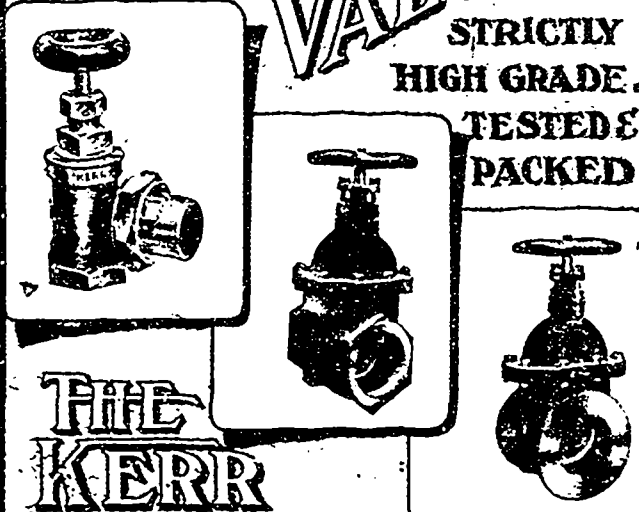
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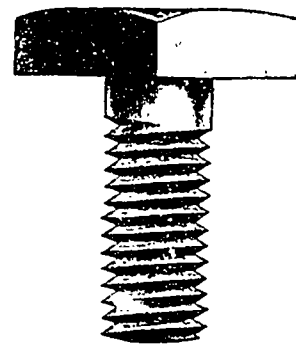
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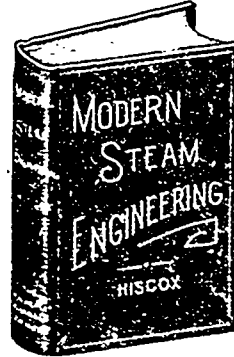
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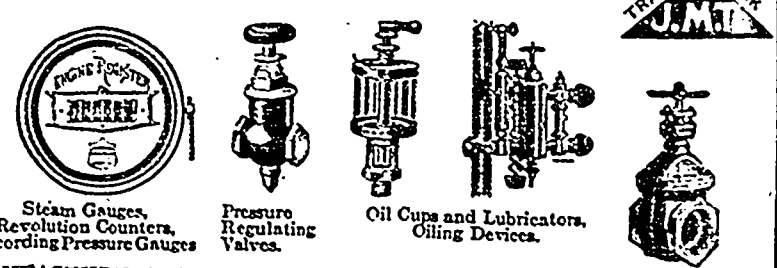
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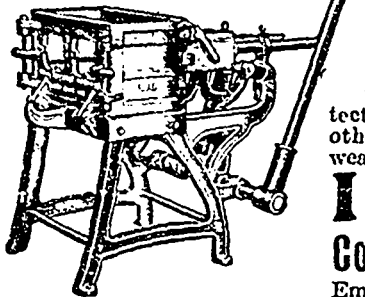
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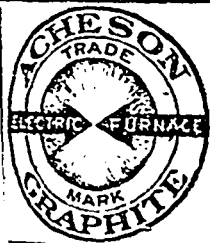
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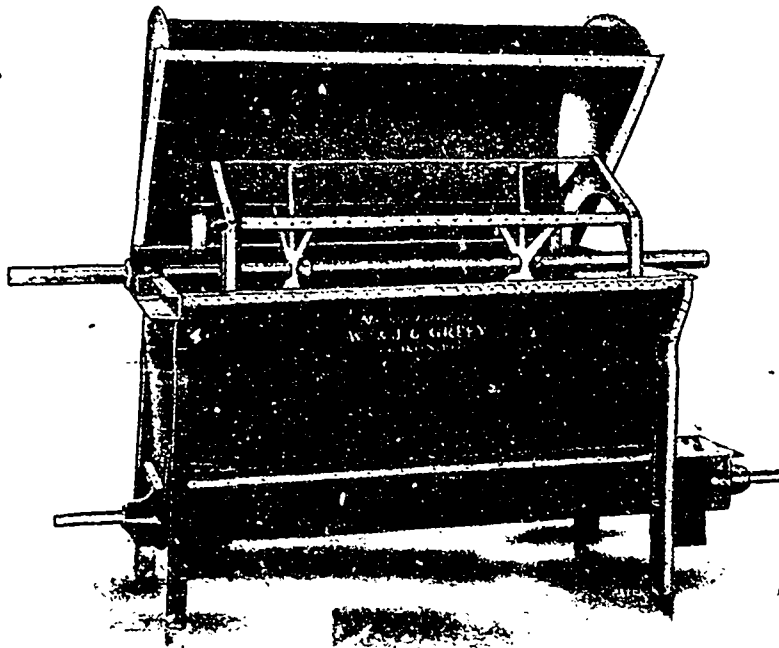
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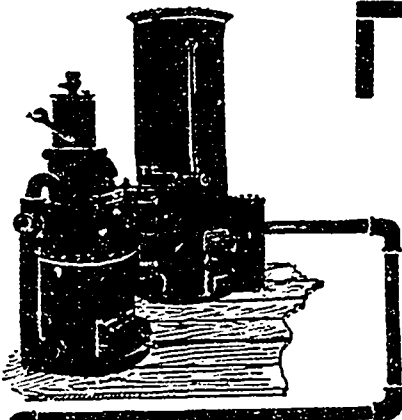


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THE IRON AND STEEL BOUNTIES.

Mr. Fielding, the Finance Minister, on April 23, presented his resolutions providing bounties upon the production of iron and steel in Canada.

Summarized the bounties are:

(a) In respect of pig iron manufactured from ore on the proportion from Canadian ore produced during the calendar years—1907, \$2.10 per ton; 1908, \$2.10 per ton; 1909, \$1.70 per ton, and 1910, 90 cents per ton.

(b) In respect of pig iron manufactured from ore of the proportion from foreign ore produced during the calendar years—1907, \$1.10 per ton; 1908, \$1.10 per ton; 1909, 70 cents per ton, and 1910, 40 cents per ton.

(c) On puddled iron bars manufactured from pig iron made in Canada during the calendar years—1907, \$1.65 per ton; 1908, \$1.65 per ton; 1909, \$1.05 per ton, and 1910, 60 cents per ton.

(d) In respect of rolled, round wire rods, not over three-eighths of an inch in diameter, manufactured in Canada from steel produced in Canada, from ingredients of which not less than 50 per cent, of the weight thereof consists of pig iron made in Canada, when sold to wire manufacturers for use of, when used in making wire in their own factories in Canada, on such wire rods made after December 31, 1906, six dollars per ton.

(e) In respect of steel ingots manufactured from ingredients, of which not less than 50 per cent, of the weight thereof consists of pig iron made in Canada, on such ingots made during the calendar years—1907, \$1.65 per ton; 1908, \$1.65 per ton; 1909, \$1.05 per ton, and 1910, 60 cents per ton.

(f) On pig iron manufactured from Canadian ore by the process of electric smelting during the calendar years—1909, \$2.10 per ton; 1910, \$2.10 per ton; 1911, \$1.70 per ton, and 1912, 90 cents per ton.

(g) On steel ingots manufactured by electric process direct from Canadian ore and on steel ingots manufactured by electric process from pig iron smelted in Canada by electricity from Canadian ore during the calendar years—1909, \$1.65 per ton; 1910, \$1.65 per ton; 1911, \$1.05 per ton, and 1912, 60 cents per ton.

The Minister, in introducing the motion incorporating the new iron and steel bounties, which were made public some time ago, said that since the resolution was placed on the order paper a number of petitions had been presented to the House, chiefly from Ontario, very largely signed by people who objected to the passing of the proposed bounties. He had no doubt that many of those who had signed the petitions did so because they objected to the principle of the bounties, but probably many others signed under a misapprehension as to what would be the burden placed on the taxpayers by the payment of these bounties. He thought, however, that it would be generally admitted that if any industry in the country deserved encouragement, if they were to adopt the principle of aiding new industries, it was that of iron and steel, for the country that did not develop its iron and steel industry could not be progressive. There were several reasons why the industry should be aided by way of bounty rather than in the form of customs duties. The chief of these was that if a duty were imposed to protect the iron and steel industry, owing to that product entering into so many lines of manufacture, it would lead to a general increase of the cost of those articles to the consumer.

The Minister said the ore used at Sydney, N.S. was almost entirely of Newfoundland origin, while at Sault Ste. Marie both native and American ore was used. In 1905-06 the Algoma Steel Co. turned out 222,891 tons of steel, the ingredients of which were 180,472 tons of Canadian pig iron, 21,219 tons of foreign pig iron and 46,821 other ingredients.

Mr. Fielding said that there was an erroneous impression abroad that the iron and steel industry was protected to a particularly large degree. No doubt many farmers were under that impression when they signed the petitions, but perhaps they would be surprised to hear that the protection afforded was not so great as that given to some lines of agricultural products. Taking pig iron at an average price of \$16 a ton, the duty and bounty together came to \$2.60, amounting to a protection of something like 16½ per cent., which was much less than that enjoyed by other lines of industry, and, taking steel ingots and billets, the duty was \$1.50, the bounty on pig iron \$1.50, the steel bounty \$1.65, making a total of \$4.65, which is equal to about 17½ per cent. under the preferential tariff. He believed that if the farmers who had signed these petitions had known the facts they would not have taken the position which they had.

The Minister promised, in response to a request, that he would bring down a return showing the percentage of Canadian ore used, stated that it should be borne in mind that most of the foreign ore used at Sydney was of Newfoundland origin. Many people did not regard Newfoundland as a foreign country, and Sir Charles Tupper had

questioned whether it would not be wise to treat it as a part of Canada for trade purposes. The Government could not go that far, but there was another point to remember, which was that the importation of ore had led to a great development of the use of the nation's fuel, coal, and so did a great deal for the creation of a new home industry. He considered that the results had justified the Government's policy. The development of the iron and steel industry had played an important part in the development of trade, and he thought he should be able to prove that every dollar which had been paid out of the treasury in the way of bounty, had come back through increased general trade of the country. The customs collections at Hamilton, Deseronto, Midland, North Sydney, Sydney and Londonderry, where there had been great development of the iron industry generally for nine years past had reached \$11,785,036. For the previous nine years the similar duties amounted to \$7,101,850, showing an increase in revenue of \$4,683,186. The bounties during the nine years amounted to \$7,948,118, so that from the increased customs revenue they had coming back directly into the treasury a large proportion of the bounties. They must also take into consideration, although it was impossible to give the precise figures, the effect the development of the industry had had in increasing the revenue at other ports of entry, and the further fact that not only had it attracted a certain class of immigration, but prevented a number of their own people leaving Canada, as they were formerly in the habit of doing, for the United States.

Dealing with the bounty proposals, Mr. Fielding said it was proposed to continue them for 3½ years beyond the first of July, at which date they should have expired, and as a basis of the new bounties they would have 55 per cent. of the original bounties, which were \$3 per ton on pig iron from the native ore, \$2 per ton on pig iron from foreign ore, and \$3 on steel. Practically the new bounties would date from the first of June and run for four years. This for 1907-8 would give a bounty of \$1.10 on pig iron made from foreign ore, and a reduction to seventy cents and forty, respectively, in 1909-10. In regard to pig iron manufactured from native ore, in order to give such manufacturers encouragement, an advantage of \$1 would be given in bounty for three years and fifty cents in the fourth year.

Dealing with the provisions for encouragement of electric smelting, Mr. Fielding alluded to the successful experiments carried on at Sault Ste. Marie, and pointed out that by this system it was hoped that it would be possible to treat ores which were not commercially valuable, especially Ontario ores, when submitted to the older methods of smelting. The amount of bounties was exactly the same, but the period over which they were extended had been put forward two years. The reason for that was because it had been represented that it would take at least two years to bring these electric plants into operation. The value of electric smelting had been pointed out by a well-known Swedish authority, who had stated that by its aid it was possible that Canada would drive Swedish iron out of the markets of the United

States, Great Britain and Japan. In conclusion, Mr. Fielding said that the estimated cost of the bounties had been generally exaggerated. Taking last year's production as a basis, and adding 10 per cent. increase each year, the statement that the bounties would amount to varying sums ranging from \$18,000,000 to \$25,000,000, were greatly exaggerated. He considered a more correct estimate would be \$7,500,000, and a further sum of \$500,000 in respect of electric smelting.

In reply to Mr. Borden, the Minister of Finance stated that a high grade of iron was produced by electric smelting. Bounties in respect to certain rolled iron and steel had been abolished, those items being dealt with in the tariff. The bounty on wire rods was fixed at \$6 a ton, while, as it was considered desirable to encourage the wire industry in Canada, wire rods were allowed to remain on the free list. The Government considered after the liberal aid which had been granted, that at the expiration of the extended period these industries should become self-sustaining. At all events there should not be any claim for further bounties, and that they should, so far as it was possible to judge at present, then cease.

#### FREE TRADE AND POVERTY.

The free trade movement is making significant strides throughout the Dominion, as has been acknowledged by THE CANADIAN MANUFACTURER, a protectionist organ, which says that there is apparently a free trade feeling everywhere, while any general and active approval of protection is now 'conspicuous by its absence.' A cheering sign of the times is the free trade activity in Montreal, where we may soon see the headquarters of a Dominion free trade organization and a number of local clubs. Later on a weekly or monthly periodical may be launched. Mr. Archibald McGoun, K.C., the chief leader of the movement, thinks a membership of forty thousand should be obtained throughout the Dominion, and that the association would then be consulted in the choice of some of the members of parliament, and might even put up some of the candidates itself. What Mr. McGoun means by free trade, however, is not what was meant by Mr. Cobden, and what has been put into practice for over sixty years in Great Britain—free trade with all countries. Mr. McGoun's free trade applies to the empire only and does not include the United States or other foreign countries, although it is proposed to remove certain classes of duties on foreign imports. Still it is a great step in advance, and there is certainly logic in Mr. McGoun's contention that if, as has been our profession all along, we put up the National Policy wall against the United States because she put up a high wall against us, we ought, by like reasoning, to deal on free trade terms with Great Britain, because she admits us to her markets without restriction.—The Montreal Witness.

We are greatly inclined to boast of universal prosperity in Canada, and to make comparisons unfavorable to the old country. Yet the report of the medical inspectors of Montreal schools should give us some pause. According to them, nearly a thousand of the twenty old thousand and children attending our schools are underfed, and "the assumption is that their parents are too poor to provide them with proper food." If that is true, there must be slum conditions in this city which are a menace, and it is time that the facts were known. That there is a good deal of poverty among us seems to find confirmation in the fact, too, that nearly a thousand pupils are too poor to buy many necessary articles, and that poverty is ac-

accompanied by the customary uncleanness, since nearly fifteen hundred pupils were found infested with vermin.—The Montreal Witness.

"A cheering sign of the times is the free trade activity in Montreal," says The Witness. It tells us that Mr. McGoun, K.C., of that city, who is establishing free trade clubs there, think that a membership of 40,000 free traders should be obtained in Canada. Mr. McGoun's free trade propaganda is to be extended to the British Empire only.

On the other hand The Witness, viewing a practical result of free trade, deploras the fact that Montreal is even now enjoying a condition never before experienced in Canada, but ever present in the free trade cities of Britian. The Witness stops long enough in its wayward teaching to view with alarm that at least 20,000 children attending the Montreal public schools are underfed—that is, they go hungry and ill clothed because their parents are too poor to provide them with the necessaries of life. Of course the Montreal paupers are accompanied by and infested with vermin. What else could be expected. Mr. McGoun and The Witness should start a fund to buy food and raiment for the Montreal paupers; a cake of soap and a fine toothed comb to accompany each loaf of bread, same as in free trade England.

#### THE TORONTO GLOBE AND AMERICAN POLITICS.

An editorial entitled "American Tariff Revision," in the Toronto Globe of April 25, reads as follows:

The American protective tariff, the most gigantic humbug of the age, is ready to tumble like a house of cards with the first touch of an awkward or deft hand. This is shown by the consternation which has followed the announcement in The New York Commercial that the Senate Finance Committee may take up the question of revision during the recess. The multitude of amendments called forth by every suggested change in Congress, has long since frightened off the boldest legislators, but the Treasury Board has continued to issue its multitudinous rulings and findings, deciding points at issue, and making others more obscure and uncertain. Many members of the Merchants' Association have taken up and urged the idea of a complete tariff revision, but as other members are afraid to disturb or touch the existing order of things no official declaration has been issued. Similar divergence of views exists in the New York Board of Trade and Transportation, the Chamber of Commerce, and other important organizations. The result is a universal admission that many things should be done, with an equally universal reluctance toward doing anything.

The process of tariff building has gone on heedlessly as in Canada during the so-called National Policy regime. Everyone who secured the ear of Congress had the taxation of the people increased on some special commodity for his benefit. Each increase helped a few by injuring many. Those who were injured sought compensation, and it was readily granted in the form of new imposts favoring their special interests at the expense of a broader circle of taxpayers. Thus the needless burdens were multiplied and multiplied, each new impost necessitating a demand for many more. With the second Cleveland campaign came a disturbing element in the form of demands that wrongs and inequalities be adjusted by levelling down, and not by the

endless process of levelling up. The resultant discussion led the people to realize the grotesque absurdity of the structure they had created, and the multitude of evils entailed by it in their political, commercial, and industrial life. With a realization of the mass of contradictions and anomalies that devotion to a false philosophy had created came the dread of touching it lest it tumble in chaos. The Congressman, prepared to point out a glaring injustice, was urged to keep silent, because his proposed amendment would prompt scores of others and endanger the whole structure.

Silence and timidity, with a mixture of despair, make up the attitude of American politicians toward the tariff, and now that the Senate Finance Committee has promised a bold advance, there is both wonder and alarm. Already the protected interests are protesting the need of excluding foreign goods, while politicians are discussing the respective merits of continuous tinkering and periodical revisions. Looking broadly at the state of political education in the republic, and at the effect of a continuous admixture of foreign elements, it is difficult to discern any quarter from which could proceed a sane and reasonable departure such as Britain made in throwing off the yoke of protection.

The foundation for this ridiculous, false, ignorant and misleading editorial in The Globe had its origin in a communication from a Washington correspondent of The New York Commercial and printed in that journal. In its entirety it was as follows:

Washington, April 21.—Although such standpatters as Speaker Cannon and Representative Dalzell would be the last to admit it, there is still a possibility that tariff revision will not have to wait until the convening of the Sixty-first Congress. If a poll of the house of representatives were taken to-day on the possibilities of revision during the session which will be convened on the first Monday of next December, it is probable that an overwhelming majority would declare that the tariff will have no part in next winter's legislative programme. This is not to say that a majority of the house are of the honest opinion, individually, that the Dingley law should not be revised within the next year, that is, before the next presidential campaign.

Shortly before the adjournment of Congress last month, Senator Aldrich, chairman of the senate committee on finance, introduced a resolution authorizing that committee to sit during the recess of the senate for the consideration of tariff, financial and other subjects, within the province of which the finance committee is concerned, to send for persons and papers, administer oaths, etc. The resolution attracted little general attention, but it was passed. Mr. Aldrich is now in Europe on a pleasure trip, but will return home within the next few weeks.

No steps have been taken toward calling a meeting of the finance committee, and it is possible that none will be taken; nevertheless, it is known that several members of the committee would not be surprised if they were called together by the chairman between now and the convening of the Congress in December. It is true, of course, that such resolutions have been passed in the closing days of other sessions, and that the committee has not always availed itself of the authority conferred, but the possibility was certainly in the minds of two or three senators, late in the recent session, that the finance committee might have to hold some meetings during the coming summer.

It has become known to your correspondent within the last two days that one of the leading members of the finance committee only recently expressed his opinion privately that it would be very unwise for the Republican

party to enter into another presidential campaign without having done anything toward the revision of the tariff. Two national elections—those of 1904 and 1906—have been held since the agitation for tariff revision became so strong in certain parts of the country—notably in Massachusetts and in the middle western and north-western states. The senator referred to has not been known as a revisionist at all, but he has always been a powerful influence in the Senate, and his word on tariff matters has always been listened to with close attention. As for Senator Aldrich, chairman of the committee, he has frequently been referred to as a standpatter, but he is not opposed to revision in the same uncompromising way that Speaker Cannon, Representative Payne and Representative Dalzell are opposed to it. He has held for a long time that the Dingley law would have to be revised in the not distant future, and he has not followed the example of the dyed-in-the-wool standpatters by regarding the present tariff law as a sort of divine institution.

It is probable that any scheme of revision which may be adopted will involve modifications in section 4 of the present law relating to the negotiation of reciprocity treaties; and it is certain also that the question of a maximum and minimum tariff will be fully discussed in Congress. Since it has been seen what Germany can do, if that country is so disposed, to restrict American trade by the imposition of a maximum scale of duties, interest in the maximum and minimum system in this country has increased visibly. Some members of Congress believe that the United States should have a means of retaliation in such circumstances.

Only that and nothing more. The Commercial maintains a regularly paid correspondent at Washington as all up-to-date American newspapers do, and, as will be seen by his letter, qualified by ifs and perhapses every statement he made. In fact he stated nothing but what was and is old gossip such as floats about the capital at all times.

It is worth noticing, however, that The Globe goes considerably out of its way to denounce a policy of the United States government with which a large majority of the eighty odd millions of people of that country are quite contented, and have been ever since they turned Grover Cleveland out of the presidency. The Globe calls the America tariff, "the most gigantic humbug of the age," that it is "ready to tumble like a house of cards;" that "consternation followed the announcement of the Commercial's correspondent that the Senate Finance Committee may take up the question of tariff revision during the recess of Congress," and so ad nauseam.

It has a fling, too, at the Treasury Board—a something with hoofs and horns in the opinion of The Globe, forgetting that the machinery of the Canadian government includes a Treasury Board also, created for similar purposes. The Merchants' Association, the Board of Trade and the Chamber of Commerce of New York, are composed of business men who differ in politics among themselves, some of them favoring free trade, and others very much in favor of tariff protection, generally of the existing sort. We have similar divergencies even here in Canada.

The Globe tells us that the process of tariff building in the United States has gone on heedlessly as in Canada

during the so-called national policy regime; and it therefore squirts a lot of such inuendoes at protective tariffs as cannot be equalled by any other paper, respectable or otherwise. The Globe forgets that ever since the foundation of the United States government with a few exceptions and brief periods, tariff protection has been, as it is now, the aegis under which the industrial pursuits of the country have grown and prospered; and it fails to remember that, without exception, every financial reverse has occurred as a result of a change of policy. The Globe should read history, at least such as is taught in the school books.

The Globe mentions Mr. Cleveland, the unfortunate gentleman who while he was president, tried so hard to embroil Great Britain including Canada, with his country. Mr. Cleveland's inspiration was no doubt drawn from a black bottle during a fishing excursion. We would willingly allow the event to sink in oblivion; but he again bobs up in the political horizon, and again urges his free trade Democratic party to again try "tariff reform," such as The Globe holds in such high esteem. Mr. Cleveland, when president, gave his country a tariff measure, and from that day to this the United States has been overwhelmingly Republican, and his country will never again act upon his free trade ideas.

It might be imagined from what The Globe says that tariff legislation in the United States is a constantly continuing process—that every one who secures the ear of Congress has the taxation of the people increased on some special commodity for his benefit; that each increase helps a few by injuring the many; that those who are injured seek compensation that is readily granted in the form of new imports favoring their special interests at the expense of a broader circle of taxpayers, and that thus the needless burdens are multiplied and multiplied, each new import necessitating demands for many more. A more outrageous falsification of facts was never uttered, even in the yellowest of yellow, scandal mongering publications. The ruinous semi-free trade tariff which was instituted in the United States under Cleveland was most happily displaced after having been weighed in the balance of public opinion and found wanting, Clevelandism giving place to McKinleyism. The Globe knows, or should know that the McKinley tariff was ratified, and went into effect on July 24, 1897—ten years ago—since which date no item, or line, or word, or punctuation point has been changed. In verification of this we would say that in the preparation of copy for our current tariff edition of THE CANADIAN MANUFACTURER, having reference to the United States tariff, in reply to an enquiry we were informed by Mr. C. H. Heep, acting-secretary of the United States Treasury: Division of Customs, that no legislation affecting rates of duty in the tariff act of July 24, 1897, had been passed. So much for the stability of the American tariff.

We cannot say as much for the Canadian tariff. The present Dominion Government came into power in 1896 and found the Foster tariff in force. It was an excellent tariff, not unduly protective in character, but good and effective. The government not being favorable to pro-



tection, immediately set to work on a revision, and on June 13, 1898, a new tariff was assented to, but which was revised up to September 4, 1903. The Government did not like the 1898 tariff, nor its amended form of 1903, and Mr. Fielding, the Finance Minister, set to work on the tariff that has only in 1907 been ratified, polished off and put in motion. It contains many provisions that were never previously known in any Canadian tariff, including some that were more or less obscured in the 1898 tariff. Mr. Fielding told the people that the great necessity of the country in tariff matters was that it should be simplified—simplicity and permanence should be its characteristics; and the hal hal was laughed at the Yankees because they had turned Mr. Cleveland out of the presidency and his pet free trade tariff thrown to the dogs. The McKinley tariff came into effect, as we have shown on July 24, 1907, and no item of it has never since then been changed, nor is it possible to be changed until after the next presidential election in the United States in 1908, if then. Not so in Canada. Since the present Dominion Government came into power in 1896, and since the coming in of the McKinley tariff, Canada has been blessed as follows: (1) The then existing Foster tariff; (2), the June 13, 1898, tariff; (3), the revision of September 4, 1903; (4), the British Preferential tariff; (5), the Intermediate tariff; (6), the General tariff; (7), the French treaty tariff; (8), the German surtax tariff; (9), the rebate tariff; (10), the anti-dumping tariff; (11), the anti-combine tariff; (12), the draw-back tariff; (13), the non-dutiable or free trade tariff, besides which, at last accounts Sir Wilfrid Laurier was about visiting France to make if possible better trade arrangements with that country, extending his pilgrimage to Spain and Italy for similar purpose. And the end is not yet. In fact the government have assumed autocratic powers in making any tariff arrangements that may please them, and they are doing it with a high hand, the most observable feature of the transactions being as near an approach to free trade as possible.

#### THE NEXT ELECTION.

Following the appointment of Mr. J. F. M. Stewart as Liberal organizer in the city of Toronto, an active but silent campaign is being instituted in the city as a preparation for the next election, whenever that may be. There are something over 40,000 voters in Toronto, and the new organizer is sending out canvassers, and, according to a carefully prepared schedule of questions, to gather together a remarkable store of information as to the electors, not as to the electors in bunches, but as to each individual, from his name and address to the trimming of his beard, presuming that he has a beard. From the nature and completeness of the information which he proposes to acquire, Mr. Stewart's co-workers conclude that he has not started any too soon. The ambitious proposal involves the compilation of data in regard to each elector, including his name, address, whether he is an owner or a tenant, whether he is a Liberal or a Tory or doubtful, where he works, what societies or church he belongs to, who can influence his vote, in

what other riding, if any, he votes; and finally a complete description of the suspect, age, height, nationality, build, eyes, hair, moustache and so on. The only thing that the canvasser is not required to do is to get the thumb prints of the elector as required by the identification system in force at police headquarters. When all these things have been learned in regard to each of the 40,000 voters, the theory is that the new organizer will have command of the situation, and the redemption of one or more of the Toronto constituencies—now held by Conservatives in both houses—will be a foregone conclusion.

Mr. Stewart, it will be remembered, was, until he became the Liberal organizer, the valued secretary of the Canadian Manufacturers' Association, and is doing heroic service for his party. It is intimated that a result of his work was the nomination of his father-in-law, Mr. W. H. Shaw, as candidate for the Dominion House of Commons for the seat now occupied by Hon. Geo. E. Foster, late Finance Minister.

#### EDITORIAL NOTES.

Reciprocity would be beneficial to both Canada and the United States. So would the removal of many other obstructions which stupidity imposes on the trade of both countries. But, fortunately for us both, our efforts to prevent ourselves from doing what we want to do are never successful, and so we can get along without reciprocity.—Toronto Globe.

We have frequently heard of the mule that put his foot in his mouth every time he opened it. Canada wants none of the reciprocity obtainable from the United States, or from any other country. What we want is protection that protects—nothing more—nothing less. We can get along without reciprocity if we give our own producers a chance. Our efforts to prevent ourselves from doing what The Globe says we want to do, but what we really do not want to do, and won't have, is meeting with unbounded success. Canada is all right. She desires to work out her own destiny, and will do so eventually and most successfully. "Large oaks from little acorns grow." Canada does not want to obtain something for nothing, nor does she want to give away valuable favors to the detriment of her own people.

The coal miners in British Columbia and Alberta who quit work a couple of weeks ago are still out. They say that they are not on strike, but have simply quit work. The trouble between them and the mine operators seem to be quite as far as ever from adjustment, meantime all those parts of Canada dependant upon these coal mines are in distress for lack of fuel; and even now, if the men returned to their work without further delay, it is probable that much suffering next winter will ensue. The Dominion Government quite recently enacted a law of conciliation for this very emergency, but it don't conciliate worth a cent. The men say that they have no confidence in the law or in the operation of it. Is it possible that Canada is to experience such a lamentable backset as now seems imminent through such a bad piece of business. There is one course that might be adopted to meet the emergency. There are thousands of East Indians, Chinese, coolies and Japanese, who could be used

in coal mining and would be glad of the job. A few ship loads of them would relieve the situation and save Canada. If the so called owners of the coal beds object to the arrangement, the government should sequester the proper pro bono publico. Let it be done if necessary.

A bill affecting patents recently in the British House of Commons passed its second reading a few days ago, and will undoubtedly soon become law. It is aimed at foreign manufacturers of machinery, who, having secured patent rights in Great Britain, continue to supply British factories with machines made outside the country. The measure is designed to compel these manufacturers to make in Great Britain the machines which they sell or lease there. Clause 16 of the bill enacts that at any time not less than three years after the grant of a patent any person interested may apply for the revocation of the patent on the ground that the patented article is manufactured exclusively or mainly outside the United Kingdom. The Controller may revoke the patent unless the patentee proves that the patented article is manufactured to an adequate extent in the United Kingdom or "gives satisfactory reasons why the article is not so manufactured." This is another form for protection.

Speaking of the efforts of the Hamilton & Toronto Electric Railway Co. to gain admittance to Toronto through an act of the Dominion Parliament without consent of the Toronto authorities, a previous effort having been also defeated, the Mail and Empire says:

As in the former, so in the present manoeuvre, Mr. Arch. Campbell is found among the leaders of this inroad upon provincial rights. Yet it is Mr. Campbell's own province whose jurisdiction was thus to be violently broken into, and it was virtually Mr. Campbell's own city that was the main objective of the attack. He himself knows best why he is willing to go so far against public interests and constitutional rights in order to further this enterprise of private parties. His zeal in behalf of the Hamilton & Toronto Electric Railway Co., when its bill was before the House several years ago, was not less intemperate and not more laudable than his present forwardness to serve the Hamilton radial railway interests.

As is well known Mr. Campbell is a Liberal of the Grit sort, but The Mail and Empire neglected to mention that he had the backing of Mr. Henderson, Conservative member for Halton, a close vicinity of Toronto. Mr. Henderson voted against Toronto interests as well as Mr. Campbell. This is the same Mr. Henderson, we believe, who a few days ago, declared himself a favorer of tariff protection and made a speech in favor of and voted in favor of a reduction to 10 per cent. on agricultural implements.

If there are lumber combines in the three prairie provinces they should be broken up ruthlessly. To force settlers to pay excessive prices for lumber in a prairie country subject to blizzards is unmitigated diabolism.—Toronto Globe.

Certainly: break them up ruthlessly or in any other way. Also break up the labor combine in the Western coal mines that is forcing the settlers in the West to pay

excessive prices for fuel in that same prairie country where blizzards abound, that is, if the settlers are not frozen to death in the meantime. It is the unmitigated diabolism of the labor unions that the settlers have to fear more than the lumber combines, which is bad enough God knows.

The British House of Commons on March 22 by 150 to 118 votes rejected on its second reading the bill proposing to put in force the metric system in Great Britain. It was stated during the debate that the principle of the bill had received the support of all the colonies, with the exception of Canada.

The Canadian Pacific is building ships in Britain. That shows how an industry can be killed by protection. At one time Canada could build her own ships.—Toronto Globe.

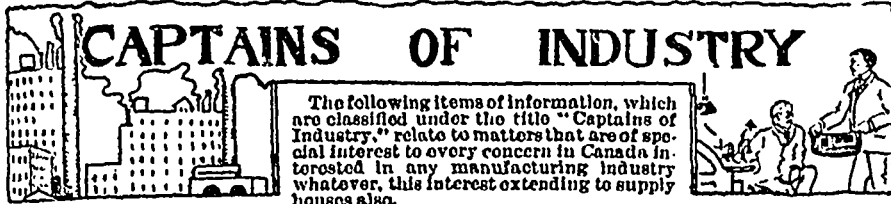
Had the Canadian shipbuilding industry ever been properly protected there would be no necessity for the Canadian Pacific or any other company or concern to go to another country to obtain ships. To-day, under the milk and water policy we have, Norwegian and other foreign ships carry all the coal transported by water from Nova Scotia to Montreal, even to the almost entire exclusion of British vessels, and British built steamers do almost all the inland water transportation of Canada. What Canada needs in the encouragement of her shipbuilding industry is a healthy and vigorous application of the National Policy of the days of Sir John Macdonald.

The Winnipeg Commercial again insists that land values are much inflated in Winnipeg and at other points in the Western Provinces, and that the high prices placed on real estate by speculators are keeping Eastern manufacturers from locating plants at Winnipeg. "Investigations seem to be the order of the day in Canada and the United States, and we think that we are just as much entitled to have our real estate values looked into as our lumber and other prices. It can readily be understood that if real estate dealers are not reasonable in the enhancing of land values, and put the ban of extortionate prices upon their holdings, then the city must suffer to the extent that manufacturers and others are prevented from buying sites here."

Britain's drink bill is £166,425,911 for a population of 43,659,121, or about \$18.53 per head.—Toronto Globe.

Thousands and tens of thousands of Britons from the slums of British cities, are being dumped into Canada, imported largely at the expense of Canada. They do not leave their drinking habits behind, and they will continue to require their \$18.53 per head of liquor, as The Globe tells us. This is a specimen of the free trade The Globe advocates between Canada and the mother country. Why not keep them going westward and give them employment in the coal mines of British Columbia and Alberta where their services can be utilized in providing fuel for those who are likely to suffer for want of it next winter.





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

The Gorman Eckert Co., Limited, London, Ont., are spending upwards of \$60,000 on a new plant on Rector and Campbell Streets. The main building 260x60 feet, three stories is now complete and office and storage buildings are under construction. The plant will be fully equipped for the manufacture and handling of their well-known brands of high grade food products, coffee, spices, extracts, baking powder, etc. Machinery will be installed during May. W. G. Murray is the architect, and Hyatt Bros., contractors.

The Battle Creek Health Food Co., Limited, London, Ont., have machinery on the way that will double the capacity of their new plant.

The Kensington Furniture Co., Goderich, Ont., have the foundations laid for an addition to their plant.

The McClary Mfg. Co., Limited, London, Ont., are building a five story 238x100 feet storage building. It will be completed about June 1.

Mr. Robert Angus, M.E., is now managing director of the Canadian Fire Engine Co., London Ont., succeeding Mr. Geo. Pritchard.

The new factory of the London Fence Co., Limited, Portage la Prairie, Man., has commenced operations.

The London Fence Machine Co., Limited, London, Ont., will build this year.

The Canadian Fire Engine Co., London, Ont., are building a galvanized iron fireproof storage shed, 40x16 feet. The company recently shipped a 600 gallo engine to Vancouver, B.C.

Kernohan & Wilson, wholesale and retail lumber dealers and contractors, London, Ont., have completed a new modern planing mill.

The Ontario Spring Bed & Mattress Co., London, Ont., are installing equipment in their iron bed department, increasing the capacity about 50 per cent.

W. H. Gillies & Co., London, Ont., have purchased the cooperage of C. W. Smith, and will commence operations in June.

J. Harris & Co., London, Ont., junk dealers, have completed a 60x40 two story brick storehouse; also an office building on their new premises.

D. S. Perrin & Co., Limited, London, Ont., are installing new power equipment, including 50 k.w. generator and 50 h.p. motor.

Dymont, Baker & Co., London, Ont., are preparing plans for an extension this year.

The London & Petrolia Barrel Co., Limited, London, Ont., are building a cement tower for steaming barrels. Work has begun on the foundations.

The Office Specialty Mfg. Co., Toronto, have opened a branch at 28 John Street, North, Hamilton, Ont.

A large part of the village of Latchford, Ont., was destroyed by fire recently. Loss over \$100,000.

The Elk Lake Silver Mines, Haileybury, Ont., have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The provisional directors include J. A. Mitchell, Haileybury, Ont., F. Pottago and A. N. Morine, Toronto.

The Globe Casket Co., London, Ont., are building a two story wing, 40x30 feet to enlarge their cloth covering department. Henry Hayman & Co. are the contractors.

Muir's Block, Port Elgin, Ont., was destroyed by fire April 17.

The premises of the Beemer Hotel, Watford, Ont., were destroyed by fire recently.

The Atlas Table Co., Preston, Ont., have been incorporated with a capital of \$40,000, to manufacture furniture, woodenware, etc. The provisional directors include H. J. Hindson, F. Clare and G. Pattinson, Preston, Ont.

The premises of the Coughlan Hotel, the Pelmhurst Hotel, Messrs. Buck & Buck, and several other buildings, Hastings, Ont., were destroyed by fire recently. Loss about \$67,000.

The Collingwood Shipbuilding Co., Collingwood, Ont., will double the capacity of their extensive plant there.

The Automobile Co., Hamilton, Ont., will erect a new factory at a cost of about \$7,000.

The Foster Grocery Co., Brantford, Ont., will erect a new warehouse at a cost of about \$25,000.

The Stratford Gas Co., Stratford, Ont., will erect a large addition to their present plant.

The Avon Hosiery Co., Stratford, Ont., will erect another story to the present factory.

Rosedale, Limited, Hamilton, Ont., have been incorporated with a capital of \$100,000, to carry on the business of a navigation and transportation company. The provisional directors include R. O. MacKay, A. B. MacKay and J. P. Steedman, Hamilton, Ont.

The premises of the York Mfg. Co., 1018 Yonge Street, Toronto, laundry machine manufacturers, were damaged by fire recently. Loss about \$2,000.

The building of F. C. Daniel, Wellington Street East, Toronto, which was recently damaged by fire, will be restored and improved at a cost of about \$20,000.

The Sanitary Packing Co., Weston, Ont., will erect a new plant this spring at a cost of about \$20,000. The entire plant will comprise a two story warehouse and storeroom 100x30 feet, a machinery and operating building, 75x40 feet; a process room, 32x27 feet, connected with main factory by an archway; all constructed of corrugated iron, and a brick boiler room, 32x27 feet.

The Chaudiere Mines, Limited, Ottawa, have been incorporated with a capital of \$1,500,000, to carry on a mining, milling and reduction business. The provisional directors include J. W. Wylie, P. O'Reilly and C. E. Plain, Ottawa.

The foundry and machine shop of the Robertson Machinery Co., Welland, Ont., were destroyed by fire April 19.

The congregation of the Baptist church, Port Arthur, Ont., will erect a new edifice, 93x30 feet, at a cost of about \$30,000.

The Wolverine Brass Works, Grand Rapids, Mich., are considering the establishment of a branch at Niagara Falls, Ont. If this is done a factory 100x50 feet and a foundry 60x30 feet will be erected.

The Canadian Pacific Cobalt Development Co., Ottawa, have been incorporated with a capital of \$3,500,000, to carry on a mining, milling and reduction business. The provisional directors include R. W. Eyre, E. E. Wallace and H. C. Macdonald, Toronto.

The annual report of the Canadian Westinghouse Co., Hamilton, Ont., shows that during the year 1906 the capital of the company was increased from \$2,500,000 to \$5,000,000. The shipments increased about 40 per cent., as compared with the previous year, and about 100 per cent. as compared with 1904. The unfilled orders on hand January 1, 1907, aggregated \$1,637,658.

A power plant will be installed in the village of Streetsville, Ont., at a cost of about \$20,000.

Messrs. Park Bros., Chatham, Ont., have been awarded the contract for constructing and installing the new filter to be placed in the local water works, the price being \$2,450.

The D. Hibner Furniture Co., Berlin, Ont., have been incorporated with a capital of \$200,000, to manufacture furniture, etc. The provisional directors include D. Hibner, J. H. Wiederhold, and H. Foreman, Berlin, Ont.

The Canadian Pacific Railway Co. may erect a station and an hotel at Fort William, Ont.

The London Street Railway Co., London, Ont., will erect an addition to their building and improve their power plant at a cost of about \$50,000.

The veneer factory of Messrs. Mulholland & Co., Sundridge, Ont., was destroyed by fire recently. Loss about \$16,000.

The National Drug Co., Toronto, the big \$6,000,000 merger organized some months ago, is negotiating for the purchase of the Henry K. Wampole drug manufactory at Perth, Ont.

The pulp mill, No. 1, of the Sault Ste. Marie Pulp & Paper Co., Sault Ste. Marie, Ont., was destroyed by fire April 24. Loss about \$200,000.

The sawmill of A. G. Bishop, Conn, near Mount Forest, Ont., was destroyed by fire April 22.

The Ontario Electric Smelting, Milling & Refining Co., Ottawa, have been incorporated with a capital of \$2,000,000, to carry on a smelting, refining and milling business. The provisional directors include J. C. Scott, J. Kent, and J. Bishop, Ottawa.

Perine's Mills, Doon, Ont., will be incorporated with a capital of \$250,000, and will be known as the Doon Twine & Cordage Co., Limited.

The Grand Trunk Railway Co. will install a new electric block system on their line between Toronto and Niagara Falls, Ont., a distance of 84 miles. The cost will be in the neighborhood of \$175,000.

It is stated that the Pere Marquette Railway will build two bridges at London, Ont., at a cost of about \$50,000.

Negotiations are being carried on between the town of Orangeville, Ont., and the Huron & Ontario Railway Co., as to making the former a junction point for the two main lines, namely, east and west from Windsor—north and south from Toronto and Whitby, Ont.

The Gordon Development Co., Ottawa, have been incorporated with a capital of \$499,000, to manufacture lumber, timber, woodenware, etc., and to carry on a mining, milling and reduction business. The provisional directors include H. S. Conn, R. V. Sinclair, and J. Thompson, Ottawa.

The waterworks system, Hintonburg, Ont., will be extended at a cost of about \$10,000.

The ratepayers of Niagara Falls, Ont., will vote on a by-law to raise \$35,000 for improvements to the waterworks system.

The town of Berlin, Ont., have purchased the plant of the Berlin & Waterloo Street Railway Co., for the sum of \$75,200.

Automatic Sprinklers, Limited, Toronto, have been incorporated with a capital of \$100,000, to manufacture automatic sprinklers, etc. The provisional directors include A. Jephcott, J. P. Murray and T. Roden, Toronto.

A sewerage system will be installed in the town of Orillia, Ont.

The Blue Bell Gold Mines, Toronto, have been incorporated with a capital of \$5,000,000, to carry on a mining, milling and reduction business. The provisional directors include D. A. Rose, F. W. Rose and H. D. McCormick, Toronto.

The Big Hundred Larder Gold Co., New Liskeard, Ont., have been incorporated with a capital of \$2,500,000, to carry on a mining, milling and reduction business. The provisional directors include J. Matthews, A. J. Thorpe and W. V. Cragg, New Liskeard, Ont.

The London Concrete Machinery Co., London, Ont., have secured a site on Hamilton Road, on which they will erect a two story concrete block building with reinforced concrete floors. The building will have a frontage of 75 feet, and two wings extending back 100 feet.

C. S. Hyman & Co., London, Ont., are planning to increase the capacity of their tannery this year by 1,000 hides a week. Among other things, they have just installed an automatic bleach, and a cyclone hair dryer, an additional story, 125x25, will be added to the cut stock department shortly. New hide cellars are contemplated.

The Laplata Cobalt Mines Co., Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include G. H. Sedgewick, A. T. Struthers, and W. H. Syms, Toronto.

The Berlin District Steam Co., Berlin, Ont., have been incorporated with a capital of \$100,000, to construct works for the production of light, heat, power, steam, hot water, etc. The provisional directors include A. Bricker, J. D. Moore and W. F. Wilson, Berlin, Ont.

The Dominion Larder Gold Mines, Cobalt, Ont., have been incorporated with a capital of \$3,000,000, to carry on a mining, milling

and reduction business. The provisional directors include N. R. Green, Cobalt, Ont., W. Ryan, Pembroke, Ont., and W. Davies, Haileybury, Ont.

The Empire Mfg. Co., London, Ont., makers of plumbers', steamfitters' and corporation brass work, are building a new plant on the interswitching between the Grand Trunk and the Canadian Pacific Railway. The main building will be brick, two stories and basement, 200x60 feet. The foundry will be one story, 100x60 feet; the offices will be in a separate building 40x30 feet, two stories. Excavation work has commenced. Moore & Henry, London, are the architects.

The Niagara Falls Mining & Drilling Co., Niagara Falls, Ont., have been incorporated with a capital of \$40,000, to carry on a mining, milling and reduction business. The provisional directors include J. H. Richard, P. Charpentier, and T. Mascott, Niagara Falls, Ont.

The Monarch Knitting Co., Dunnville, Ont., have been incorporated with a capital of \$250,000, to manufacture cotton, and woolen fabrics, etc. The provisional directors include F. R. Lalor, G. H. Orme and J. A. Burns, Dunnville, Ont.

The Lea Pickling & Preserving Co., Simcoe, Ont., have been incorporated with a capital of \$10,000, to manufacture pickles, jams, sauces, etc. The provisional directors include R. Hamilton, J. Hawthorne and F. D. Lea, Simcoe, Ont.

Foundations are being laid for a new wing to the factory of the Mooney Biscuit & Candy Co., Limited, Stratford, Ont. It will be three stories, 132x74 feet, mill construction, costing about \$10,000. New machinery to a value of about \$20,000, will be installed. R. Thomas Orr is the architect, and J. L. Young is the contractor. A new boiler will be installed, and the offices will be remodelled.

The Globe Wernicke Co., Limited, Stratford, Ont., will increase their output 50 per cent. this year.

Anglo Canadian Cobalt Mining Co., Toronto, have been incorporated with a capital of \$1,100,000, to carry on a mining, milling, and reduction business. The provisional directors include J. T. Richardson, D. C. Ross and L. B. Spencer, Toronto.

The International Vencer & Lumber Co., Renfrew, Ont., have been incorporated with a capital of \$100,000, to manufacture lumber, timber, woodenware, etc. The provisional directors include T. E. Porter, W. H. Burgin, and D. A. MacArthur, Philadelphia, Pa.

The Brockville Malleable Iron Co., Brockville, Ont., have been incorporated with a capital of \$60,000, to manufacture iron, brass, bronze and aluminum castings, machinery, tools, implements, etc. The provisional directors include J. Connolly, J. A. MacKenzie, and G. I. Mallory, Brockville, Ont.

The Stratford Brick & Tile Co., Stratford, Ont., will build two new brick kilns this spring.

Jas. A. Cline, Limited, are preparing plans for a two story brick building, 80x40 feet, on concrete foundations. The first story will be used for office and shipping purposes, and the second for upholstering, leaving the old building for the manufacture of furniture frames. Orr & Russell, Stratford, are the architects.

Messrs. Christie Henderson & Co., Toronto,

have been incorporated with a capital of \$100,000, to manufacture lime, stone, brick, builder's supplies, etc. The provisional directors include C. C. Henderson, Acton, Ont., G. H. Kilmer and W. H. Irving, Toronto.

The Elmira Interior Hardware Co., Elmira, Ont., have been incorporated with a capital of \$100,000, to manufacture furniture, hardwood fittings for banks, churches, offices, etc. The provisional directors include M. Weber, A. J. Kimmell and P. Lamberger, Elmira, Ont.

The International Snow Plow Mfg. Co., Stratford, Ont., have been incorporated with a capital of \$250,000, to manufacture snow plows, cars, trucks, wheels, axles, couplings, brakes, etc. The provisional directors include J. W. Mowbray, W. J. Hackwell and W. Dyer, Stratford, Ont.

J. F. Scholz, whip manufacturer, Stratford, Ont., is installing two new leather plants.

The St. Thomas Packing Co., Limited, St. Thomas, Ont., have secured about 5 acres, on which they will build an abattoir and packing house, and a fertilizer plant. The abattoir and packing house building will be 100x80 feet, concrete blocks, one story. The new plant will represent an investment of about \$20,000, and is expected to be completed about October 1. N. R. Darrach, St. Thomas, is the architect.

Soo Larder Lake Exploration Co., Sault Ste. Marie, Ont., have been incorporated with a capital of \$150,000, to carry on a mining, milling and reduction business. The provisional directors include A. D. McNabb, G. Dawson and A. R. Johnson, Sault Ste. Marie, Ont.

The Ore Reduction Co., Toronto, have been incorporated with a capital of \$250,000 to carry on a mining, milling and reduction business. The provisional directors include R. E. Kemerar, E. S. Francis and W. R. P. Parker, Toronto.

The Parry Sound Transportation Co., Toronto, have been incorporated with a capital of \$150,000, to construct vessels, boats, scows, etc., and to carry on a warehousing business. The provisional directors include J. B. Miller, F. B. Polson and W. B. Ladd, Toronto.

The Smith-Runciman Co., Toronto, have been incorporated with a capital of \$75,000 to manufacture millinery, dry goods, etc. The provisional directors include H. W. Smith, T. Runciman and R. S. Smith, Toronto.

The Canadian Iron & Foundry Co., Limited, St. Thomas, Ont., are building a two story brick pattern storage house.

The St. Thomas Acetylene Mfg. Co., Limited, St. Thomas, Ont., recently shipped a 300 light machine to Bermuda, B.W.I. The third shipped to Bermuda by this company.

Mr. D. C. Wallace has been appointed manager of the St. Thomas Acetylene Mfg. Co., Limited, St. Thomas, Ont., succeeding Mr. Morton who died in March.

The Concrete Engineering & Construction Co., Toronto, have been incorporated with a capital of \$10,000, to manufacture reinforced concrete, trussed steel iron, etc. The provisional directors include A. F. R. D. Moorhead and R. H. Paterson, Toronto.

The National Plumbing Supply Co., Toronto, have been incorporated with a capital

of \$40,000, to manufacture brass, copper, tin, iron, soil pipe, plumbers' supplies, etc. The provisional directors include E. A. Roger, P. D. Ivey and S. C. Crocker, Toronto.

The Frame & Hay Fence Co., Stratford, Ont., have been incorporated with a capital of \$10,000, to manufacture wire fences, gates, fencing machinery, etc. The provisional directors include R. S. Frame, D. D. Hay, and K. C. Turnbull, Stratford, Ont.

The Fohkummah Oil Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture petroleum, oil, gas, etc. The provisional directors include F. H. Lytle, A. C. Bedford-Jones and L. Duff, Toronto.

The Silver Belt Cobalt Mining Co., Toronto, have been incorporated with a capital of \$1,500,000, to carry on a mining, milling and reduction business. The provisional directors include G. H. Kilmer, W. H. Irving and H. W. Shapley, Toronto.

H. T. Reason & Co., London, Ont., manufacturers of paper boxes, bags, and envelopes, are installing new machinery to double their capacity this year.

The Regal Glove & Mitt Co., London, Ont., are installing new machinery. This year they will extend their capacity and commence the manufacture of workmen's shirts and overalls.

The Cobalt Lorrain Mining & Development Co., Cobalt, Ont., have been incorporated with a capital of \$1,500,000, to carry on a mining, milling and reduction business. The provisional directors include H. A. B. Coake, J. Hylands and J. Martin, Cobalt, Ont.

Wallace Blake Shouldice, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture drygoods, etc. The provisional directors include E. B. Wallace, T. J. Blake, and J. W. Shouldice, Toronto.

Charles Bush, Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture inks, machinery, printers' presses, rollers, types, etc. The provisional directors include W. M. Bush, C. Bush, and C. A. Eskmore, Toronto.

Among the new buildings to be erected in Port William, Ont., during 1907, are the Grand Trunk Pacific elevator, 7,000,000 bushels, cost \$2,000,000; shipyards and dry dock, \$1,000,000; Imperial Steel & Iron Works, \$500,000; Consolidated Elevator Co., \$200,000; Canada Iron & Foundry Co., \$1,000,000; Ogilvie Flour Mills Co., \$175,000; Canadian Pacific Railway coal docks and sheds, \$75,000; Muir-head & Black elevator, \$100,000.

The Beamsville Larder Lake Prospecting Co., Beamsville, Ont., have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The provisional directors include S. B. Bisbee, R. H. Davy and H. V. Robins, Beamsville, Ont.

The Crown Canister Co., Dundas, Ont., have been incorporated with a capital of \$100,000, to manufacture canisters, dies, and various iron goods, etc. The provisional directors include W. B. Bentley, J. Watt, Brantford, and S. Metcalfe, Galt, Ont.

In addition will be erected to St. Andrew's church Brantford, Ont., at a cost of \$25,000.

A new eight roomed school will be erected at Midland, Ont., at a cost of about \$30,000.

The Dominion Garment Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture woollens, garments, wearing apparel, etc. The provisional directors include F. D. Byers, F. H. Lytle and A. C. Bedford-Jones, Toronto.

The Wahcondah Steamship Co., Hamilton, Ont., have been incorporated with a capital of \$100,000, to carry on the business of a navigation and transportation company. The provisional directors include W. G. Walton, F. A. Magee, and J. Milne, Hamilton, Ont.

The Larder Gold Queen Limited, New Liskeard, Ont., have been incorporated with a capital of \$1,500,000, to carry on a mining, milling and reduction business. The provisional directors include T. McCamus, J. Matthews and D. Stewart, New Liskeard, Ont.

A new public school will be erected at Norway, Ont., at a cost of \$17,000.

The Lake of the Woods Milling Co., Keewatin, Ont., will have their new \$1,250,000 mill in operation shortly.

The Canadian Smelting & Refining Co., Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include C. W. Thompson, H. B. Johnson and H. T. Hunter, Toronto.

Messrs. Kurtze & McLean, Stratford, Ont., have been incorporated with a capital of \$40,000, to manufacture acetylene, gasoline and gas plants, gas stoves, fixtures, motors, etc. The provisional directors include J. L. Youngs, Stratford, Ont., C. F. R. Kurtze, and W. J. McLean, St. Williams, Ont.

The Ontario Steel Tubular Axle Co., Belleville, Ont., have been incorporated with a capital of \$20,000, to manufacture steel tubular axles, etc. The provisional directors include H. P. Thomas, R. E. Colling, and W. J. Thomson, Belleville, Ont.

The Preston Car & Coach Co., Preston, Ont., have been incorporated with a capital of \$200,000, to manufacture railway and street cars, snow plows, snow sweepers, carriages, trucks, wagons, ladders, etc. The provisional directors include G. A. Clare, A. N. W. Clare, and C. R. Hanning, Preston, Ont.

The Helion Electric Co., Toronto, have been incorporated with a capital of \$1,500,000, to manufacture electric and gas machinery and appliances, etc. The provisional directors include T. M. Moore, D. Stevenson and J. H. Gilliam, Toronto.

The Gordon Pulp & Paper Co., Dryden, Ont., have been incorporated with a capital of \$1,000,000, to manufacture pulp, paper, etc. The provisional directors include A. I. McKinley, Sarnia, Ont., S. G. M. Nesbitt, Brighton, Ont., M. W. Murdoff, Trenton, Ont.

The Pleating & Mfg. Co., Toronto, have been incorporated with a capital of \$10,000, to manufacture dry goods, pleating machines, etc. The provisional directors include J. J. Eaton, F. H. Hurlburt, W. H. Miller, Toronto.

The Greater Canada Mining Co., Toronto, have been incorporated with a capital of \$2,500,000, to carry on a mining, milling and reduction business. The provisional directors include J. E. Day, J. M. Ferguson and A. W. Bixel, Toronto.

The Lehigh Cobalt Silver Mines, Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include A. L. Bitzer, M. F. Pumaville, and G. Grant, Toronto.

Canuck Silver Mines, Cobalt, Limited, Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include A. F. Lobb, A. D. Wilson, Toronto, and G. A. Loney, Sudbury, Ont.

The North Star Larder Lake Mining Co., Toronto, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include J. M. Ferguson, J. E. Day and A. W. Bixel, Toronto.

The wholesale grocery of Messrs. N. Quintal & Sons, Montreal, was damaged by fire April 20 to the extent of about \$100,000.

J. Jacobs, Montreal, has purchased the building occupied by D. Morrice & Co., Notre Dame Street West, as well as the adjoining lot for the sum of \$100,000. It is understood that two more stories will be added to the building.

A new Y.M.C.A. building will be erected in Sherbrooke, Que., at a cost of about \$30,000.

A sewerage system will be installed at Aylmer, Que., at a cost of about \$60,000.

The Mount Royal Box & Lumber Mfg. Co., Montreal, have been incorporated with a capital of \$475,000, to manufacture timber, lumber, doors, sashes, blinds, etc. The charter members include J. Godbout, jr., J. P. Abel and E. Abel, Montreal.

I. L. Lafleur, Limited, Montreal, have been incorporated with a capital of \$80,000, to manufacture paints, oils, chemicals, dynamite, gunpowder, motors, dynamos, electrical plants, machines, etc. The charter members include L. T. Marechal, I. L. Lafleur, and H. Gratton, Montreal.

Messrs. Westinghouse, Church, Kerr & Co., of Canada, Montreal, have been incorporated with a capital of \$2,500,000, to manufacture engines, machinery, tools, implements, metals, boilers, etc., and to carry on the business of electrical, civil and hydraulic engineers. The charter members include P. Davidson, A. Wainwright and C. F. Larkin, Montreal.

The Eastern Cigar Co., Marieville, Que., have been incorporated with a capital of \$15,000, to manufacture tobacco, cigars, etc. The charter members include N. Prefontaine, A. H. Hubert and J. N. Theberge, Marieville, Que.

The Frontenac Gas Co., Quebec, Que., will install a new plant at a cost of about \$1,000,000.

The Dominion Bridge Co., Montreal, have taken over the bridge and structural steel department of the Locomotive Machine Co., Long Point, Que.

The National Specialty Co., Montreal, have been incorporated with a capital of \$10,000, to manufacture machines, instruments, stationery, etc. The charter members include H. E. Duquette, A. Delorine and H. Prevost, Montreal, Que.

The Imperial Supply Co., Montreal, have been incorporated with a capital of \$100,000, to manufacture railway, marine and contractors' supplies, etc. The charter members include

clude H. H. Bradfield, Morrisburg, Ont., W. R. Duckworth, and H. G. Myers, Montreal.

Messrs. McRae, Chandler & McNeil, Montreal, have been incorporated with a capital of \$100,000, to carry on a contracting and constructing business. The charter members include J. A. McRae, Niagara Falls, Ont., W. H. Chandler and J. H. McNeil, Toronto.

In order to keep pace with the requirements of their increase of business the John McDougal Caledonian Iron Works Co., Limited, of Montreal, have opened sales offices at the following places:—Montreal, 82 Sovereign Bank Building; Toronto, 810 Traders Bank Building; Winnipeg, Man., 251 Notre Dame Street; Vancouver, B.C., 416 Seymour Street; Nelson, B.C., Josephine Street; New Glasgow, N.S., Telephone Building. Their principal products are waterworks equipment and all kinds of hydraulic and mill machinery.

The Caguan Tramway Co., Montreal, have been incorporated with a capital of \$250,000, to construct tramways and to manufacture automobiles, carriages, vans, trucks, etc. The charter members include W. N. Tilley, S. Johnston and A. J. Thomson, Toronto.

The Structural Steel Co., Montreal, have been incorporated with a capital of \$500,000, to erect steel and iron structures and to manufacture iron, steel, etc. The charter members include W. C. McIntyre, P. Johnson and F. G. Bush, Montreal.

The Canada Loose Leaf Co., Montreal, have been incorporated with a capital of \$20,000, to manufacture office furniture, stationery, bound books, carbon paper, typewriter supplies, etc. The charter members include F. Harcourt, Westmount, Que.; L. J. Dunbar and A. G. Cameron, Montreal.

The Atlas Publishing Co., Montreal, have been incorporated with a capital of \$20,000, to print atlases, maps, guides, books, etc. The charter members include F. A. Genereux, E. Schmidt and A. Merrill, Montreal.

It is stated a good seam of coal has been struck at Point Aconi, near North Sydney, N.S.

The Cape Breton Electric Co., Sydney, N.S., are extending their lines so that they may supply power to North Sydney and Sydney Mines.

The waterworks system, Truro, N.S., will be extended and improved at a cost of about \$15,200.

The shingle mills of the Prescott Lumber Co., New Mills, N.B., were destroyed by fire recently.

The premises of the Restigouche Woodworking Co., Dalhousie, N.B., were destroyed by fire recently. Loss about \$80,000.

Forty-two bridges will be built in New Brunswick in the near future. The total expenditure will be about \$884,200.

The Dominion Bridge Co., Montreal, have been awarded the contract for erecting the metal superstructure for the St. George Lower Bridge, St. George, N.B.

Messrs. Moore & Hills, Cartwright, Man., have been incorporated with a capital of \$50,000, to manufacture goods, wares, merchandise, etc. The provisional directors include R. F. Moore, J. J. Hills and J. E. Cannon, Winnipeg, Man.

The Protection Concrete Co., Winnipeg, Man., have been incorporated with a capital

of \$100,000, to manufacture cement blocks, bricks, tiles, lime, gravel, stone, clay, etc. The provisional directors include J. Robinson, H. F. Osler and H. B. Rugh, Winnipeg, Man.

The Roy Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$5,000, to manufacture chemicals, drugs, medicines, surgical instruments, etc. The provisional directors include S. L. Gregory, H. D. Scott, and R. F. Rand, Winnipeg, Man.

The city council, Winnipeg, Man., have decided that the Great Northern Railway Co. must build six subways in connection with their entrance into the city.

The ratepayers of Morden, Man., will vote on two by-laws, one to raise \$20,000 for the construction of granolithic sidewalks and the other to raise the same amount for the construction of an electric lighting plant.

Canadian Consolidated Flour Mills, Limited, Winnipeg, Man., have been incorporated with a capital of \$1,000,000, to carry on a general milling business, and to build mills, elevators, warehouses, etc. The provisional directors include J. H. Davidson, Neepawa, Man., T. C. Bullock, Crystal City, Man., and C. C. Smith, Carnduff, Sask.

The Empire Jewelry Case Co., of Canada, Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture wooden, paper and leather goods, jewelry cases, show cases, etc. The provisional directors include J. McLean, D. R. Dingwall, and J. D. Barker, Winnipeg, Man.

Messrs. R. J. MacPherson & Co., Winnipeg, Man., have been incorporated with a capital of \$5,000, to carry on a printing, lithographing and engraving business. The provisional directors include R. J. MacPherson, A. H. Bailey and C. E. Saunders, Winnipeg, Man.

The city council, Winnipeg, Man., have approved of the following expenditures for 1907:—Block pavements, \$53,072; macadam pavements, \$53,352; asphalt pavements, \$1,407,865; granite stone walks, \$93,055; plank walk, \$22,263; grading, \$4,075, and sewers, \$151,724.

Winnipeg, Man., is to have a new provincial jail to accommodate about 150 prisoners.

The Citizens Fuel Co., Winnipeg, Man., have been incorporated with a capital of \$10,000, to carry on a wholesale lumber and fuel business and to manufacture stone, brick, tile pipes, etc. The provisional directors include E. G. C. Elgood, H. C. Lawrence and W. W. Richardson, Winnipeg, Man.

The Northern Trading Co., Winnipeg, Man., have been incorporated with a capital of \$500,000, to carry on a general trading business, and to manufacture electrical apparatus, gold, silver, copper, iron, coal, oil, timber, ties, stone, sand, clay, etc. The provisional directors include T. S. Ewart, C. W. N. Kennedy and C. Vokes, Winnipeg, Man.

Manitoba Linseed Oil Mills, Limited, Winnipeg, Man., have been incorporated with a capital of \$200,000, to manufacture all articles made of linseed, varnishes, stock food, etc. The provisional directors include K. B. Stoddart, J. Carr, and R. W. Paterson, Winnipeg, Man.

The Royal Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture steam boilers, meters, dynamos, engines, electric appliances, implements,

etc. The provisional directors include H. T. Helgeson, Regina, Sask., J. R. Norris, Winnipeg, Man., and C. S. Whiteworth, Cedar Falls, Iowa.

Imperial Investments, Limited, Winnipeg, Man., have been incorporated with a capital of \$100,000, to carry on a mining and lumbering business, etc. The provisional directors include C. W. Stuart, C. Devine and A. M. S. Ross, Winnipeg, Man.

Messrs. T. Meredith & Co., Winnipeg, Man., have been incorporated with a capital of \$1,000,000, to manufacture lumber, timber, tools, machinery, implements, etc. The provisional directors include I. Meredith, W. W. Fraser and M. J. Armington, Winnipeg, Man.

The Mineral King Nickel Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to carry on a mining and metallurgical reduction business. The provisional directors include A. Haggart, W. W. Whitlock and A. Sullivan, Winnipeg, Man.

The J. Thompson Co., Winnipeg, Man., have been incorporated with a capital of \$50,000, to manufacture cast-iron, robes, hearses, ambulances, etc. The provisional directors include J. Thompson, J. F. Thomson and J. Wilson, Winnipeg, Man.

Messrs. McCulloch & Boswell, Winnipeg, Man., have been incorporated with a capital of \$60,000, to manufacture motor engines, machinery, automobiles, bicycle carriages, etc. The provisional directors include J. Boswell, D. Boswell and W. Jackson, Winnipeg, Man.

The Mack Lumber Co., Winnipeg, Man., have been incorporated with a capital of \$100,000, to manufacture lumber, timber, doors, sashes, shingles, laths, trim, poles, etc. The provisional directors include P. C. McGillivray, C. J. McCollam and I. S. Pariz.

A new Oddfellow's Hall will be erected in Saskatoon, Sask., at a cost of about \$15,000.

The Herald printing plant, the Mason Hall, and several other buildings, Carleton Place, Sask., were destroyed by fire recently. Loss about \$25,000.

An addition will be erected to the warehouse of the Canadian Pacific Railway Co., Lethbridge, Alta., at a cost of about \$100,000.

The sash and door factory of the Arch Woodworking Co., Arcola, Sask., was destroyed by fire April 19. Loss about \$500,000.

Regina, Sask., has granted the Spence & Eaton Co., an exclusive franchise for a period of 15 years to supply gas to the town.

The electric light plant, Indian Head, Sask., will be extended at a cost of about \$25,000.

A gas producer plant will be erected at Edmonton, Alta., as the light capacity of the present power plant is not sufficient.

An independent telephone company is seeking a franchise at Pincher Creek, Alta. S. W. Berry, Pincher Creek, is interested.

The Macleod Telephone Co., Lethbridge, Alta., are making arrangements to extend their plant in shape to connect with the telephone line to the north of the town.

The Alberta Government has set aside \$200,000 for the construction of telephone lines into the province. Also a number of long distance lines are under construction and several others are being planned.

The Holden & Vegreville Telephone Co.

Holden, Alta., have been organized for the purpose of installing a local system; also a long distance line to Vegreville, Alta., a distance of 25 miles. The officers of the company include N. M. Smith; C. N. Breslin and M. Allan.

Messrs. Flanagan & Wilson, Saskatoon, Sask. are preparing plans for a new hotel to be erected there at a cost of about \$100,000.

A large power house will be erected in connection with the Canadian Pacific Railway Hotel at Victoria, B.C., at a cost of about \$40,000.

The Stave Lake Power Co., who are now engaged in establishing a 15,000 h.p. hydro-electric plant at Stave Falls, B.C., will shortly call for tenders for supplying the generating plant and turbines. Three 5,000 k.w. generators will be installed in the power house.

## PUBLICATIONS.

The Bureau of Census and Statistics has issued a most illuminating blue book giving statistics as to wage-earners in Canada by occupations according to the figures of the last decennial census. Tables are given showing the number of persons engaged in various callings, the amount of earnings by each class, etc. The figures cover all wage-earners sixteen years of age and over except in the manufacturing class, where the minimum age limit considered is fifteen years. The average yearly earnings at regular work of all classes of occupations is \$387.16 for males and \$181.93 for females. Trade and transportation pays an average wage of \$503.22 for every male employe. Professional men, including clergy, government employes, musicians, teachers, engineers, etc. earn \$676.88 per year on the average. The average earnings of males employed in manufacturing are \$403.14, in agriculture \$207.55, in domestic and personal service \$272.46. Of the whole number of wage-earners, 114,930, the males constitute 81.17 per cent., and the females 18.83 per cent., and comparing the totals of wage-earners of both sexes, by classes, with the totals of all classes, it is found that the agricultural class gives employment to 8.93 per cent., the domestic and personal class to 25.61 per cent., the fisheries class to .91, the forestry and lumbering class to 2.02 per cent., the manufacturing class to 33.83 per cent., the mining class to 2.93 per cent., the professional class to 6.34 per cent., and the trade and transportation class to 19.37 per cent. The whole amount of wages earned in the census year at regular and extra employment by the 114,930 persons, fifteen years of age and over, whose records were fully taken, was \$55,534,450, which is nearly \$20,000,000 more than the net debt of the Dominion at the end of the last fiscal year; and, allowing the same average earnings for the 107,661 persons whose records were incomplete in the census schedules, the aggregate earnings of the 922,501 persons recorded by occupations as wage-earners would reach \$321,500,000, or \$55,000,000 more than the net national debt.

**FILING DEVICES & SYSTEMS.** Henry & Adams, 10 Adelaide Street West, Toronto, are sending out a 72-page catalogue showing the best manufactured by the Shaw-Walker Co., Chicago, and handled by them in Canada.

This catalogue is very complete and instructive, showing filing systems for almost any thing to be filed. The advantages of the vertical filing systems for various needs are demonstrated followed by illustrations and descriptions of horizontal sections for various needs. Card index systems are given considerable space and these too are well illustrated showing at a glance their value and economy. The entire catalogue is handsomely illustrated and should be in the hands of every one interested in office labor saving devices.

**BRIEN FURNACES.** Brien hot air and combination furnaces are well described in an illustrated catalogue issued by the Niagara Falls Heating & Supply Co., Limited, Niagara Falls, Canada. Various accessories are also described and illustrated together with the cost of the various parts. Tables of dimensions and capacity of steam boilers and hot water boilers are also given.

**CORE DRILLS.** "Davis Calyx Diamondless Core Drills" is the subject of a 54-page catalogue from the Canadian Rand Drill Co., Limited, Montreal, in which some unique and exclusive features of these drills are dwelt upon, together with an interesting description of the drills and their operation. Some views are shown of this drill in actual operation. A section of the catalogue is devoted to rand air compressors and a list of the various publications completes subject matter.

**POWER AND TRANSMISSION.** The March issue of the house organ of the Dodge Mfg. Co., Mishawaka, Ind., who are represented in Canada by a manufacturing plant and various branch offices. The power department of the Perfection Biscuit Co.'s plant at Fort Wayne, in which Dodge apparatus plays an important part is described in it.

**CONVEYING MACHINERY.** Bulletin No. 17 of Robins Conveying and Elevating Machinery in Pulp and Paper mills has been issued by the Robins Conveying Belt Co., New York. It is devoted to the economical handling of material in these industries showing how Robins apparatus may be used to advantage.

**Book Catalogue.** The new books issued by the Hill Publishing Co., New York, are listed and some of them described in a new catalogue containing 168 pages, they cover many lines of the metal working industries and enter the field of engineering, mining, and allied interests together with those dealing with industrial matters such as cost-keeping, etc.

**YEAR BOOK.** The Merchants' Association of New York have issued their year book for 1907 showing the annual report of the President which takes up the various questions discussed during the past year and gives further the Treasurer's statement, the by-laws and a list of the members.

**A STUDY IN GRAPHITE.** An impartial treatise on the subject of graphite lubrication with tests by Prof. W. F. M. Goss, of Purdue University, is the latest publication from the advertising department of the Joseph Dixon Crucible Co., Jersey City, N.J. A dissertation by Prof. Goss is followed by a complete description of the test, together with illustrations of the testing machines used. The conditions of the bearings and journal used after the test are revealed by photographs. This booklet is being sold at 25 cents a copy but to readers of THE CANADIAN MANUFACTURER, mentioning this paper, it

will be sent free of charge on application to the above company.

**TESTING FOR SAFETY.** The Norton Co., Worcester, Mass., are sending out a booklet describing the method of testing grinding wheels made of alundum in which some interesting information is given.

**INSURANCE DEPARTMENT.** A booklet has just been issued by the Canadian Manufacturers' Association showing the reasons for the establishment of an insurance department to the association and points out the need of careful attention to details in connection with the making of insurance policies.

**THIRTY-SEVENTH ANNUAL REPORT.** The Royal Bank of Canada have issued their statement for 1906 in a beautifully arranged and attractive circular of 68 pages printed on heavily coated paper. Interesting financial data is given showing the standing of the bank together with lists of branches, correspondence, and shareholders. A department is devoted to imports into Canada during the years between June 30, 1899 and 1906. A portion is also devoted to the Canadian Customs tariff showing the duty on various lines and the more important articles on the free list.

**A VISIT.** A visit to the works of the Canadian General Electric Co., and to the factory of the Canada Foundry Co., as described by Augustus Bridle and reprinted from the Toronto Globe is attractively brought out in a beautifully illustrated catalogue of 30 pages issued by the two companies named. High class half tones illustrating the various departments appear in profusion throughout the catalogue. Descriptive matter is particularly interesting and should appeal to any way interested in the products of these large industrial concerns.

**WESTINGHOUSE BULLETINS.** The Canadian Westinghouse Co., Hamilton, Ont., have just compiled circulars dealing with air-blast transformers and rotary converters.

**CONCRETE MACHINERY.** The Ideal Concrete Machinery Co., London, Ont., are presenting in a 64-page beautifully illustrated catalogue the "Concrete Building Block of the Future," as turned out in their concrete block machines. The catalogue describes various outfits for doing this work, giving the price in each case. The reproduction of the block and its various adaptations are well shown. Some illustrations of beautiful residences are also given.

**METHODS AND WORK.** Pamphlet No. 16, gives an account of the methods and work of the engineering organization of Dodge & Day, Philadelphia, Pa., illustrating some recent work undertaken by this organization and carried out by them on a large scale.

**FIVE THOUSAND FACTS ABOUT CANADA.** In compiling this remarkable little book, Mr. Frank Yeigh, of Toronto, has performed a service to the country which should meet with a response in the form of an order for a copy from all loyal Canadians. The facts are conveniently grouped under various headings making them easily accessible. A glance through the book fills one with enthusiasm at the present prosperity and future prospects of the Dominion. This valuable book is published by the Canadian Facts Publishing Co., 667 Spadina Avenue, Toronto, where it may be had at the rate of 25 cents a copy.



**THE MAKING OF A MERCHANT.** Forbes & Co., book publishers of Chicago, have just placed on the market "The Making of a Merchant," by Harlow N. Higinbotham, price \$1.50 net. This book is designed to be not only an inspiration to young men starting out in business career but a source of information and guidance to those already established in business. The author is well qualified to give such suggestions and advice which are given in such a manner that no one can read this book without feeling in some manner grateful to its author.

**KELLY'S DIRECTORY.** The twenty-first edition of the Merchants', Manufacturers' and Shippers' Directory of the World, published by Kelly's Directories, Limited, London, England, has been issued. The aim of this volume is to bring together the names of manufacturers, merchants, exporters, etc., of the United Kingdom trading with the colonies and abroad as well as those of all the more important foreign merchants, whether exporters to or importers from the United Kingdom and those of the manufacturers of the principal goods imported into the United Kingdom. The directory is thus a guide to both the import and export trades of the world and contains considerable information not to be found in any other book. By the aid of branch offices in New York and Hamburg and through the assistance of British consuls and secretaries of Chambers of Commerce acting in co-operation with the Home office from which a large territory is covered by travelling agents, the lists for this 1907 edition have been corrected, revised and made up to date. With the experience of 21 years in bringing out this directory the publishers have brought it to a high standard of excellence and completeness, leaving little to be desired in the way of a store of knowledge of the field it covers.

The regulations in force in foreign countries with regard to British commercial travellers are first given, followed by a statement of the treatment of foreign commercial travellers in the United Kingdom. A pleasing feature of this book is the fact that it is well indexed, rendering the finding of any town, city or country or of any desired branch of trade, the matter of a moment. Any firm engaged in any way in an export business or at all interested in the exporters and importers of other countries should provide itself with a copy of this directory.

**THE CANADIAN INDUSTRIAL BLUE BOOK.**

CANADIAN MANUFACTURER is indebted to Mr. M. J. Henry, of the Manufacturers' List Co., Toronto, for a copy of the 1907 edition of The Canadian Industrial Blue Book, The Manufacturers' List Buyers Guide of Canada. The work contains 75 pages more than the 1901 edition and 3,000 more addresses of manufacturers. The Department of Trade and Commerce, Ottawa, have circulated more of this work abroad this year than ever before and are receiving very complimentary letters from British consulates and others throughout foreign countries on its usefulness to them, as they become fully conversant with Canadian manufactured products and its manufacturers through its columns. This publication is the only one of its kind published in Canada. The price of the book is \$5.00 to the United States or Canada and

£1 1s. 0d. to Great Britain and other countries, by registered post.

THE CANADIAN MANUFACTURER PUBLISHING Co. will be pleased to mail copies to any of its readers on receipt of the price as above.

**THE GREENE-SWIFT BUILDING.**

The finishing touches are being put on the new building of Greene-Swift & Co., London, Ont. About one half of the building will be occupied by Greene Swift & Co., for the manufacture of men's and boys' ready made clothing.

The Fred H. Crabb Mfg. Co., London, Ont., have secured premises in the new building of Greene-Swift & Co., London, for the manufacture of overalls, smocks and shirts, and they will also carry a line of gents' furnishings. Up-to-date machinery is being installed and the offices will be fitted up in attractive style.

The Robinson Corset Co., London, Ont., formerly on Clarence Street, have moved into their new premises in the Greene-Swift building, where they are making corsets and ordered costumes. The plant is running but the offices are not yet equipped.

A part of the building is being fitted up to rent for office purposes.

This is the first building of the kind to be erected in London. It is built of concrete throughout, reinforced on the Kahn system, an exceptionally fireproof construction. It is a handsome building and a credit to the city.

**HANOVER INDUSTRIAL ASSOCIATION.**

Hanover business men have organized the "Hanover Industrial Association," with the following officers:

- President—Val. Kirchner.
- Vice-Presidents—H. H. Engel and J. H. Adams.
- Secretary—B. V. Gomery.
- Treasurer—J. Mills.
- Council—Messrs. Hollinger, Peplar, Mitchell, Armstrong, Gruetzner, and Drs. Taylor and Staples.

**BUILDING IN CANADIAN CITIES.**

According to the Dominion Labor Department, Toronto has lead in activity in building operations in 1906, with Winnipeg second. The figures given by the cities whose operations exceeded half a million dollars are:

Toronto	\$13,160,398
Winnipeg	12,760,450
Montreal	8,600,360
Vancouver	4,233,910
Port Arthur	2,894,760
Hamilton	2,124,815
Edmonton	1,869,069
Ottawa	1,728,975
Calgary	1,482,984
London	1,200,000
Fort William	1,152,240
Moose Jaw	843,221
Brandon	748,672
Victoria	699,300
Halifax	688,315
Peterborough	615,000
Belleville	600,000

The operations in 26 cities aggregated \$53,316,998, as compared with \$39,862,634, an increase of 33.6 per cent.

**BUILDING IN TORONTO THIS YEAR.**

It is probable that Toronto will break even the high records of 1906 during the present year. Among the firms who decided upon the following extensions or new premises are:

- The T. Eaton Co., additions to their store.
  - The R. Simpson Co., additions to their store.
  - Thos. Ogilvie & Sons, new warehouse, Bay Street, \$100,000.
  - Gordon MacKay & Co., new factory, \$60,000.
  - W. R. Brock Co., additions to warehouse.
  - National Drug Co., new warehouse, Wellington Street, \$36,000.
  - L. C. Todd Co., new factory, Wellington Street, \$60,000.
  - Freyseng Cork Co., addition to factory.
  - Christie Brown & Co., additions to factory.
  - Gerhard Heintzman, Limited, additions to factory.
  - Walter Davidson & Co., warehouse, \$19,599.
  - Somervilles, Limited, brass foundry and factory.
  - Dominion Radiator Co., extensive additions.
  - Canada Foundry Co., additions to machine shop.
  - Canadian Oil Co., new warehouse, \$20,000.
  - Dominion Bridge Co., new erecting shops, \$50,000.
  - Edmanson & Bates Co., new warehouse, \$25,000.
  - Geo. Rathbone, additions to planing mill, \$40,000.
  - John Northway & Sons, new retail store and warehouse.
  - Confederation Life Assurance Co., office building to cost \$200,000.
  - King Edward Hotel, two additional stone laundry, etc., \$120,000.
  - Canadian Fairbanks Co., new warehouse.
  - Mussen Book Co., new building, Richmond and Duncan.
  - Royal Bank, office building, near Yonge on King.
- Many other firms have bought sites preparatory to erecting new premises, among these being the Manufacturers' Ltd. and the Sovereign Bank, who will, it is understood, erect a 20-story office building.

**AMERICAN INVESTMENTS IN BRITISH COLUMBIA.**

United States Consul Smith at Vancouver, B.C., furnishes the following information concerning recent investment by Americans in Vancouver and adjacent islands: "The Graham Steamship, Coal & Lumber Co., of Los Angeles, Cal., with a capital of \$10,000,000, has three subsidiary companies, each of which is also incorporated in British Columbia. One of these subsidiary companies secured no less than 102 square miles of valuable timber limits in Graham Island, the most northerly island of Queen Charlotte group, fronting on Masset Inlet, the Alin and Quan lakes and Yakowa River. In addition it controls a number of leases that bring up the total area of timber lands held to about 75,000 acres. The company is planning to erect on the island a complete settlement with lumber mills, houses for workmen and officers and their families, yards for building tugs and vessels, etc. In addition to the timber area mentioned, this company has also purchased 30,000 acres of coal land, located in the same island. A large number of men are already at work on the ground, and the

party will be further increased in the near future. It is expected that this company will furnish coal and lumber for the Grand Trunk Pacific Railway. Already contracts have been made to supply coal and lumber, which the company expects to transport in their own vessels, to the western terminus of the road at Prince Rupert. It is expected that \$2,000,000 will be expended in the improvements in progress and contemplated. Another subsidiary company has established a lumber mill at Port Renfrew, on the south coast of Vancouver Island, and has also purchased a mill at Victoria. They are now consolidating the two into a large mill on Esquimalt Harbor, where several acres of land have been secured, with two experts from Texas in control. Here the improvements completed and in progress will amount to \$1,000,000.

Another syndicate of American capitalists, known as the Redcliff Lumber Co., are also erecting another large lumber mill near Kyuquot Sound, north of Alberni, and on the west coast of Vancouver Island, and have secured 20,000 acres of timber land to supply the same. Still another American syndicate, members of which have been operating in Minnesota, Michigan, and northern Ontario, have purchased 60,000 acres of timber land on the west coast of Vancouver Island, and are now making preparations to erect two additional lumber mills. These large investments by Americans are of the utmost importance to British Columbia, and have resulted in an advance in the price of timber and coal lands, as well as renewed activity in all branches of trade. American capital is doing a great deal to develop the resources of British Columbia.

**MINERAL SURFACE ROOFING.**

There are many roofings on the market today which will give satisfaction provided they are carefully painted or coated every year or two. This painting, however, is expensive and troublesome, and is not required on a new roofing called Amatite, which is being placed on the market. Amatite has a mineral surface which takes the place of paint and lasts very much longer. Manufacturers who have any roofing to do should obtain a free sample, which may be done by addressing the Barrett Mfg. Co., New York, Chicago, Cleveland, Alleghany, Kansas City, St. Louis, Minneapolis, Philadelphia, New Orleans, Cincinnati. Paterson Mfg. Co., Montreal, Canadian agents, Toronto and Montreal.

**THE SOUTHERN CALIFORNIA NEW TRAIN.—BEST ROUTE.**

The Los Angeles Limited, electric lighted, cars from the Pullman shops, with all latest innovations for travel comfort, leaves Chicago 10.05 p.m. daily, arrives Los Angeles 1.45 p.m. third day via Chicago, Union Pacific & North-Western Line and the Salt Lake Route. Pullman drawing room and tourist sleeping cars, composite observation car, dining cars, a la carte service. For rates, sleeping car reservations and full particulars apply to your nearest agent or address B. H. Bennett, 2 East King St., Toronto.

Let us have the faith that right makes right, and with that faith let us do our duty as we understand it.—Lincoln.

**CHAIN MADE IN CANADA.**

Definite announcement has been made that the Standard Chain Co., the largest chain manufacturers in the United States, are about to erect a plant to turn out this product in Canada. Already application has been made to the Canadian government for a charter. When this is granted a large factory will be built at Walkerville, which is expected to be in operation towards the end of summer. In this plant it is purposed to manufacture all sizes and grades of coil chain, log chain and harness chain. This is another proof of the growth of Canada and adds to its many industries, one which will supply the Canadian market with goods of their own manufacture instead of importing from Europe and the United States.

Alexander Gibb, a prominent manufacturers agent of Montreal, has represented the Standard Chain Co. in Canada, for many years. He will hold an important office in the new company and will look after the marketing of the company's product.

**MACHINERY WANTED.**

The addition which the Sherlock-Manning Organ Co., London, Ont., are putting to their factory will be two stories, 96x80 feet, giving an additional floor space of over 14,000 feet. This is the fourth enlargement this firm has made in four years. This additional space, with the necessary new machinery will enable the firm which has heretofore made organs only, to start manufacturing pianos. Included in the new machinery being installed are a revolving feed jointer, and a gang self-feeding rip saw, the first to be used in a wood working concern in Canada. The new piano department will have a capacity of about 300 pianos a year. An addition to the machine shop later in the year is contemplated.

**NEW APPRENTICESHIP SYSTEM.**

United States Consul F. W. Mahin, of Nottingham, England, writes of a firm at Lincoln, who have introduced a variation in the apprenticeship system that is attracting wide attention and favorable comment. He states that the rule in England is to bind a boy for seven years, from the age of 14 to 21, during which period he leads a narrow, treadmill life. The Lincoln firm, however, takes apprentices at any age between 15 and 22—one inducement to this change being the expectation that boys of 16 to 18 will have had a good school education and will therefore be better fitted than a boy at 14 to master the trade. To encourage boys at 16 to 18 years to become apprentices, the same wages will be paid them as if they had begun at 15.

But the most important part of the Lincoln firm's new apprenticeship system is to give all deserving apprentices a varied shop experience, and to supplement the shop work with courses of instruction bearing directly thereon. By combining mental training with shop work it is believed that more intelligent workmen will be evolved than under the old system. The general scheme is thus outlined:

Apprentices will be moved from one class of work to another at the discretion of the firm. Diligence, skill, and proficiency will be held to constitute a claim for transference to another class of work. Keeping a boy on

routine work simply because he has become skillful at it will, so far as possible, be avoided.

All apprentices are under a superintendent, whose sole duties are to supervise, teach, promote, and advise. The firm maintains its own school in the works, and all apprentices can attend classes free; books and utensils are provided by the firm. Officials of the firm take part in the work of teaching the apprentices, and in general deal with subjects in which they are specialists. It is among the duties of the superintendent to prevent an apprentice from "drifting" through the works, to protect boys from favoritism of the opposite in the works, and to report to the firm cases of merit or demerit.

**CANADIAN RAILWAY NEEDS.**

Replying to a letter inquiring for information in regard to the manufacture of railway appliances in Manitoba, United States Consul Shank, of Winnipeg, says:

There are no manufacturers of this line in Western Canada but there are four foundries in Winnipeg which occasionally make frogs and switches of a special design. The Canadian Pacific Railway Co. occasionally makes a frog of some special design at its shops in this city. Steel rails are purchased either from the mills at Sault Ste. Marie, or Sydney, Nova Scotia, or in the United States. The mills in this country are not able to supply all the demand for steel rails.

The amount of track laid last year by the various roads was as follows: Canadian Pacific Railway, 250 miles; Canadian Northern Railway, 191 miles; Great Northern Railway, 151 miles; and the Grand Trunk Pacific about 40 miles. During the next five years the railroad development of the North-West will be very extensive. The Grand Trunk Pacific will build from the Pacific coast to Winnipeg, and the Dominion Government will construct a continuation of this line to Moncton, New Brunswick. The Canadian Northern is continuing its line from Edmonton west to the coast, and the line north from Edmonton which will extend eventually to Great Slave Lake. This road has already constructed about 60 miles of this branch to Fort Churchill on Hudson Bay. This line will be about 700 miles in length when completed.

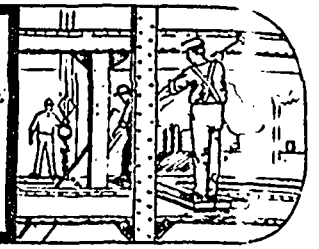
The Canadian Northern Railway Co. has also constructed many new branch lines. The Canadian Pacific Railway Co. is continually adding to its already large system, and is double tracking its line from Winnipeg to Fort William, a distance of 426 miles; 100 miles of this track has already been laid. The Great Northern Railway Co. is extending many of its branch lines across the international boundary, and is doing some very active work in British Columbia as well as in Manitoba. It has lines already running into Brandon and Portage la Prairie, and has obtained a site for terminals in the city of Winnipeg. In the near future the Canadian Northern and Grand Trunk Pacific railway companies will build a union station in this city as well as their shops and yards. All of this work is going to make a great demand for railway supplies of all kinds.

Do not dare to live without some clear intention toward which your living shall be bent. Mean to be something with all your might.—Phillips Brooks.



## Construction and Equipment

Giving information regarding modern materials and methods for the construction of factories, mills, etc., and about machinery and power appliances for their equipment.



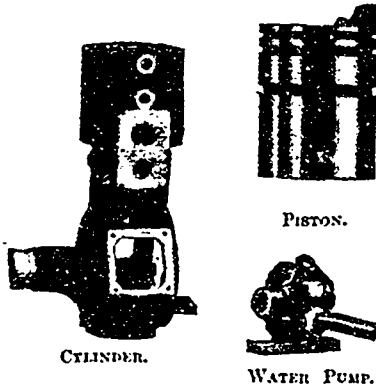
### FAIRBANKS-MORSE 2-CYCLE ENGINE.

A new two-cycle three port engine is being placed in the market by the Canadian Fairbanks Co., being the product of the new Fairbanks Morse Canadian plant. Tests during the past few years have demonstrated that the three port engine when properly designed will run faster and develop more power than the type that has a check valve in the base.

In this engine the number of working parts is reduced to a minimum, without omitting any essential part, which means a minimum of attention required from the operator.

#### CYLINDER.

The cylinder and base are cast together, and are of hard, close grained iron. Our long experience in the construction of gasoline engines makes it possible for us to put into the cylinder a quality of iron that gives efficient service with a minimum of wear. The



CYLINDER.

PISTON.

WATER PUMP.

exhaust port, the transfer port from base to cylinder, and the admission port to the base, are large, well proportioned and carefully placed. The cylinder has large water jacket spaces around the combustion chamber and parts exposed to the high temperatures of the exploded gases.

The cylinder is bored and carefully reamed to standard size. Without a true cylindrical bore, good compression, with its desirable effects on economy and power, cannot be expected. In our new shop, with its modern tools, we have the needed facilities for this important part of gas engine construction.

#### BEARING.

The base of this engine has one removable side bearing. In a two-cycle engine, where the mixture is compressed in the base, the base is a very important part. The mixture must not leak from the base, or there will be loss of fuel and loss of power. The place where leakage is usually found is at the crank shaft bearings. In many engines the bearings are short, not properly fitted, of unsuitable material, and wear rapidly, with constantly increasing loss of power by the engine.

Knowing this to be one of the vital points, a crankshaft of liberal dimensions is provided. The bearing pressures per square inch are so low that with proper lubrication long life is assured. The bearings are fitted with brass compression grease cups. The hand hole plates of liberal size make it easy to get at the crank pin bearing. The upper half of the base does not have to be lifted. The lugs on the side of the base for fastening the engine to the foundation, give the engine a wide foundation support, and add much to its stability.

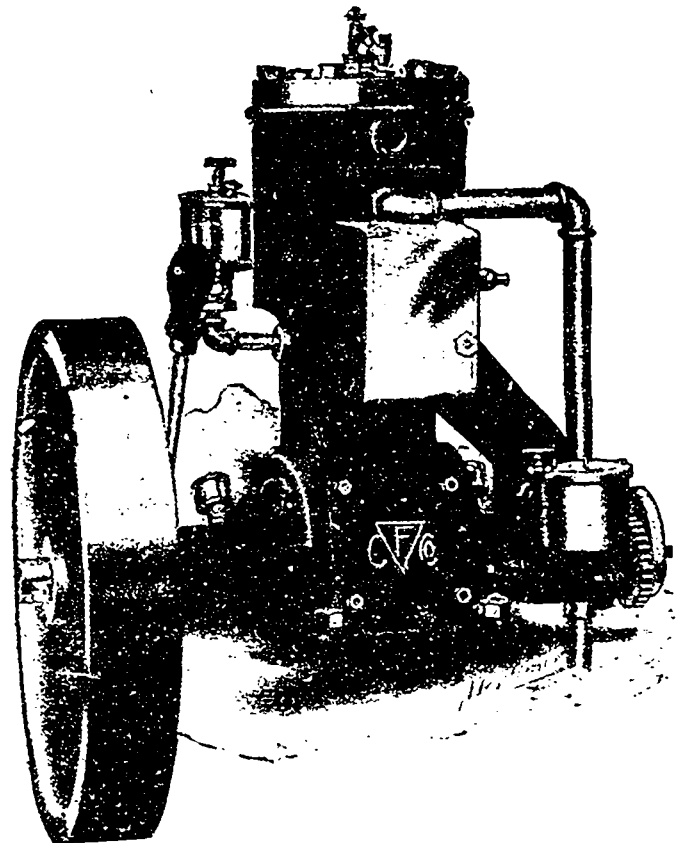
#### CRANK SHAFTS.

The crank shaft is a steel forging. The

#### PISTON AND HEAD.

The piston is made of a special grade of cast iron, and is fitted with snap rings. Piston is carefully ground to insure perfect fit in cylinder, and to insure good compression. A baffle plate is fitted to the top of the piston to prevent the entering charge from mixing the exploded gases. The baffle plate has been designed after much thought and careful experiments, and has given good results.

The head is cast separate from the cylinder and is well water-jacketed. It is nickel-plated. It can be removed by taking out the cap screws holding it to the cylinder, it being unnecessary to break any water seal.



FAIRBANKS-MORSE 2-CYCLE ENGINE.

connecting rod is made of a special quality bronze, and has good sized bearings. The cap on crank pin end is provided with an oil dip that conveys lubricating oil from the base to the crank pin bearing, practically flooding this bearing with oil. The piston pin is made of machinery steel, case hardened and ground. It has an oil hole through which lubricating oil is conveyed from the cylinder oiler to the piston pin bearing. The efficiency of this method of lubrication is well known.

This, together with the hand hole plates on the base, makes the removal of the piston from the cylinder a simple matter. The spark plug is located in the center of the head. A vent cock is also placed in the head.

#### CARBURETOR.

The carburetor is provided with a float to keep the gasoline level constant. The float is treated with shellac to insure continued uniform results. The gasoline regulator



ing valve is fitted with a wing nut to avoid any possibility of the valve moving after being once set. This carburetor is easily adjusted and efficient. The connecting pipe from carburetor to cylinder is supplied with warm air from around the exhaust pipe, which assists in the vaporizing of the gasoline. In the contact braker, two points of good conducting material are brought together by

**TRIPLE GEARED POWER ROLLING MILL.**

This newly designed mill is used for rolling gold, silver, britania and white metals and in the production of silverware articles. It has in it many new and important features. A heavy rigid bed supports the entire machine, gears are all machine cut, pinions being of steel, toggles are of steel, rolls forged

tools, giving its origin and development, its design, its various types as manufactured by different builders, including engines lathes, heavy lathes, high speed lathes, special lathes, turret lathes, and many others, lathe works, lathe tools, rapid change mechanism, speed and feeds, power for cutting tools, lathe testing, etc.

Being written by a practical man, one who understands most thoroughly lathe practice, the book would appeal particularly to practical men. Nothing regarding the lathe, as to its history, development or present properties has been omitted. The book is practical and is in fact a veritable encyclopedia regarding the lathe.

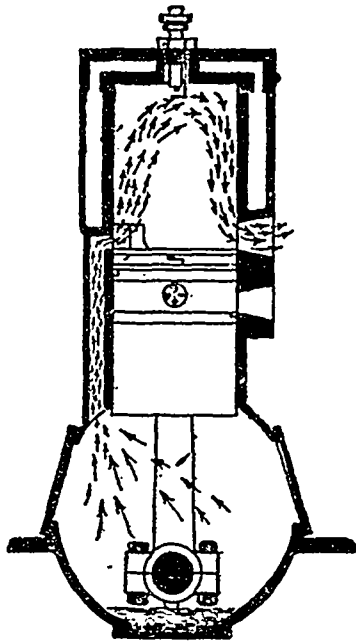
This important machine tool has received much attention in the hands of writers from time to time but in this work the treatise is apparently complete. A book of this kind should have a large sale at the hands of all machinists and mechanics who are interested in the first and most useful of all machine tools.

**NEW COMPOSITION FOR PROTECTING IRON AND WOOD.**

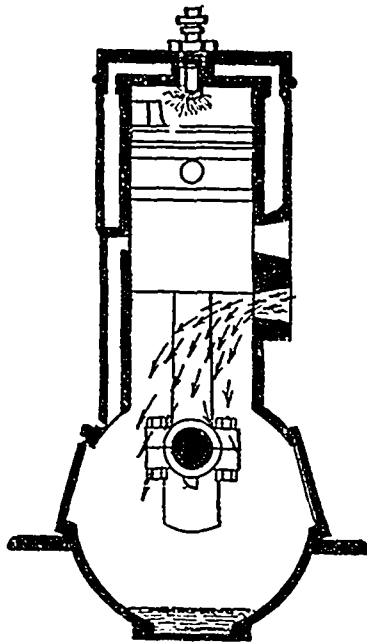
Consul Albert Halstead advises that a new process has been patented for making a composition to protect iron and wood work from destruction by oxidization, concerning which he writes from Birmingham:

"Not only is it said to be useful for the preservation of the hulls of vessels from the destructive action of sea water and of barnacles, but also to remain permanently viscous. It is asserted as well that it is non-inflammable, and need not be dry before a ship goes to sea. If the composition actually fulfills all the claims made, it should be useful not only for sea-going vessels, but for the protection of the steel framework of buildings.

The total quantity of Portland cement manufactured in Canada during 1906 was estimated at 2,152,562 barrels, compared with 1,541,567 barrels in 1905, an advance of 95.6 per cent. The total sales showed an increase of 57.4 per cent. Fifteen companies were operating plants during 1906, with a total daily capacity of about 10,500



SECTIONAL VIEW SHOWING THREE PORT AND OPERATION OF PISTON.



a cam. The points are positively held in contact while the crank turns through a certain angle, when they are again separated. Contact is sure. By means of lever connected with a sleeve on the outside of the crank shaft bearing, the time of ignition can be varied at the will of the operator. The whole mechanism is simple, positive, and free from trappy parts. A vibration spark coil is used.

**WATER PUMP.**

The water pump is a brass-gear pump driven by a pinion on the crank shaft. It furnishes an abundance of water for keeping the cylinder properly cooled. The pump is well made, and lifts the water easily without being primed.

**PROPELLER.**

A two blade 16 inch special bronze reversible propeller, with stern bearing, stuffing boxes, thrust and clamp collars, is furnished with the 4 h.p. engine. The 8 h.p. has an 18 inch 3-blade propeller. It was designed, tested and perfected by an experienced marine engineer, and is a good outfit.

Ease of starting is important with any engine. Special attention was given to this point. A priming cup with small gasoline can and accompanying dangers in a boat is used. A small and neat starter crank is provided. With it a boy can give the engine a turn and it starts. If stopped with mixture in the base, pull the engine back against the compression and it starts.

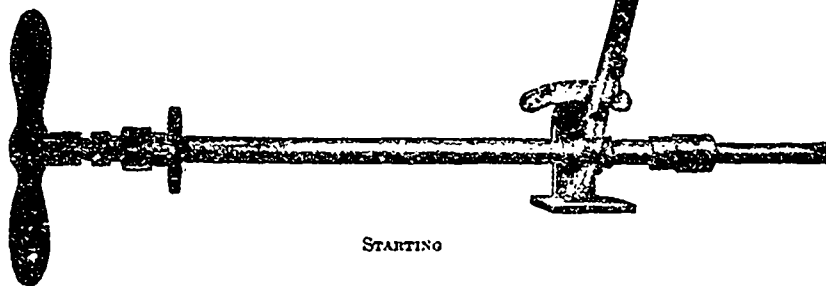
J. J. McLaughlin, Limited, Toronto, mineral water manufacturers, are establishing a branch in Edmonton, Aka.

of steel made specially for this purpose and hardened roll bearings are of phosphor bronze, all others are of best quality bearing metal and are self oiling. Ample adjustments are arranged for wherever required. The raising and lowering device of the rolls is designed so that either end of the roll may be moved independent of the other, or roll may be moved exactly the same amount at each end. All gearing is covered. Machine is furnished with adjustable belt shifter and tight and loose pulleys. It is compact, well built and handy. Will not get out of order or give trouble in any way. It is manufactured and designed by Wm. & J. G. Greey, 2 Church Street, Toronto.

**MODERN AMERICAN LATHE PRACTICE.**

By OSCAR E. FERRIGO, M.E.

An entirely new and practical work, including four hundred and sixteen pages with



STARTING

three hundred and fourteen detailed engravings made from special drawings, price \$2.50, the Norman W. Henley Publishing Co., New York.

In this is described the king of machine

barrels. Four additional plants were under construction during the year, of which the total initial daily capacity will be about 4,700 barrels. The average price per barrel was \$1.49, compared with \$1.42 in 1905.

# Crucibles—Their Care and Use.

By JOHN A. WALKER.

Many foundrymen do not fully appreciate the importance of keeping and handling their crucibles in a manner which will insure the greatest number of heats with the least danger of accidents, and this booklet is published to emphasize this point.

The importance of the subject seems to be underestimated, and crucible users will find it to their advantage to give the matter more thought and attention, and instruct their furnace men, melters and other employees accordingly.

The graphite crucible (graphite is otherwise known as plumbago or black lead) is now in almost universal use, having supplanted the clay crucible, which, though comparatively inexpensive, lasted only a heat or two, and was exceedingly unreliable. Even the graphite crucible, the most efficient melting pot yet invented, or likely to be invented, is necessarily a fragile and delicate thing. It is expected to withstand successfully degrees of heat sufficient to melt the most refractory metals, from composition to nickel, and no known vessel can long withstand such savage punishment.

As any defect in, or accident to, a crucible

## GRAPHITE.

Graphite is a pure carbon and belongs to the diamond and coal family. It is the product of a temperature beyond the limits of calculation, and is found in the oldest rock formations.

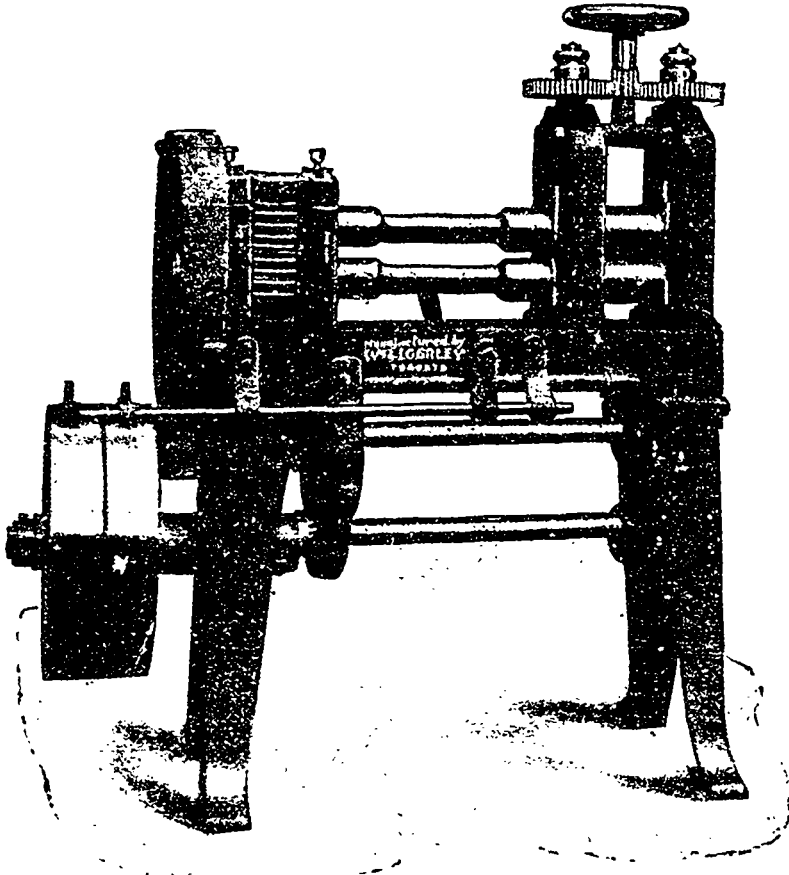
The fact that it is the result of incalculable heat, of course enables it to bear up under degrees of heat that will melt other minerals.

Graphite is found in limited quantities all over the globe, but only in a few locations is it in sufficient volume to pay for mining and refining.

In making crucibles there is added to the graphite sufficient clay to furnish the necessary binding qualities which graphite lacks, and fire-sand to give the crucible openness of grain, thus rendering it able to withstand sudden changes in temperature.

## COLOR OF CRUCIBLES.

As to the color of finished crucibles, it needs only to be said that while some are darker and some lighter in shade, there is absolutely no difference in quality on account of this difference in color. The difference in color is the result of an oxidizing condition



GREET TRIPLE GEARED POWER ROLLING MILL.

is an exceedingly annoying as well as an expensive matter, and as such occurrences are in most cases due to improper or careless methods in the annealing or handling of crucibles, the suggestions embodied in this booklet should prove valuable, as they are the result of long experience and the best thought and knowledge on the subject.

in the kiln at the time of burning. To economize space, crucibles are "nested" in the kiln. By "nested" we mean that a smaller one is placed inside a larger one. Even though the outer one does not come in contact with the flame, some air will creep in, due to the expansion and contraction of the kiln walls, and at a certain degree of tem-

perature this air finds its affinity in the carbon, and they both clope in the form of carbonic acid gas—this changes the color of the crucible.

The amount of graphite lost to the crucible by this process of oxidation is only a very small amount, so trifling, indeed, that it does not in any way impair the quality of the crucible notwithstanding a more or less widespread pressure to that effect.

## SCALPING.

One source of trouble now and then reported, and most exasperating to the crucible maker, is what is known as "scalping" or flaking-off of a portion of the crucible. This is invariably caused by carelessness at the start.

When the crucible comes from the kiln it contains less than one-quarter of one per cent. combined moisture. In this condition it is absolutely impossible to scalp it. But the moment it cools off it begins to absorb what is known as hygroscopic moisture—the moisture that is in the air, and once absorbed it requires a temperature of not less than 250 degrees Fahrenheit to dispel this moisture. It is also essential that the crucible be kept to this temperature to prevent its absorbing the moisture again.

It is, therefore, very important that the crucible should be properly annealed in a temperature of at least 250 degrees Fahrenheit before using. Whether annealing in a special furnace or on top of the crucible furnace, there are four points that must be observed:

First: The temperature must go above 250 degrees Fahrenheit.

Second: This temperature should be reached gradually.

Third: This temperature must be held a sufficient time to allow the moisture to thoroughly disappear.

Fourth: The crucible must go in the crucible furnace with a temperature above 250 degrees Fahrenheit.

Some foundries practice the first, second and third rules perfectly and "fall down" entirely on the fourth by hurriedly and carelessly taking the crucible from the furnace and placing it on damp sand or a cold furnace floor and allowing it to stand there indefinitely before charging. A failure to comply with this fourth rule counteracts all that the other three have accomplished and the crucible maker may be informed that his pots are "no good."

Another defect the crucible manufacturer hears of is what are known as alligator cracks. Now and then a manufacturer finds a crucible with fine cracks all over its surface before it is in the fire. Examination shows the outside covered with hair cracks resembling an alligator's skin. This is due to the gases and the result of improper annealing.

It is generally understood that crucibles improve with age, and this fact explains why it is that the large consumer has little or none of the trouble the small buyer has. The orders in large lots, stores them away and gives them time to "season," while the other does not order until his stock is out, then sends in a "rush" order, and the crucibles go from kiln to furnace.

It is perfectly obvious that the crucible maker who buys crucibles in quantities, stores them where they will be kept dry and free from moisture, handles them carefully and intelligently, will secure a far greater number

of heat than will the man who buys only as he needs and stores or handles his crucibles carefully.

**PIN HOLES AND THEIR CAUSE.**

Unless the annealing is carefully done, however, hidden cracks, flaws or fissures may be present which, under strong heat, may cause pin holes and similar defects to make their appearance. Pin holes are one of the chief difficulties that the user of crucibles meets. Crucibles do not usually show this defect until they have been in use for some time. It seems to require a number of heats

10 or 15 in a coal or coke furnace where it is necessary to handle the crucible with tongs. The best tongs are those made with jaws shaped like the ace of spades, giving a broad gripping surface, thus enabling the melter to get a good firm hold on the crucible, at the same time distributing the pressure instead of concentrating it at one point. Every user of crucibles will find that it will pay him well to give careful attention to this question of crucible tongs.

**HOW TO PLACE THE METAL IN CRUCIBLES.**

Sufficient time and special care should be

comes from its clay body, hence, if cold ingots are wedged in a crucible and jammed to fit tight, their expansion, which is much greater than the expansion of the crucible, will crack the latter before the melting point is reached.

Crucibles are often unwittingly injured by the furnace man in ramming his fires. As a usual thing, he will take a long steel bar and jam with all his strength into the hot fuel. He does this either to pack the fuel so that more may be added or to make room for the tongs prior to pouring. If, however, it is necessary for any reason to do this it should be done carefully and with judgment.

**A NEW EXPLOSIVE.**

Potasimite is a new explosive, perfected in Monterey, Mex., and first used with success upon the construction of a Mexican Central Railroad branch with wonderful results, for it is pronounced safer, cheaper and more powerful than dynamite. Those explosives based upon nitrogen produce a gas that necessitates abandoning closed works, such as mine or tunnel, during the explosion, and the laborers cannot return to work for a long time thereafter, depending upon the facility for carrying off the gas. Potasimite is said to produce no noxious gas, the only precaution necessary in its use being that the workmen get out of the way of the flying particles of blasted rock.

**AMBITIOUS.**

The builders of the old world were more ambitious than our own. No such theatre has ever been built in the modern world as the Coliseum, with its diameter of 615 feet, its height of 164 feet, and its seats for 100,000 people. No wall has ever been built to equal the great wall of China, which runs 30 feet high and 24 feet thick for 1,200 miles; and the pyramids remain the wonder of the world in the twentieth century as in the first. Ancient Egypt had 12 palaces, each with 3,000 rooms; and the walls of Nineveh ran for 100 miles 100 feet high, and wide enough for three chariots to drive abreast along the top. Who builds so well and on so magnificent a scale to-day?

**CONCERNING HOLLOW GLASS BRICKS.**

The demand for hollow bricks and building blocks for house construction has induced glass manufacturers to put hollow glass bricks on the market, says Building Management, and they promise to be used exclusively for novel and artistic effects. The first glass bricks being sold proved a failure on account of their cost, but the hollow glass bricks can be made at much less expense. They are lighter and stronger than clay bricks and are such excellent non-conductors that walls built of them are proof against dampness, sound, heat and cold. The binding strength of the glass mortar is almost as great as the bricks themselves.

The Crown Hat Co., Galt, will build a two-storey brick addition 60x50 ft., commencing work in June.

The Canada Wood Mfg. Co., Farnham, Que., is offered for sale as a going concern. The property includes factory employing 200 hands, water rights producing 300 h. p., grounds, outbuildings and boarding house. John W. Ross, Montreal, is liquidator.



FIG. 1. CRUCIBLE SHOWING THE CRACKS WHICH BEGIN TO FORM AT THE TOP WHEN ITS LIFE IS NEARLY ENDED

to develop this defect. Pin holes are usually discovered by metal dropping down into the furnace pit, and when the crucible is removed a stream of metal will be found trickling down its side.

Another cause of the shortness of life of a graphite crucible is the improper fit and careless management of the tongs. This is proved beyond doubt by the fact that in a tilting furnace it is not unusual to obtain from 50 to 60 heats from a No. 200 crucible as against

exercised in placing the metal in a crucible. It is quite natural to hurry in putting ingots into a crucible in order that the cover of the furnace shall not be left off too long. It is more or less dangerous, however, to jam the ingots, so particular care should be taken to see that they be placed in the crucible loosely.

Graphite is an inert substance, and as graphite is the crucible's principal ingredient, the only expansion possible to a crucible

# The Industrial Disputes Investigation Act, 1907.

FROM THE DOMINION OF CANADA LABOR GAZETTE.

## OUTLINE OF LEADING PROVISIONS.

The past month has been especially notable in the history of labor legislation in Canada, since it has seen enacted "An Act to Aid in the Prevention and Settlement of Strikes and Lockouts in Coal Mines and Industries Connected with Public Utilities," more briefly known as "The Industrial Disputes Investigation Act, 1907," the measure having received the royal assent on the 23rd of the month. An outline of the new Act, which is printed in full as an appendix to the present issue of the Labor Gazette, will be of interest to both employers and employes.

In the first place, it may be remarked that this measure is a natural sequence of the Conciliation Act of 1900, and the Railway Labor Disputes Act of 1903, both of which are now incorporated in the Conciliation and Labor Act, Chap. 96 of the Revised Statutes of Canada, 1906. The object of the new legislation, as the complete title to the Act sets forth, is to aid in the prevention and settlement of industrial disputes in so far as the same affect any form of public utilities. Such disputes obviously affect the public interest more closely than those concerning any other class of industry, and their prevention altogether, or, if that is impossible, their prompt and amicable settlement, is even more desirable than in the case of the ordinary labor trouble, since a cessation of work from lockout or strike in the case of a public utility involves not only loss to employers and employed, but grave inconvenience and possibly serious distress to the public at large. Of the total number of industrial disputes, the proportion that concerns the operation of public utilities is very striking. Taking the six years during which records have been kept in the Department of Labor, it will be found that the total number of workpeople affected was 142,027, of which exactly one-third represented disputes in what are by general consent denominated public utilities, viz., mining, transport, street railways, telephony and telegraphy. The actual number of disputes in the public utility class of industries during that period is relatively small, being only 100 out of 715, but the average number of employes concerned in such disputes is so much larger than the general average that the total number affected was no less than 47,397. It goes without saying that such an interference with the ordinary routine of industrial life cannot take place without the gravest consequences to all concerned. The fuel famine in the West during the past year, which was at least aggravated by reason of the prolonged strike at the Lethbridge coal mines, is an illustration, fresh in the public mind, of the intimate relation between the public utility industry and the public welfare. Severe as the situation actually became, it must have been infinitely worse had not the good offices of the Department of Labor resulted in effecting a settlement between the operators and the workmen.

Obviously, the public interest, not less than the interests of employer and employed, lies in the settlement of such disputes in their initial stages and before they have assumed so serious a form as a lockout or a strike.

What, therefore, the new Act does is to require that any dispute arising in connection with the class of industries named shall be submitted to a Board of Conciliation and Investigation, with a view to arriving at a settlement before a strike or a lockout can be legally brought about. This may be termed compulsory investigation, during which the parties in dispute will be brought necessarily face-to-face, and that conference and discussion secured which in the past have usually taken place only after the rigorous and harmful step of bringing about on the one side or the other a suspension of work. Further important provisions of the Act are those which require that employers and employes shall give at least thirty days' notice of an intended change affecting conditions of employment with respect to wages or hours, and that pending the proceedings before a Board, the relations to each other of the parties to the dispute shall remain unchanged, and neither party shall do anything tending to bring about respectively a lockout or a strike. One other section of the Act that should be emphasized is that which provides for the application of the statute to industries other than those connected with public utility when the parties to a dispute in such class of industries may so desire.

## MACHINERY OF THE ACT.

It will be interesting to glance at the machinery by which it is endeavored to secure the investigation aimed at. The vital features of the Act are contained in section 5, viz.:

"Wherever any dispute exists between an employer and any of his employes, and the parties thereto are unable to adjust it, either of the parties to the dispute may make application to the Minister for the appointment of a Board of Conciliation and Investigation, to which Board the dispute may be referred under the provisions of this Act; Provided, however, that, in the case of a dispute between a railway company and its employes, such dispute may be referred, for the purpose of conciliation and investigation, under the provisions concerning railway disputes in the Conciliation and Labor Act." and in section 56 (in part):

"It shall be unlawful for any employer to declare or cause a lockout, or for any employe to go on strike, on account of any dispute prior to or during a reference of such dispute to a Board of Conciliation and Investigation under the provisions of this Act, or prior to or during a reference under the provisions concerning railway disputes in the Conciliation and Labor Act: Provided, etc."

## APPLICATION TO RAILWAY DISPUTES.

A word of explanation will be in place in respect to the reference in the fifth section of the Act as quoted, and as appears in other sections, to a dispute between a railway company and its employes. Under the Railway Labor Disputes Act, 1903, the parties to a dispute between a railway company and its employes were enabled to refer such dispute for conciliation and arbitration under terms provided by the Act. Representations were made on behalf of some organizations of railway employes that the

members of these organizations would prefer the former measure to the new one, they having become accustomed to its provisions and for other reasons, it being alleged, in particular, that the former measure provided a more expeditious and less expensive means of carrying on an investigation. This was not admitted to be the case, but to enable the parties to take advantage of the provisions of either Act, under section 5 of the present Act it is made optional with the parties to a dispute affecting railway employes to refer such dispute for investigation under the provisions of the present measure or under the provisions concerning railway disputes in the Conciliation and Labor Act, these last-named provisions representing the Railway Labor Disputes Act, 1903, as it appears in the Revised Statutes of Canada, 1906; but reference of a dispute under the provisions of the one statute or the other must be made before a lockout or strike can be legally declared, the parties to such a dispute being expressly included in the operation of section 56.

## REGISTRAR APPOINTED UNDER THE ACT.

The Act contemplates the appointment of a Registrar of Boards of Conciliation and Investigation, to whom shall be forwarded all applications for the appointment of a Board of Conciliation and Investigation, and who shall receive and register and generally deal with all applications for references of such disputes and shall at once bring to the attention of the Minister of Labor every such application, and generally shall, in the terms of the Act, "do all such things and take all such proceedings as may be required in the performance of his duties prescribed under this Act, or any regulations thereunder." It may be added that the Governor-General-in-Council, in whose hands the appointment of the Registrar of Boards of Conciliation and Investigation was vested under the Act, has by order-in-council, appointed the Deputy Minister of Labor to the office indicated.

## BOARDS TO BE CONSTITUTED WITHIN FIFTEEN DAYS.

The Minister of Labor shall, within fifteen days from the date at which he receives an application for the appointment of a Board, if satisfied that the provisions of the Act apply, establish such Board under his hand and seal of office.

The Board shall consist of three members, who shall be appointed by the Minister. One shall be appointed on the recommendation of the employer concerned in the dispute, and one on the recommendation of the employes so concerned; the third on the recommendation of these two.

The party making application for the Board may make his recommendation for a representative on the Board at the time his application is forwarded. In any event both parties to the dispute must make their respective recommendations in five days after being required to do so by the Minister, and in the event of their failing to do so, the Minister is empowered to select a fit person to act similarly.

if the two representatives of the parties to the dispute have not, at the end of five days after their appointment, recommended a third member of the Board, the Minister is authorized to select and appoint such third member. The third member of the Board is to be chairman.

The members of this Board will take an oath of office before entering on their duties and will be equipped by the Department with a secretary, stenographer or such other clerical assistance as may seem to the Minister to be necessary.

#### FORM OF APPLICATION.

The manner in which and the persons by whom an application for the appointment of a Board is to be made are very fully set forth in the Act and should be carefully noted. (See sections 15 and 16). Application forms will be supplied by the Registrar of Boards of Conciliation and Investigation, and must be accompanied, when forwarded to him in accordance with the Act by a statement setting forth (1) the parties to the dispute; (2) the nature and cause of the dispute, including all claims or demands made by either party upon the other to which exception is taken; (3) an approximate estimate of the number of persons affected; and (4) the efforts made by the parties themselves to adjust the dispute. The application must further be accompanied by a "statutory declaration setting forth that, failing an adjustment of the dispute or a reference thereof by the Minister of a Board of Conciliation and Investigation, under the Act, to the best of the knowledge and belief of the declarant, a lockout or strike, as the case may be, will be declared, and that the necessary authority to declare such lockout or strike has been obtained." Section 16 of the Act explains in detail the signatures that shall be necessary to the applications that may be respectively made under the Act.

#### SECOND PARTY TO DISPUTE TO BE INFORMED.

So that both parties to the dispute may be made acquainted with the proceedings taken under the Act at the earliest moment possible and all unnecessary delay prevented, the applicant for the appointment of a Board is required to send to the other party to the dispute a copy of the application at the same time he is transmitting the application to the Registrar, and the second party to the dispute shall without delay prepare a statement in reply and forward the same to the Registrar and to the party making the application. The Act is precise in indicating who shall be regarded as properly representing the various parties who may make application for the appointment of Boards and those concerned should pay special attention to section 20, which bears on this point.

#### POWERS AND FUNCTIONS OF THE BOARD.

Upon the appointment of the Board, the Registrar is to forward the Chairman a copy of the application for the appointment of such Board, and of the statements of the respective parties on the subject of a reference under the Act where the number of employees affected is less than ten. In the course of the investigation that follows, the Board may take all such suggestions and do all such things as it deems right and proper for inducing the parties to come to a fair and amicable settlement of the dis-

pute" (section 23), and if a settlement of the dispute is arrived at by the parties during the course of its reference to the Board, a memorandum of the settlement is to be drawn up by the Board and signed by the parties and may be made binding if the parties agree as provided by a subsequent section of the Act, and a copy of the memorandum, with a report on the proceedings, is to be forwarded to the Minister. If a settlement of the dispute is not arrived at during the course of its reference to the Board, the Board is to make a full report thereon to the Minister, and make such recommendation as it sees fit for the settlement of the dispute; and when it is deemed expedient to do so, is also to state the period during which the proposed settlement shall continue in force and the date from which it shall commence. This report is to be sent to the Registrar, and similarly, a minority report may be made by a dissenting member of the Board. The Board will be invested with all the necessary powers for summoning and enforcing the attendance of witnesses, administering oaths and otherwise, so far as may be necessary to a full investigation of the matters brought before it. The Board will have the right to investigate and to allow those whom it may indicate to investigate all books, documents, etc., brought before the Board, but the information obtained therefrom shall not, except in so far as the Board deems expedient, be made public. The Act makes all necessary provision for the payment of witnesses, and for imposing penalties where the summons or order of the court has been disobeyed or where any person may be guilty of contempt to the Board. The Board is further invested with power to enter or to authorize others to enter any premises associated with the dispute which has been referred to it, and may there pursue its investigation.

Any party to a reference may be represented before the Board by three, or less than three persons designated for the purpose, or by counsel or solicitor where allowed, and such counsel or solicitor shall be entitled to appear or be heard before the Board only with the consent of the parties to the dispute, and notwithstanding such consent, the Board may decline to allow such appearance.

Members of the Board must be British subjects, though not necessarily residents of Canada. The sittings of the Board are to be fixed as to time and place by the chairman, and the proceedings conducted in public unless the Board of its own motion or by request of any of the parties to the dispute, direct that they be held in private. The Board may at any time dismiss any matter referred to it which it deems frivolous or trivial, also it may, with the consent of the Minister of Labor, employ any competent experts or assessors to examine the books or official reports of either party and to advise upon any technical or other matter material to the investigation.

The Act provides for the adequate payment of the members of the Board during the time they are employed on the task in hand, also for their necessary travelling expenses, and further expressly prohibits the acceptance by any member of the Board of any perquisite or gratuity apart from his remuneration by the Government on account of any matters brought before the Board,

and makes the acceptance of such perquisite or gratuity an offence punishable by a fine not exceeding one thousand dollars.

#### THIRTY DAYS' NOTICE TO PRECEDE CHANGES IN WAGES AND HOURS.

An important provision of the Act is that which requires employers and employees coming within its scope to give at least thirty days' notice of any intended change affecting conditions of employment as to wages or hours.

Equally important is the provision that, pending the proceeding before a Board, the relation to each other of the parties to the dispute shall remain unchanged, and neither party shall be concerned in doing directly or indirectly anything tending to promote a strike or lockout. That this provision may not work an injustice to either party, it is provided that it shall be an indictable offence for either party to a dispute to use this or any other provision of the Act for the purpose of unjustly maintaining a given condition of affairs through delay.

#### PENALTIES UNDER THE ACT.

Any employer declaring or causing a lockout contrary to the provisions of the Act becomes liable to a fine of not less than \$100, nor more than \$1,000 for each day or part of a day that such lockout exists, while any employe who goes on strike contrary to the provisions of the Act becomes liable to a fine of not less than \$10 nor more than \$50 for each day or part of a day that such employe is on strike.

A further important provision of the Act declares that any person who incites, encourages, or aids in any manner any employer to declare or continue a lockout, or any employe to go or continue on strike contrary to the provisions of the Act, shall be guilty of an offence and liable to a fine of not less than \$50 nor more than \$1,000.

#### THE AWARD MAY BE MADE BINDING.

Although, as stated above, the finding of the Board is not in itself binding, and when delivered leaves the parties to the dispute free to take such action as they may respectively choose, yet, under section 62, either party to the dispute may agree to be bound by the award or recommendation of the Board, and if the other party agree in like manner, then the recommendation shall be made a rule of a Court of Record on the application of either party and shall be binding on both parties "as parties are bound upon an award made pursuant to a reference to arbitration on the order of a Court of Record."

#### PROCEEDINGS IN CASE OF VIOLATIONS.

It will be seen that the Act does not contemplate that the Department of Labor, or any other department of the Government, shall institute proceedings when the provisions are believed to have been infringed. Any individual may lay the information necessary to such proceedings, as in the case of any other infringement of the law where the procedure for enforcing penalties is that prescribed by Part XV. of the Criminal Code (chap 146, R.S.C., 1906). Under the sections of the Criminal Code indicated, it is declared that any one Justice of the Peace may receive the information or complaint of an alleged breach of the law, grant a summons or warrant thereon, and issue his summons or warrant to compel the attend-



ance of witnesses for either party, and do all other necessary acts and matters preliminary to the hearing and the complaint or information may be tried before any one Justice of the Peace for the territorial division where the complaint or information arises.

#### APPLICATION UNDER CERTAIN CONDITIONS TO INDUSTRIES OTHER THAN PUBLIC UTILITIES.

An important special provision is that which (section 63) allows for a reference under the Act of disputes occurring in industries other than those associated with public utilities and provides for such variations in the machinery as may be necessary to cover the case, viz., an agreement to allow such reference to be forwarded to the Registrar, who will communicate it to the other party to the dispute, and if the other party similarly agrees, the present Act applies as in the case of public utility industries, and from the time the parties to such a dispute have been notified by the Registrar that in consequence of their mutual agreement the dispute has been brought under the present Act, any lockout or strike that may exist in connection therewith shall forthwith cease.

#### TECHNICAL IRREGULARITY NOT TO INVALIDATE PROCEEDINGS.

Finally, so far as this review of the Act is concerned, it is provided that "no proceeding under this Act shall be deemed invalid by reason of any defect of form or any technical irregularity."

#### A STEP IN ADVANCE.

It is not, of course, to be hoped that the present legislation will work from the start without a hitch, but it is believed to be a long step in advance upon all preceding measures that have touched the vexed and difficult problem of the relation of capital and labor in Canada. It varies in important respects from the Labor legislation that has been enacted in any other country where such matters have been seriously regarded, and it is believed such variations from beaten paths will be found helpful in the solution of the problem indicated, which is surely one of the most tremendous that the twentieth century will confront. In the successful working of the Act much depends upon the spirit in which it is accepted by employers and employees respectively; if this be, as there is every reason to hope, one of moderation and conciliation, the present measure may go far to obviate the friction that too often marks the relations to each other of these two all-important elements in the social system, and may thus help to promote the stability and development of Canadian industry, on which latter condition, more than on any other, depends ultimately the welfare of the country as a whole, no less than the betterment of the lot of the industrial classes in particular.

Among the recent purchasers of Smart-Turner pumps are the Victoria Harbor Lumber Co., Whitefish, Ont.; the Midland Engine Works, Midland, Ont.; James Ready, Fairville, N.B.; the E. Long Mfg. Co., Orillia, Ont.; The Delhi Mfg. Co., Delhi, Ont.; the Lion Brewery, Berlin, Ont.; J. H. Peel, Victoria Road, Ont.; the Montreal Reduction & Smelting Co., Trout Mills, Ont., and the Corporation of Calgary, Alta.

## Iron and Steel Nomenclature.

At the Brussels Congress of the International Association for Testing Materials held last year a report on the uniform nomenclature of iron and steel was presented. The committee was asked to continue its work with a view to securing the foreign equivalents of the terms defined. This has been done to some extent giving the terms in English, French, German, Swedish, Spanish and Dutch. The metallurgical definitions as presented by the committee are herewith given, together with definitions of special sizes and shapes of iron and steel and a suggestion as to the line of demarcation between iron and steel.

#### DEFINITIONS.

**Alloy Cast Irons.**—Those which owe their properties chiefly to the presence of an element (or elements) other than carbon.

**Alloy Steels.**—Those which owe their properties chiefly to the presence of an element (or elements) other than carbon.

**Basic Pig Iron.**—In America, pig iron containing so little silicon and sulphur that it is suited for easy conversion into steel by the basic open hearth process. It is restricted to pig iron containing not more than one per cent. of silicon.

**Bessemer Pig Iron.**—That which contains so little phosphorus and sulphur that it can be used by itself for conversion into steel by the original or acid Bessemer process. In America this term is restricted to pig iron containing not more than 0.10 per cent. of phosphorus.

**Bessemer Steel.**—Steel made by the Bessemer process, whether its carbon content is high, low or intermediate.

**Blister Steel.**—Steel made by carburizing wrought iron by heating it in contact with carbonaceous matter. It might also be made by so carburizing a low carbon steel.

**Cast Iron.**—Generically, iron containing so much carbon or its equivalent that it is not malleable at any temperature. Specifically, cast iron in the form of castings other than pigs, or remelted cast iron suitable for casting into such castings, as distinguished from pig iron—i.e., cast iron in pigs, etc. For instance, cast iron pigs—i.e., pig iron, like lead in pigs, i.e., pig lead—is remelted and cast into castings, such as columns, locks, gears, etc., of special shape suited to their special purpose; these are specifically called "cast iron," and this is the usual restricted meaning of "cast iron" in trade language. The committee recommends drawing the line between cast iron and steel at 2.20 per cent. carbon for the reason that this appears from the results of Carpenter and Keeling to be the critical percentage of carbon corresponding to the point "a" in the diagrams of Roberts-Austen and Roozeboom. As to the significance of this critical point the committee is not prepared to express an opinion. Prof. Wedding reported that in Germany every metallic product of the blast furnace is called pig iron or cast iron, and appeared to dissent from drawing any line between cast iron and steel. Mr. Brinell thought 2.20 per cent. of carbon a rather high limit for practical purposes.

**Cast Steel.**—The same as crucible steel. Obsolescent, and to be avoided because confusing and because a temptation to fraud.

**Cemented Steel.**—The same as blister steel.

**Charcoal Hearth Cast Iron.**—Cast iron which has had its silicon and usually its phosphorus removed in the charcoal hearth, but still contains so much carbon as to be distinctly cast iron.

**Converted Steel.**—The same as blister steel.

**Crucible Steel.**—Steel made by the crucible process, whether its carbon content is high, low or intermediate.

**Gray Pig Iron and Gray Cast Iron.**—Pig iron and cast iron in the fracture of which the iron itself is nearly or quite covered by graphite, so that the fracture has the gray color of graphite.

**Hematite Pig Iron.**—Originally pig iron made from the hematite ores of England, which happened to be so free from phosphorus and sulphur that the pig iron made from them can be used by itself for the acid Bessemer process. By association it has come to mean any pig iron thus relatively free from phosphorus and sulphur. The term is not used in America and is undesirable.

**Hot Metal or Direct Metal.**—The molten cast iron from the blast furnace before it has been allowed to solidify.

**Ingot Iron.**—Steel cast into an initially malleable mass and containing so little carbon or its equivalent that it does not harden greatly on sudden cooling. The word is rarely used in English, "mild steel" or "low carbon steel" or "soft steel" being generally used in its place. In America the line between soft steel and half-hard steel is usually drawn at a carbon content of about 0.20 per cent.

**Ingot Steel.**—Steel cast into an initially malleable mass and containing so much carbon or its equivalent that it hardens greatly on sudden cooling. The word is rarely used in English, but "hard steel," "high carbon steel" or "half-hard steel" are used in its place.

**Malleable Castings.**—Castings of malleable cast iron, which see.

**Malleable Cast Iron.**—Iron which when first made is cast in the condition of cast iron, and is made malleable by subsequent treatment without fusion. Although the English name of this variety suggests that it is cast iron, it is not truly a variety of cast iron, but rather forms an independent species of iron, because it lacks the essential property of cast iron, viz., its extreme brittleness. Though the term "malleable casting" is very common, the term "malleable cast iron" is very rarely used. The common but excusable term, we regret to see, is "malleable," pronounced "mallable" used as a substantive. Those with some respect for their mother tongue, if asked of what material a malleable casting was composed, would generally use a circumlocution.

**Malleable Iron.**—The same as wrought iron. Used in Great Britain, but not in the United States except carelessly as meaning "malleable cast iron" (vulgar "mallable").

**Malleable Pig Iron.**—An American trade name for the pig iron suitable for converting into malleable castings through the process of melting, treating when molten, casting in a brittle state, and then making malleable without remelting. The term should be used.

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with care to avoid confusion. This material is also called in trade in America "malleable iron," but this use should be avoided, because "malleable iron" has the older and (in Great Britain) firmly established meaning of "wrought iron."

**Mottled Pig Iron and Mottled Cast Iron.**—Pig iron and cast iron the structure of which is mottled, with white parts in which no graphite is seen, and gray parts in which graphite is seen.

**Open Hearth Steel.**—Steel made by the open hearth process, whether its carbon content is high, low or intermediate.

**Pig Iron.**—Cast iron which has been cast into pigs direct from the blast furnace. This name is also applied to molten cast iron which is about to be cast into pigs or is in a condition in which it could readily be cast into pigs.

**Plate Iron.**—A name applied in Great Britain to refined cast iron.

**Puddled Iron.**—Wrought iron made by the puddling process.

**Puddled Steel.**—Steel made by the puddling process, and necessarily slag bearing (See Weld steel).

**Refined Cast Iron.**—Cast iron which has had most of its silicon removed in the refinery furnace, but still contains so much carbon as to be distinctly cast iron.

**Shear Steel.**—Steel, usually in the form of bars, made from blister steel by shearing it into short lengths, piling, and welding these by rolling or hammering them at a welding heat. If this process of shearing, piling, etc., is repeated, the product is called "double shear steel."

**Steel.**—Iron which is malleable at least in some one range of temperature, and in addition is either (a) cast into an initially malleable mass; or, (b) is capable of hardening greatly by sudden cooling; or, (c) is both so cast and so capable of hardening. Variety (a) includes also molten iron which if cast would be malleable, as do its two sub-varieties, "ingot iron" and "ingot steel." (Tungsten steel is malleable only when red hot).

**Cast Steel (adjective).**—Consisting of solid Bessemer, open hearth, crucible or other slagless steel, and neither forged nor rolled; applied to steel castings. For instance, a "steel cast" gun is a gun which is a steel casting—i.e., which has been neither forged nor rolled. To call it a "cast steel" gun would imply that it was made of crucible steel, to which the term "cast steel" is restricted.

**Steel Castings.**—Unforged and unrolled castings made of Bessemer, open hearth, crucible or any other steel. Ingots and pigs are in a sense castings. The term "steel castings" is used in a more restricted sense, excluding ingots and pigs and including only specially shaped castings, such as are generally used without forging or rolling. They may, however, later be forged—e.g., under the drop press—when they cease to be "castings" and become "drop forgings," or if only part is forged then they are partly forgings and partly castings.

**Washed Metal.**—Cast iron from which most of the silicon and phosphorous have been removed by the Bell-Krupp process without removing much of the carbon, so that it still contains enough carbon to be classed as cast iron. The name "washed metal" is extended to cover this product even if its

carbon is somewhat below the proper limit for cast iron.

**Weld Iron.**—The same as wrought iron. Obsolete and needless.

**Weld Steel.**—Iron containing sufficient carbon to be capable of hardening greatly by sudden cooling, and in addition slag bearing because made by welding together pasty particles of metal in a bath of slag, as in puddling, and not later freed from that slag by melting. The term is rarely used.

**White Pig Iron and White Cast Iron.**—Pig iron and cast iron in the fracture of which little or no graphite is visible, so that their fracture is silvery and white.

**Wrought Iron.**—Slag bearing, malleable iron, which does not harden materially when suddenly cooled.

**Wrought Steel.**—The same as weld steel. Rarely used.

#### SPECIAL SIZES OR SHAPES OF IRON AND STEEL.

**Bar Iron.**—Wrought iron in the form of bars, rods, etc.

**Muck Bar.**—The wrought bars usually one inch thick and about four inches wide, made by the first rolling of a ball of puddled iron.

**Merchant Bar.**—Wrought iron in the form of merchantable bars or rods made by shearing muck bar into short lengths, piling it and rolling or forging it at a welding heat.

**Bloom.**—1. A large bar, drawn from an ingot or similar mass, for further manufacture. 2. A rough bar of wrought iron drawn from a Catalan or bloomary ball for further manufacture.

**Billet.**—A small bar drawn from a pile, bloom or ingot for further manufacture. The committee recommends that the line between blooms and billets be drawn at the size of five inches square, as representing common custom.

**Slab.**—A flat piece of plate, with its largest surfaces plane drawn or sheared from an ingot or like mass for further treatment.

#### THE BOUNDARY BETWEEN STEEL AND IRON.

It would be well to decide on a definite carbon-content to serve as a boundary line between ingot iron and ingot steel, between puddled iron and puddled steel, and between any other varieties of wrought iron and weld steel. Two plans have been considered. One is to draw this line at 0.32 per cent. carbon or its equivalent in other elements, for the reason that this carbon content appears to correspond to the critical point 0 in the diagrams of Roberts-Austen and Roozeboom. This has the merit of corresponding to a definite physical boundary. Mr. Pourcel would classify solely according to the presence or absence of slag, so that "steel" should include all forms of iron freed from slag by fusion and cast in a malleable condition, and "wrought iron" should include all classes produced in a pasty condition. He does not think that any cross classification according to the proportion of carbon is expedient.

The other plan is to draw the boundary at 0.20 per cent. of carbon, because this is a convenient place to separate the important classes "soft steel" and "half hard steel" so that if this point were adopted "ingot iron" would be synonymous with "soft steel," and "ingot steel" would be the advantages of the two classes "half-hard steel" and "hard steel."

#### VANCOUVER ISLAND MINERALS.

An official bulletin has been issued by the British Columbia government giving the result of an official trip made by the provincial assayer among the mines and groups of mines on the west coast of Vancouver Island which may be summarized as follows.

Little development, but well-marked copper and hematite iron zones exist on Quatsno Sound. This property is now under lease to an American syndicate at Seattle which contemplates the making of iron at Nootka-Wash., but so far no ore has been mined or shipped. At Nootka Sound, which lies south of and adjacent to Esperanza Inlet, also on west coast, extensive areas of crystalline marble of great purity and good quality exist, but whether it can be quarried in sufficiently large slabs to be profitable is not yet determined, although transportation facilities are all that could be desired.

At Hesquot Harbor, the next inlet to the south, the assayer found beds of zinc blende, carrying 20 to 25 ounces to the ton. At Sidney Inlet, 10 miles yet farther south, is a group of nine claims at a height of over 2,000 feet, the ore from which shows 17 per cent. copper. There are also many claims, containing iron and copper pyrites, on Clayoquot Sound, still farther south on the west coast of the island. The principal claims here are also owned by an American company composed of citizens of Seattle.

On Barkley Sound, the most important inlet on the west coast of Vancouver Island, are a large number of claims in which quantities of ore have been found showing principally copper pyrites, gold and silver. In one place a buff red stone, thought to have good value as a building stone, is found. In one plateau, 4,000 feet wide, there is the strong red color due to iron stain, and the whole ground, as well as some of the hills around, are heavily mineralized with iron pyrites and pyrrhotite. Here also many iron and other claims are bonded to American syndicates, though as yet little active work has been done, and no ore has been shipped.

Since it has developed that certain citizens of New York and Colorado have secured an option on a number of mineral claims at Sooke, on the southern coast of the island, great activity has been manifested in prospecting the district adjacent to Victoria. All the claims on which option has been given have developed copper-gold ores.

The great trouble with much of Vancouver Island is that the cliffs and mountains are so steep and vast as to be almost inaccessible, while the mineralization is so scattered and of such low grade, that only by the best and most modern machinery can it be developed to the financial advantage of the operator. The future of the island is far from being proven, yet the occasional concentrations render the proposition interesting for exploration.

#### SOMETHING LIKE A CHAIN

A chain two and a half miles long has just been completed at Cradley Heath. It weighs 25 tons, and had to be conveyed from the chain forge to the canal by a wagon drawn by a traction engine. It was shipped to a Leicestershire colliery, where it is to be used for hauling.



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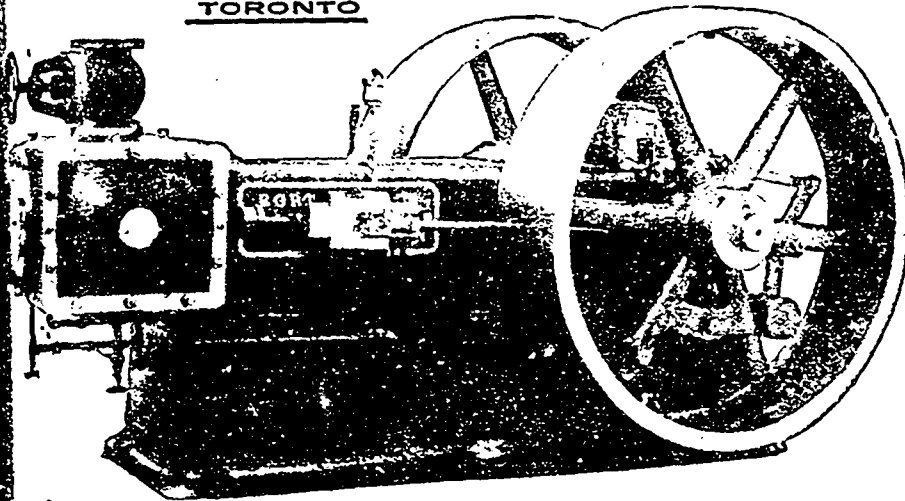
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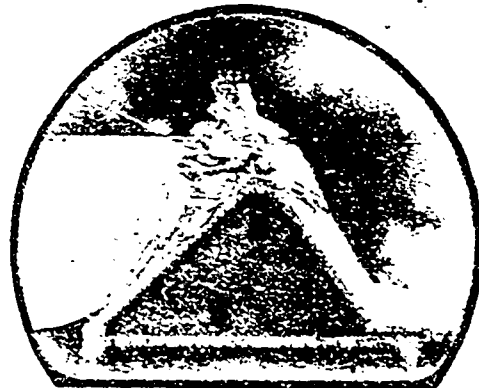
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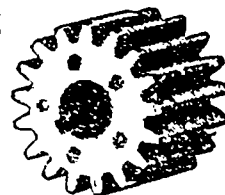
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# Classified Index of Lines Sold by Advertisers

All advertisers are invited to send in full list of lines sold by them. We desire to keep this index thoroughly up-to-date, but this will be impossible unless each advertiser sees to it that he is represented under each heading he is entitled to.

<p><b>Abrasives</b> Williams, A. R. Machinery Co., Toronto</p> <p><b>Accountants</b> Neff, A. C. &amp; Co., Toronto. Viau, Henri, Montreal.</p> <p><b>Acids</b> Canada Chemical Co., London, Ont. Nichols Chemical Co. of Canada, Montreal.</p> <p><b>Air Compressors</b> Allis-Chalmers-Bullock, Limited, Montreal. Canada Foundry Co., Toronto. Canadian Rand Drill Co., Sherbrooke, Que. Darling Bros., Montreal. Smart-Turner Machine Co., Hamilton, Ont.</p> <p><b>Alkali</b> Winn &amp; Holland, Montreal.</p> <p><b>Alum</b> Leslie, A. C. &amp; Co., Montreal. Nichols Chemical Co. of Canada, Montreal.</p> <p><b>Aluminum</b> Northern Aluminum Co., Pittsburg, Pa. Syracuse Smelting Works, Montreal.</p> <p><b>Angles, Beams and Girders</b> Bourne-Fuller Co., Cleveland, Ohio. Canada Foundry Co., Toronto. Nova Scotia Steel &amp; Coal Co., New Glasgow, N.S.</p> <p><b>Aniline Colors and Dyewood Extracts</b> Benson, W. T. &amp; Co., Montreal. Brunner, Mond &amp; Co., Norwich, England. Canada Chemical Mfg. Co., London, Ont. Cassella Color Co., New York City. McArthur, Corneille &amp; Co., Montreal. Nichols Chemical Co. of Canada, Montreal. Winn &amp; Holland, Montreal.</p> <p><b>Annealing Muffles and Furnaces (Wire)</b> Leslie, A. C. &amp; Co., Montreal. Turner, Vaughn &amp; Taylor Co., Cuyahoga Falls, Ohio.</p>	<p><b>Antimony</b> Syracuse Smelting Works, Montreal.</p> <p><b>Anvils and Vises</b> Leslie, A. C. &amp; Co., Montreal.</p> <p><b>Architects</b> Parke, R. J., Toronto.</p> <p><b>Automatic Gear Cutting Machines</b> Becker-Brainard Milling Machine Co., Hyde Park, Mass.</p> <p><b>Axles</b> Nova Scotia Steel &amp; Coal Co., New Glasgow, N.S.</p> <p><b>Babbitt Metal</b> Greedy, Wm. &amp; J. G., Toronto. Petrie, H. W., Toronto. Syracuse Smelting Works, Montreal.</p> <p><b>Banks</b> Bank of Hamilton, Hamilton, Ont.</p> <p><b>Bar Iron and Steel</b> Bourne-Fuller Co., Cleveland, Ohio. Leslie, A. C. &amp; Co., Montreal. London Rolling Mills, London, Ont. Union Drawn Steel Co., Hamilton, Ont.</p> <p><b>Belt Dressing</b> Greedy, Wm. &amp; J. G., Toronto. Petrie, H. W., Toronto. Sadler &amp; Haworth, Montreal and Toronto. Williams, A. R. Machinery Co., Toronto.</p> <p><b>Belt Fasteners</b> Bristol Co., Waterbury, Conn. McLaren, D. K., Montreal and Toronto. Petrie, H. W., Toronto. Sadler &amp; Haworth, Montreal and Toronto. Williams, A. R. Machinery Co., Toronto.</p>	<p><b>Bolting (Cotton)</b> Dominion Belting Co., Hamilton, Ont. Greedy, Wm. &amp; J. G., Toronto. McLaren, D. K., Montreal and Toronto. Petrie, H. W., Toronto. Sadler &amp; Haworth, Montreal and Toronto.</p> <p><b>Bolting (Leather)</b> Greedy, Wm. &amp; J. G., Toronto. McLaren, D. K., Montreal and Toronto. Petrie, H. W., Toronto. Sadler &amp; Haworth, Montreal and Toronto. Williams, A. R. Machinery Co., Toronto.</p> <p><b>Bolting (Rubber)</b> Greedy, Wm. &amp; J. G., Toronto. Gutta Percha &amp; Rubber Mfg. Co., Toronto. McLaren, D. K., Montreal and Toronto. Petrie, H. W., Toronto. Sadler &amp; Haworth, Montreal and Toronto.</p> <p><b>Bolting and Supplies</b> Bristol Co., Waterbury, Conn. Dominion Belting Co., Hamilton, Ont. Greedy, Wm. &amp; J. G., Toronto. Gutta Percha &amp; Rubber Mfg. Co., Toronto. Jeffrey Mfg. Co., Columbus, Ohio. McLaren, D. K., Montreal and Toronto. Petrie, H. W., Toronto. Williams, A. R. Machinery Co., Toronto.</p> <p><b>Blast Furnace Brick</b> Dunbar Fire Brick Co., Pittsburg, Pa. Elk Fire Brick Co., St. Mary's, Pa. Hamilton Facing Mill Co., Hamilton, Ont. Harbison-Walker Refractories Co., Pittsburg, Pa. Pennsylvania Fire Brick Co., Beech Creek, Pa. Stowe-Fuller Co., Cleveland, Ohio.</p> <p><b>Bleaching Powder</b> Winn &amp; Holland, Montreal.</p> <p><b>Blowers</b> Hamilton Facing Mill Co., Hamilton, Ont. Sheldons, Limited, Galt, Ont. Sturtevant, B. F. Co., Boston, Mass.</p>
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## CONTRACTORS

# DERRICKS

<sup>3</sup>/<sub>4</sub> Ton to 20 Tons

MADE IN CANADA.

## ST. LAWRENCE SUPPLY CO., Limited

1591 ONTARIO STREET EAST, MONTREAL

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

# CLASSIFIED INDEX.

(CONTINUED).

**Bluestone**  
 LeC. A. C. & Co., Montreal.

**Boiler Compounds**  
 Canada Chemical Mfg. Co., London, Ont.  
 Hamilton Facing Mill Co., Hamilton, Ont.

**Boiler Coverings**  
 Mac Boiler Covering Co., Montreal

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

**BOILERS (See Engines and BOLLERS)**

**Bolts and Nuts**  
 London Rolling Mills, London, Ont.  
 Murray, John, Screw, Limited, Ingersoll, Ont.

**Borax**  
 LeC. A. C. & Co., Montreal.

**Brick Machinery**  
 Bechtels, Limited, Waterloo, Ont.  
 Bez. A. & Sons Toronto.

**Building and Paving Brick**  
 Dunbar Fire Brick Co., Pittsburgh, Pa.  
 Hamilton Facing Mill Co., Hamilton, Ont.  
 Harrison-Walker Refractories Co., Pittsburgh, Pa.  
 Pennsylvania Fire Brick Co., Beech Creek, Pa.  
 Stowe-Fuller Co., Cleveland, Ohio.

**Building Iron and Steel**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Foundry Co., Toronto.  
 Expanded Metal & Fireproofing Co., Toronto.

**Builders' Materials**  
 Albert Mfg. Co., Hillsboro, Ont.  
 Canada Foundry Co., Toronto.  
 Expanded Metal & Fireproofing Co., Toronto.  
 Gardner, John J., Toronto.  
 Ontario Lime Association, Toronto  
 Sheldons, Limited, Galt, Ont.

**Burlap (Decorative)**  
 Dominion Oil Cloth Co., Montreal.

**Business Methodizers**  
 Van Henri, Montreal.

**Cables**  
 Greening, B. Wire Co., Hamilton, Ont.  
 Phelps Eugene F. Electrical Works Montreal.

**Calcium Chloride**  
 Winn & Holland, Montreal.

**Canada Plates**  
 LeC. A. C. & Co., Montreal.  
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.

**Caps**  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.

**Card Clothing**  
 Murray, D. K., Montreal and Toronto.

**Cast Iron Pipe**  
 Canada Foundry Co., Toronto.  
 Central Pipe Foundry Co., Montreal.  
 Dougall, John, Caledonian Iron Works Co., Montreal.

**Cuttings (Grey Iron, Malleable Iron and Brass)**  
 Greer, Wm. & J. G., Toronto.  
 Murray Engine Co., Walkerville, Ont.  
 Dougall, John, Caledonian Iron Works Co., Montreal.  
 McKinnon Dash & Metal Works Co., St. Catharines, Ont.  
 Smart-Turner Machine Co., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Cement**  
 Mac Boiler Covering Co., Montreal.  
 Ontario Lime Association.

**Cement Machinery**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Greer, Wm. & J. G., Toronto.  
 Dougall, John, Caledonian Iron Works Co., Montreal.

**Centrifugal Pumping Machinery**  
 Smart-Turner Machine Works, Baldwinsville, N.Y.  
 Smart-Turner Machine Co., Hamilton, Ont.

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

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

**Charcoal Pig Iron**  
 Canada Iron Furnace Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.

**Chemicals**  
 Canada Chemical Co., London, Ont.  
 Leslie, A. C. & Co., Montreal.  
 Nichols Chemical Co. of Canada, Montreal.  
 Winn & Holland, Montreal.

**Chemists**  
 Heys, Thomas & Son, Toronto.

**Chemists' Machinery**  
 Greer, Wm. & J. G., Toronto.

**Clay Working Machinery**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.  
 Bechtels, Limited, Waterloo, Ont.  
 Berg, A. & Sons, Toronto.  
 Greer, Wm. & J. G., Toronto.

**Coal, Coko and Charcoal.**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Hamilton Facing Mill Co., Hamilton, Ont.

**Coal Cutting Machines**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian Rand Drill Co., Sherbrooke, Que.  
 Jeffrey Mfg. Co., Columbus, Ohio.

**Coal Triples**  
 Jeffrey Mfg. Co., Columbus, Ohio.

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

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

**Collection Agency**  
 Petrie, H. D., Hamilton, Ont.

**Collectors (Pneumatic)**  
 Greer, Wm. & J. G., Toronto.  
 Sturtevant, B. F. Co., Hyde Park, Mass.

**Condensers**  
 Smart-Turner Machine Co., Hamilton, Ont.

**Connecting Rods.**  
 Canada Forge Co., Welland, Ont.

**Contractors' Machinery**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Gartsboro, John J., Toronto.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Contractors' Plants**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Petrie, H. W., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.  
 Williams A. R. Machinery Co., Toronto.

**Conveying Machinery**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Babcock & Wilcox, Limited, Montreal.  
 Canada Foundry Co., Toronto.  
 Greer, Wm. & J. G., Toronto.  
 Jeffrey Mfg. Co., Columbus, Ohio.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Perrin, William R. & Co., Limited, Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Copper Materials**  
 Greening, B. Wire Co., Hamilton, Ont.  
 Phillips, Eugene F. Electrical Works, Montreal.  
 Syracuse Smelting Works, Montreal.

**Covers**  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.

**Cranes (Electric and Hand Power)**  
 Babcock & Wilcox, Montreal.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Crankshafts**  
 Canada Forge Co., Welland, Ont.

**Crayons**  
 Lowell Crayon Co., Lowell, Mass.

**Crucibles**  
 Dixon, Joseph, Crucible Co., Jersey City, N.J.  
 Hamilton Facing Mill Co., Hamilton, Ont.  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
 Syracuse Smelting Works, Montreal.

**Crucible Caps**  
 Hamilton Facing Mill Co., Hamilton, Ont.  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.

**Crucible Covers**  
 McCullough-Dalzell Crucible Co., Pittsburg, Pa.

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

**Dashes**  
 McKinnon Dash & Metal Works Co., St. Catharines, Ont.

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

**Directories**  
 Kelly's Directories, Limited, Toronto

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

**Dredges**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Drill Chucks**  
 Krug & Crosby, Hamilton, Ont.

**Drills**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
 Petrie, H. W., Toronto.

**Drills (Pneumatic and Rock)**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Canadian Rand Drill Co., Sherbrooke, Que.  
 Jeffrey Mfg. Co., Columbus, Ohio.

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

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

**Dry Battery Filler**  
 International-Acheson-Graphite Co., Niagara Falls, N.Y.

**Dry Kiln Apparatus**  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Boston, Mass.

**Dust and Shavings Separators**  
 Greer, Wm. & J. G., Toronto.  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Boston, Mass.

**Dye Stuffs and Chemicals**  
 Benson, W. T. & Co., Montreal.  
 Brunner, Mond & Co., Northwich, England.  
 Canada Chemical Mfg. Co., London, Ont.  
 Cassella Color Co., New York City.  
 Leslie, A. C. & Co., Montreal.  
 McArthur, Cornelle & Co., Montreal.  
 Nichols Chemical Co. of Canada, Montreal.  
 Winn & Holland, Montreal.

**DYNAMOS (See Motors and Dynamoes)**

**Electric Meters and Transformers**  
 Packard Electric Co., St. Catharines, Ont.

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

**Electric Transformers**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Electrical Supplies**  
 Bristol Co., Waterbury, Conn.  
 Canadian General Electric Co., Toronto



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Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jones & Moore Electric Co., Toronto.  
Morrison, Jas., Brass Mfg. Co., Toronto.  
Packard Electric Co., St. Catharines, Ont.  
Toronto & Hamilton Electric Co., Hamilton, Ont.

## Electrodes

International-Acheson-Graphite Co., Niagara Falls, N.Y.

## Elevators and Conveyors

Darling Bros., Montreal.  
Greay, Wm. & J. G., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.

## Elevator Insurance

Canadian Casualty & Boiler Insurance Co., Toronto.

## Emery and Emery Wheels

Forman, John, Montreal.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Petrie, H. W., Toronto.

## Engineers (Chemical)

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

## Engineers (Civil)

Mitchell, Charles H., C.E., Toronto.  
Parke, R. J., Toronto.

## Engineers (Consulting)

Aitken, K. L., Toronto.  
Electrical Construction Co., London, Ont.  
Fensom, O. J., Toronto.  
Hunt, Robert W. & Co., Chicago, Ill.  
Marion & Marion, Montreal.  
Mitchell, Charles H., C.E., Toronto.  
Parke, R. J., Toronto.  
Perrin William R. & Co., Limited, Toronto.

## Engineers (Contracting)

Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
Fensom, O. J., Toronto.  
Greay, Wm. & J. G., Toronto.  
Hall, J. B. & Son, Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Robb Engineering Co., Amherst, N.S.

## Engineers (Electrical)

Aitken, K. L., Toronto.  
Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Ltd., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Crocker-Wheeler Co., St. Catharines, Ont.  
Electrical Construction Co., London, Ont.  
Fensom, O. J., Toronto.  
Jones & Moore Electric Co., Toronto.  
Marion & Marion, Montreal.  
Toronto & Hamilton Electric Co., Hamilton, Ont.

## Engineers (Mechanical)

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
Electrical Construction Co., London, Ont.  
Fensom, O. J., Toronto.  
Greay, Wm. & J. G., Toronto.  
Hall, J. B. & Son, Toronto.  
Hunt, Robert W. & Co., Chicago, Ill.  
Kerr Engine Co., Walkerville, Ont.  
Marion & Marion, Montreal.  
Mitchell, Charles H., C.E., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Robb Engineering Co., Amherst, N.S.

Sheldons, Limited, Galt, Ont.  
Smart-Turner Machine Co., Hamilton, Ont.

## Engineers (Mill and Hydraulic)

Fensom, O. J., Toronto.  
Greay, Wm. & J. G., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

## Engineers (Mining)

Heys, Thomas & Son, Toronto.  
Mills, S. D., Toronto.

## Engineers and Contractors

Greay, Wm. & J. G., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Smart-Turner Machine Co., Hamilton, Ont.

## Engineers' Supplies

Morrison, Jas., Brass Mfg. Co., Toronto.

## Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Goldie & McCulloch Co., Galt, Ont.  
Morris Machine Works, Baldwinsville, N.Y.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Petrie, H. W., Toronto.

Robb Engineering Co., Amherst, N.S.

Sheldons, Limited, Galt, Ont.  
Smart-Turner Machine Co., Hamilton, Ont.

Sturtevant, B. F. Co., Boston, Mass.  
Williams, A. R. Machinery Co., Toronto.

## Engravers

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

## Exhaust Fans

Greay, Wm. & J. G., Toronto.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Sheldons, Limited, Galt, Ont.  
Sturtevant B. F. Co., Boston, Mass.

## Exhaust Heads

Darling Bros., Montreal.  
Sheldons, Limited, Galt, Ont.  
Sturtevant B. F. Co., Hyde Park, Mass.

## Exhausters

Sheldons, Limited, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park, Mass.

## Factory Sites

(See Factory Locations.)

## Fans

Sheldons, Limited, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park, Mass.

## Feed Water Heaters

Babcock & Wilcox, Limited, Montreal.  
Darling Bros., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Pittsburg Filter Mfg. Co., Pittsburg, Pa.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

## Feed Water Purifiers

Pittsburg Filter Mfg. Co., Pittsburg, Pa.

## Files

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

## Fillet (Pattern)

Hamilton Facing Mill Co., Hamilton, Ont.  
Sadler & Haworth, Montreal and Toronto.

## Filters (Oil)

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

## Filters and Filtering Systems (Water)

Babcock & Wilcox, Limited, Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Pittsburg Filter Mfg. Co., Pittsburg, Pa.

## Financial

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

## Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburg, Pa.  
Elk Fire Brick Co., St. Mary's, Pa.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Harbison-Walker Refractories Co., Pittsburg, Pa.  
Leslie, A. C. & Co., Montreal.  
Ontario Lime Association, Toronto.  
Pennsylvania Fire Brick Co., Beech Creek, Pa.  
Stowe-Fuller Co., Cleveland, Ohio.

## Fire Escapes

Darling Bros., Montreal.

## Flour Mill Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.

## Forges and Blowers

Canada Foundry Co., Toronto.  
Greay, Wm. & J. G., Toronto.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Sheldons, Limited, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

## Forgings

Canada Forge Co., Welland, Ont.

## Founders

Canada Foundry Co., Toronto.  
Goldie & McCulloch Co., Galt, Ont.  
Greay, Wm. & J. G., Toronto.  
Kerr Engine Co., Walkerville, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

## Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.  
International-Acheson-Graphite Co., Niagara Falls, N.Y.

## Fuel Economizers

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

## Furniture (Lodge, Opera and School)

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

## Galvanizing

Ontario Wind Engine & Pump Co., Toronto.

## Galvanizing and Tinning Machinery and Furnaces (Wire)

Greay, Wm. & J. G., Toronto.  
Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

## Gas Blowers and Exhausters

Sturtevant, B. F. Co., Hyde Park, Mass.

## Gas and Gasoline Engines

Economic Power, Light & Heat Supply Co., Toronto.  
Morrison, T. A. & Co., Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

## Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.  
Morrison, Jas., Brass Mfg. Co., Toronto.

## Gauges (Steam)

Morrison, Jas., Brass Mfg. Co., Toronto.  
Petrie, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto.

## Gauges (Water)

Babcock & Wilcox, Limited, Montreal.  
Morrison, Jas., Brass Mfg. Co., Toronto.

## Generating Sets

Sturtevant, B. F. Co., Hyde Park, Mass.

## Generators

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Phillips, Eugene F., Electrical Works, Montreal.  
Toronto & Hamilton Electric Co., Hamilton, Ont.

## Gloves, Mittens and Moccasins

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

## Glycerine

Winn & Holland, Montreal.

## Government Notices

Factory Inspectors.  
Minister of Agriculture.

## Graphite

Dixon, Jos. Crucible Co., Jersey City, N.J.  
Hamilton Facing Mill Co., Hamilton, Ont.  
International-Acheson-Graphite Co., Niagara Falls, N.Y.  
McCullough-Dalzel Crucible Co., Pittsburg, Pa.  
Morrison, Jas., Brass Mfg. Co., Toronto.

## Hack Saws

Krug & Crosby, Hamilton, Ont.

## Hames

McKinnon Dash & Metal Works Co., St. Catharines.

## Hardware

Butterfield & Co., Rock Island, Que.  
Gartshore, John J., Toronto.  
Globe Machine & Stamping Co., Cleveland, Ohio.  
Morrow, John, Screw, Limited, London, Ont.

## Heating and Ventilating Apparatus

Darling Bros., Montreal.  
Sheldons, Limited, Galt, Ont.  
Sturtevant, B. F. Co., Boston, Mass.

## High Pressure Blowers

Sturtevant, B. F. Co., Hyde Park, Mass.

## Hoisting Engines

Allis-Chalmers-Bullock, Limited, Montreal.

## Hoists (Chain and Pneumatic)

Canadian Rand Drill Co., Sherbrooke, Que.

## Hose (Fire and Pneumatic)

Gutta Percha & Rubber Mfg. Co., Toronto.

## Hydrants

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

## Hydraulic Accumulators

Canadian Boomer & Boschert Press Co., Montreal.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Perrin, Wm. R. & Co., Limited, Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

## Hydraulic Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Canadian Boomer & Boschert Press Co., Montreal.  
Darling Bros., Montreal.  
Greay, Wm. & J. G., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.

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

Smart-Turner Machine Co., Hamilton, Ont.

## Hydro-Electric Plant

Allis-Chalmers-Bullock, Limited, Montreal.

**HARBISON WALKER REFRACTORIES CO.**  
 PITTSBURGH, PA.

Manufacturers of  
 Highest Grade  
 Refractories.

Importers of  
 Chrome Ore.

Sole Agents for  
 Carl Spaeter Magnesite.

**Fire Clay Silica  
 Magnesia, Chrome  
 BRICK.**

Electric Furnaces, Linings, Slaves,  
 Open Hearth Furnaces,  
 Brick, Crucibles, Linings, Brick  
 for Glass Furnaces, Brick for Mill  
 and Heating Furnaces,  
 Brick for Copper, Nickel, Brass  
 Smelters, Gas, Ordinary Cement  
 Linings, Brick for Lime Kilns, etc.

7,500 Regular Customers      Write for Booklet      1,000,000 Daily Capacity

**I**F you could see the quality of materials, the care and skill which go to the making of every McCullough-Dalzell Crucible, based on scientific study of founders' needs, we'd get your orders. Write for prices.

**MCCULLOUGH-DALZELL CRUCIBLE COMPANY, PITTSBURG, PA.**

**The Stone-Flux Co.**      **FIRE BRICK**      SILICA      FIRE CLAY  
 CLEVELAND, O.      ALUMNITE      SILICA CEMENT

MAGNESITE      BURNT MAGNESITE

Our factories are the most complete in the country. Located in Pennsylvania, Ohio, and Kentucky—and controlling the largest known bodies of Refractory materials for different work. Operated by experienced managers. We manufacture material for all heat work—second to none. Capacity over 200,000 Brick and Special Shapes per day. Write for catalogue.

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## Injectors

Canada Foundry Co., Toronto.  
Morrison, Jas., Brass Mfg. Co., Toronto.  
Williams, A. R. Machinery Co., Toronto.

## Insulated Wires and Cables

Phillips, Eugene F., Electrical Works, Montreal.

## Insulation, Sound and Cold Storage

Mica Boiler Covering Co., Montreal.

## Iron and Steel Specialties

Armstrong Mfg. Co., Bridgeport, Conn.  
Bourne-Fuller Co., Cleveland, Ohio.  
Canada Foundry Co., Toronto.  
Leslie, A. C. & Co., Montreal.  
London Rolling Mill Co., London, Ont.  
Lysaght, John, Limited, Bristol, England and Montreal.  
Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
Petrie, H. W., Toronto.  
Union Drawn Steel Co., Hamilton, Ont.

## Iron and Steel Inspection

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

## Lamps—Electric

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

## Lathes

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

## Lathes (Wood-working)

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

## Linoleum

Domimon Oil Cloth Co., Montreal.

## Lubricators

Hamilton Facing Mill Co., Hamilton, Ont.  
Morrison, Jas., Brass Mfg. Co., Toronto.

## Machinists

Fisher Bros., Toronto.  
Goldie & McCulloch Co., Galt, Ont.  
Greedy, Wm. & J. G., Toronto.  
Hall, J. B. & Son, Toronto.  
Kerr Engine Co., Walkerville, Ont.  
Krug & Crosby, Hamilton, Ont.  
Robb Engineering Co., Amherst, N.S.  
Smart-Turner Machine Co., Hamilton, Ont.

## Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.  
Butterfield & Co., Rock Island, Que.  
Goldie & McCulloch Co., Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Morrow, John, Screw, Limited, Ingersoll, Ont.  
Petrie, H. W., Toronto.

## Machine Tools

Becker-Brainard Milling Machine Co., Hyde Park, Mass.  
Darling Bros., Montreal.  
Petrie, H. W., Toronto.

## Malleable Castings

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

## Marine and Stationary Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.  
Smart-Turner Machine Co., Hamilton, Ont.

## Mechanical Draft

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

## Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio

## Metallurgists

Mills, S. D., Toronto.

## Mica Coverings

Mica Boiler Covering Co., Montreal.

## Mill Machinery and Supplies

Allis-Chalmers-Bullock, Limited, Montreal.  
Armstrong Mfg. Co., Bridgeport, Conn.  
Becker-Brainard Milling Machine Co., Hyde Park, Mass.

Darling Bros., Montreal.  
Gardshore, John J., Toronto.  
Goldie & McCulloch Co., Galt, Ont.

Greedy, Wm. & J. G., Toronto.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Hay, Peter Knife Co., Galt, Ont.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Morrow, John, Screw, Limited, Ingersoll, Ont.  
McDougall, John, Caledonian Iron Works Co., Montreal.

McLaren, D. K., Montreal and Toronto.  
Petrie, H. W., Toronto.  
Robb Engineering Co., Amherst, N.S.  
Sadler & Haworth, Montreal and Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.  
Spence, R. & Co., Hamilton, Ont.

## Milling Cutters and Machines

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

## Mining Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Gardshore, John J., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Perrin, William R. & Co., Limited, Toronto.  
Petrie, H. W., Toronto.  
Williams, A. R. Machinery Co., Toronto

## Motors and Dynamos

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Electrical Construction Co., London, Ont.  
Forman, John, Montreal.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
Petrie, H. W., Toronto.  
Sturtevant, B. F. Co., Hyde Park, Mass.  
Toronto & Hamilton Electric Co., Hamilton, Ont.

## Motors (Electric)

Sturtevant, B. F. Co., Hyde Park, Mass.

## Moulding Sand

Hamilton Facing Mills Co., Hamilton, Ont.

## Moulders Supplies.

Hamilton Facing Mill Co., Hamilton, Ont.

## Municipal Filtration Plants (Water)

Pittsburg Filter Mfg. Co., Pittsburg, Pa.

## Nickel

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

## Nozzles

McCullough-Dalzell Crucible Co., Pittsburg, Pa.  
Morrison, Jas., Brass Mfg. Co., Toronto.

## Office and Bank Fittings

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

## Oils and Lubricants

Dixon, Jos. Crucible Co., Jersey City, N.J.  
Hamilton Facing Mill Co., Hamilton, Ont.  
Imperial Oil Co., Petrolia, Ont.  
Queen City Oil Co., Toronto.

## Oil Cloth

Domimon Oil Cloth Co., Montreal.

## Paint Pigment

International-Acheson-Graphite Co., Niagara Falls, N.Y.

## Paints and Colors

Berry Bros., Walkerville, Ont.  
McArthur, Cornells & Co., Montreal.

## Paint and Color Machinery.

Greedy, Wm. & J. G., Toronto.

## Paper Manufacturers

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

## Patents

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

## Perforated Metals

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

## Personal Accident

Canadian Casualty & Boiler Insurance Co., Toronto.

## Phosphorizers

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

## Pig Iron

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

## Pipe (Riveted, Iron and Steel)

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

## Pipe Threading Machine

Armstrong Mfg. Co., Bridgeport, Conn.  
Butterfield & Co., Rock Island, Que.  
Morrison, Jas., Brass Mfg. Co., Toronto.  
Petrie, H. W., Toronto.

## Pipe Coverings

Mica Boiler Covering Co., Montreal.

## Pipes and Tubes

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

## Plaster

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

## Plates

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

## Plumbago

Hamilton Facing Mills Co., Hamilton, Ont.  
International-Acheson-Graphite Co., Niagara Falls, N.Y.

McCullough-Dalzell Crucible Co., Pittsburg, Pa.

## Pneumatic Separators

Sheldons, Limited, Galt, Ont.  
Sturtevant, B. F. Co., Hyde Park, Mass.

## Pneumatic Tools

Allis-Chalmers-Bullock, Limited, Montreal.  
Canadian Rand Drill Co., Sherbrooke, Que.  
Hamilton Facing Mill Co., Hamilton, Ont.

## Pointer Rolls (For Bods and Wire)

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

## Power Plants—Equipments

Allis-Chalmers-Bullock, Limited, Montreal.  
Babcock & Wilcox, Limited, Montreal.  
Canadian General Electric Co., Toronto.  
Canadian Westinghouse Co., Ltd., Hamilton, Ont.  
Darling Bros., Montreal.  
Economic Power, Light & Heat Supply Co., Toronto.  
Electrical Construction Co., London, Ont.  
Goldie & McCulloch, Galt, Ont.  
Gutta Percha & Rubber Mfg. Co., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Jones & Moore Electric Co., Toronto.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Packard Electric Co., St. Catharines, Ont.

Perrin, Wm. R. & Co., Limited, Toronto.

Petrie, H. W., Toronto.

Phillips, Eugene F., Electrical Works, Montreal.

Robb Engineering Co., Amherst, N.S.

Sadler & Haworth, Montreal and Toronto.

Smart-Turner Machine Co., Hamilton, Ont.

Sturtevant, B. F. Co., Boston, Mass.

Toronto & Hamilton Electric Co., Hamilton, Ont.

## Presses (Tie, Sewer Pipe, Nozzles and Sleeves)

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

## Presses (Balling, Celluloid, Cider, Die, Filter Vulcanizing)

Canadian Boomer & Boschert Press Co., Montreal.  
Perrin, Wm. R. & Co., Limited, Toronto.

## Presses (Hydraulic)

Canadian Boomer & Boschert Press Co., Montreal.  
Perrin, Wm. R. & Co., Limited, Toronto.

## Presses (Stamping and Drawing)

Hall, J. B. & Son, Toronto.

## Pulleys

Darling Bros., Montreal.  
Goldie & McCulloch Co., Galt, Ont.  
Greedy, Wm. & J. G., Toronto.  
Jeffrey Mfg. Co., Columbus, Ohio.  
McDougall, John, Caledonian Iron Works Co., Montreal.  
Petrie, H. W., Toronto.  
Smart-Turner Machine Co., Hamilton, Ont.

## Producer Gas Plants

Economic Power, Light & Heat Supply Co., Toronto.  
Producer Gas Co., Toronto.

## Pumps and Pumping Machinery

Allis-Chalmers-Bullock, Limited, Montreal.  
Canada Foundry Co., Toronto.  
Canadian Boomer & Boschert Press Co., Montreal.  
Darling Bros., Montreal.  
Downie Pump Co., Downsville, Pa.  
Goldie & McCulloch Co., Galt, Ont.  
Kerr Engine Co., Walkerville, Ont.  
Morris Machine Works, Baldwinville, N.Y.  
McDougall, John, Caledonian Iron Works Co., Montreal.

Ontario Wind Engine & Pump Co., Toronto.

Perrin, Wm. R. & Co., Limited, Toronto.

Petrie, H. W., Toronto.

Smart-Turner Machine Co., Hamilton, Ont.

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**Punches and Shears**  
 Globe Machine & Stamping Co., Cleveland, Ohio.  
 Petrie, H. W., Toronto.

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

**Purifying and Softening Systems (Water)**  
 Babcock & Wilcox, Limited, Montreal.  
 Darling Bros., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.

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

**Railway Supplies**  
 Algoma Steel Co., Sault Ste. Marie, Ont.  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Ingersoll, John J., Toronto.  
 Manning, B. Wire Co., Hamilton, Ont.  
 Gutta Percha & Rubber Mfg. Co., Toronto.  
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
 Petrie, Eugene F. Electrical Works, Montreal.

**Reamers**  
 Butterfield & Co., Rock Island, Que.

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

**Rock and Ore Crushers**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Rolling Mill Engineers**  
 Bourne-Fuller Co., Cleveland, Ohio.

**Rolls, Chilled Iron and Sand Cast.**  
 Greig, Wm. & J. G., Toronto.

**Roofing**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Sheldons, Limited, Galt, Ont.

**Rotary Blowers**  
 Sturtevant, B. F. Co., Hyde Park, Mass.

**Rubber Goods**  
 Gutta Percha & Rubber Mfg. Co., Toronto.

**Rubber Packing**  
 Gutta Percha & Rubber Mfg. Co., Toronto.

**Rubber Washing Tubs**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Rural Mail Boxes**  
 Globe Machine & Stamping Co., Cleveland, Ohio.

**Saddlery Hardware**  
 Mason Dash & Metal Works Co., St. Catharines, Ont.

**Safes and Vaults**  
 Goldie & McCulloch Co., Galt, Ont.

**Salammoniac**  
 Leslie, A. C. & Co., Montreal.  
 Winn & Holland, Montreal.

**Sal Soda**  
 Winn & Holland, Montreal.

**Saw Mill Machinery**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Screws**  
 Brown, John, Screw, Limited, Ingersoll, Ont.

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

**Second-Hand Machinery**  
 Krug & Crosby, Hamilton, Ont.

**Sewer Pipes.**  
 Dominion Sewer Pipe Co., Swansea, Ont.  
 Ontario Lino Association, Toronto.

**Shafting**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Forge Co., Welland, Ont.  
 Goldie & McCulloch Co., Galt, Ont.  
 Greig, Wm. & J. G., Toronto.  
 Leslie, A. C. & Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.  
 Petrie, H. W., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Shear Knives**  
 Peter Knife Co., Galt, Ont.

**Sheets (Iron and Steel)**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Leslie, A. C. & Co., Montreal.  
 Sturtevant, John, Limited, Bristol, England, and Montreal.

**Sheet Metal Goods**  
 Globe Machine & Stamping Co., Cleveland, Ohio.

**Sheet Metal Stamping**  
 Globe Machine & Stamping Co., Cleveland, Ohio.

**Shovels.**  
 Canada Facing Mill Co., Hamilton, Ont.

**Signal Contacts**  
 International-Acheson-Graphite Co., Niagara Falls, N.Y.

**Silicate of Soda**  
 Winn & Holland, Montreal.

**Smoke Stacks**  
 McDougall, John, Caledonian Iron Works Co., Montreal.

**Smart-Turner Machine Co., Hamilton, Ont.**

**Soda Ash**  
 Winn & Holland, Montreal.

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

**Special Machinery**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Fisher Bros., Toronto.  
 Globe Machine & Stamping Co., Cleveland, Ohio.  
 Greig, Wm. & J. G., Toronto.  
 Hall, J. B. & Son, Toronto.  
 Krug & Crosby, Hamilton, Ont.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Speed Recorders**  
 Bristol Co., Waterbury, Conn.

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

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

**Steam, Hot Blast Apparatus**  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Hyde Park, Mass.

**Steam Pumps**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Canada Foundry Co., Toronto.  
 Darling Bros., Montreal.  
 Goldie & McCulloch Co., Galt, Ont.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Petrie, H. W., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.  
 Williams, A. R. Machinery Co., Toronto.

**Steam Separators**  
 Babcock & Wilcox, Limited, Montreal.  
 Darling Bros., Montreal.  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Robb Engineering Co., Amherst, N.S.  
 Sheldons, Limited, Galt, Ont.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Steam Shovels**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Steam Specialties**  
 Darling Bros., Montreal.  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Hyde Park, Mass.

**Steam Valves**  
 Babcock & Wilcox, Limited, Montreal.  
 Darling Bros., Montreal.  
 Kerr Engine Co., Walkerville, Ont.  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Petrie, H. W., Toronto.  
 Williams, A. R. Machinery Co., Toronto.

**Steel Rails**  
 Algoma Steel Co., Sault Ste. Marie, Ont.  
 Drummond, McCall & Co., Montreal and Toronto.  
 Galtshore John J., Toronto.

**Steel Shafting**  
 Canada Forge Co., Welland, Ont.  
 Darling Bros., Montreal.  
 Goldie & McCulloch Co., Galt, Ont.  
 Greig, Wm. & J. G., Toronto.  
 Leslie, A. C. & Co., Montreal.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Nova Scotia Steel & Coal Co., New Glasgow, N.S.

**Stocks and Dies**  
 Armstrong Mfg. Co., Bridgeport, Conn.  
 Butterfield & Co., Rock Island, Que.  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Petrie, H. W., Toronto.

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

**Structural Steel**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Canada Foundry Co., Toronto.

**Sulphate of Alumina**  
 Nichols Chemical Co. of Canada, Montreal.  
 Winn & Holland, Montreal.

**Sulphite of Ammonia**  
 Winn & Holland, Montreal.

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

**Switchboards**  
 Allis-Chalmers-Bullock, Limited, Montreal.

**Systematizers**  
 Viau, Henri, Montreal.

**Tanks (Oil and Water)**  
 Canada Foundry Co., Toronto.  
 Goldie & McCulloch Co., Galt, Ont.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Ontario Wind Engine & Pump Co., Toronto.

**Taps and Dies**  
 Butterfield & Co., Rock Island, Que.  
 Globe Machine & Stamping Co., Cleveland, Ohio.

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

**Textile Manufacturers**  
 Dominion Oil Cloth Co., Montreal.  
 Storey, W. H. & Sons, Aton, Ont.

**Thermometers (Recording)**  
 Bristol Co., Waterbury, Conn.  
 Morrison, Jas., Brass Mfg. Co., Toronto.

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

**Tool Steel**  
 Bourne-Fuller Co., Cleveland, Ohio.  
 Leslie, A. C. & Co., Montreal.

**Traps (Steam)**  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Hyde Park, Mass.

**Trucks**  
 Greig, Wm. & J. G., Toronto.  
 McDougall, John, Caledonian Iron Works Co., Montreal.  
 Sheldons Limited Galt, Ont.

**Trucks (Railway)**  
 Canada Foundry Co., Toronto.

**Trucks (Wire Mill Supplies)**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Tubs (Cleaning and Coating Wire)**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Tumbling Barrels**  
 Globe Machine & Stamping Co., Cleveland, Ohio.  
 Petrie, H. W., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.

**Turbines**  
 Allis-Chalmers-Bullock, Limited, Montreal.  
 Canada Foundry Co., Toronto.

**Upright Drills**  
 Krug & Crosby, Hamilton, Ont.

**Valves**  
 Babcock & Wilcox, Limited, Montreal.  
 Canada Foundry Co., Toronto.  
 Canadian Boomer & Boschert Press Co., Montreal.  
 Kerr Engine Co., Walkerville, Ont.  
 Morrison, Jas., Brass Mfg. Co., Toronto.  
 Petrie, H. W., Toronto.  
 Smart-Turner Machine Co., Hamilton, Ont.  
 Williams, A. R. Machinery Co., Toronto.

**Valves (Rubber)**  
 Gutta Percha & Rubber Mfg. Co., Toronto

**Varnishes**  
 Berry Bros., Walkerville, Ont.

**Ventilators**  
 Darling Bros., Montreal.  
 Sheldons, Limited, Galt, Ont.  
 Sturtevant, B. F. Co., Boston, Mass.

**Wagon and Carriage Wood Work**  
 Hore, F. W. & Son, Hamilton, Ont.

**Washers or Hollinders (Cleaning Rubber)**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Water Purifying Chemicals**  
 Canada Chemical Mfg. Co., London, Ont.

**Water Softening Plants**  
 Pittsburg Filter Mfg. Co., Pittsburg, Pa.

**Wheelbarrows.**  
 Hamilton Facing Mill Co., Hamilton, Ont.

**Whiting**  
 Leslie, A. C. & Co., Montreal.

**Windmills**  
 Ontario Wind Engine & Pump Co., Toronto.

**Wire Mill Supplies**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Wire**  
 Greening, B. Wire Co., Hamilton, Ont.  
 Leslie, A. C. & Co., Montreal.  
 Phillips, Eugene F. Electrical Works, Montreal.

**Wire Cloth**  
 Greening, B. Wire Co., Hamilton, Ont.  
 Greig, Wm. & J. G., Toronto.  
 Winn & Holland, Montreal.

**Wire Drawing Machinery**  
 Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio.

**Wood-Working Machinery**  
 Goldie & McCulloch Co., Galt, Ont.  
 Petrie, H. W., Toronto.  
 Sheldons, Limited, Galt, Ont.  
 Williams, A. R. Machinery Co., Toronto.

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

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MARGARET CARLYLE, Parliament Buildings, Toronto.  
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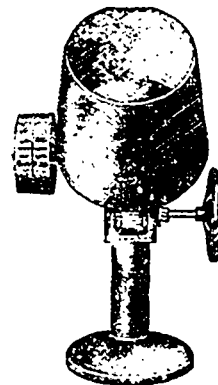
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The efficiency of a mechanical draft plant  
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per cent. more power. We make it part of  
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Fans  
Econo-  
mizers



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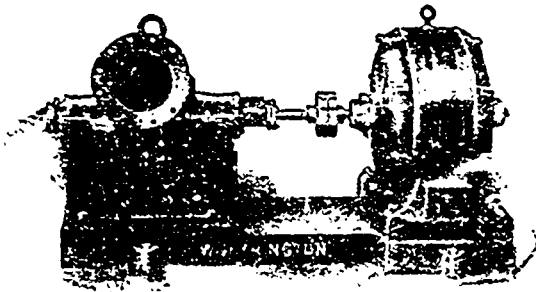
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