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VOL. 49. TORONTO, DECEMBER 16, 1904. No. 12.

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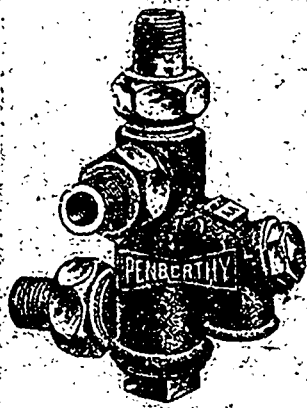
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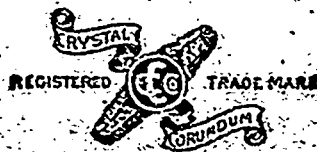
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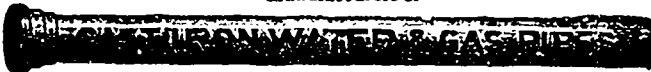
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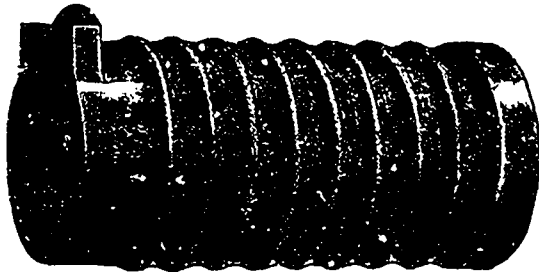
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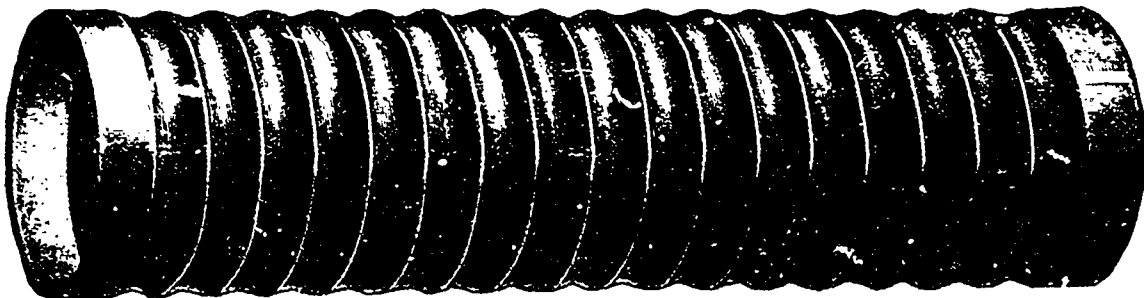


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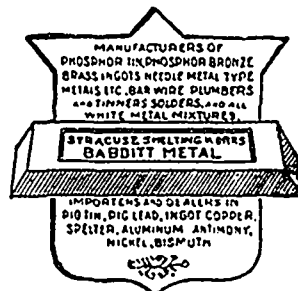


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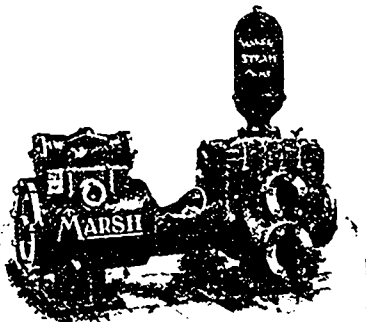
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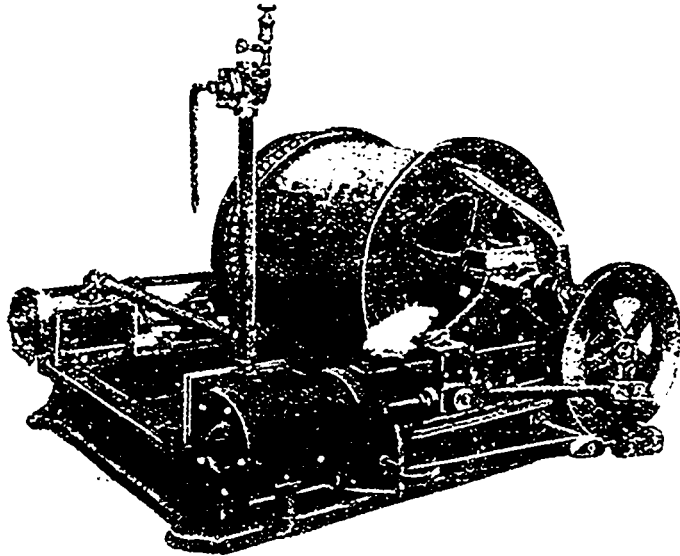
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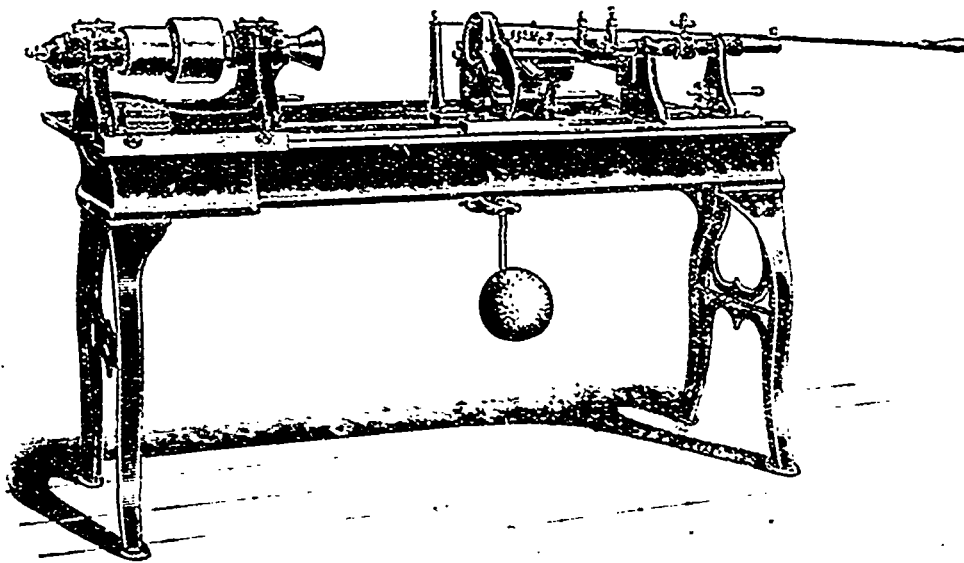
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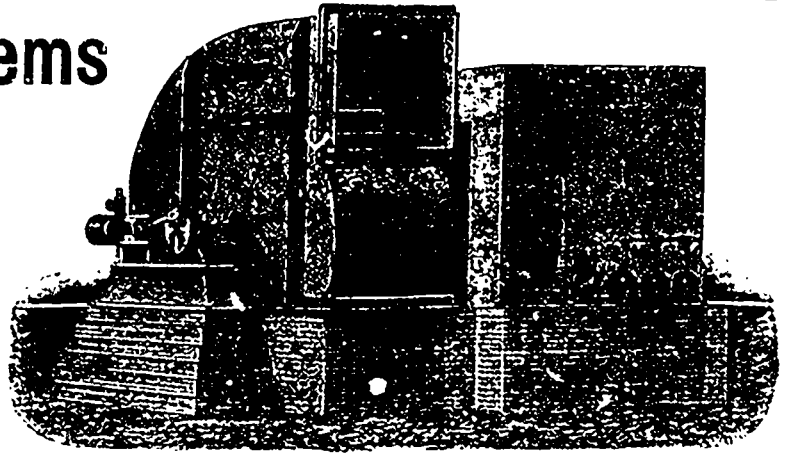
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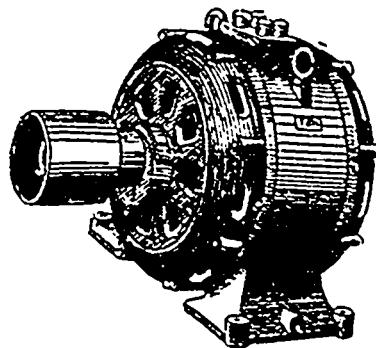
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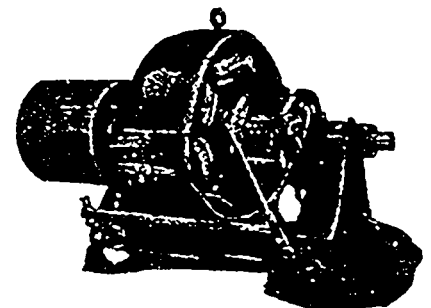
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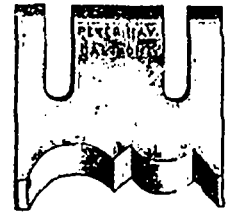
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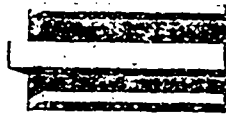
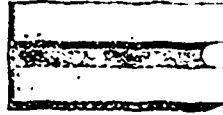
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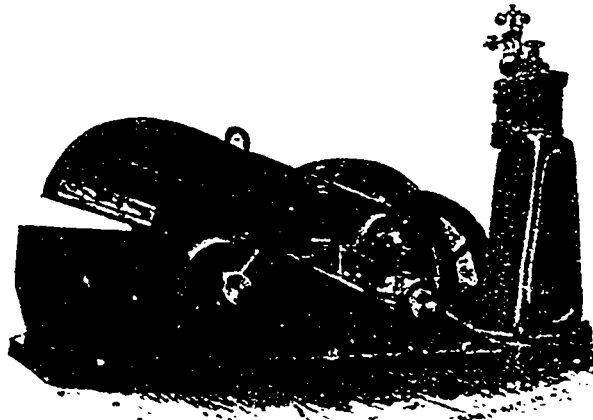
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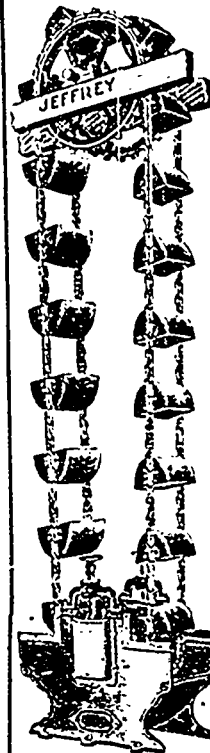
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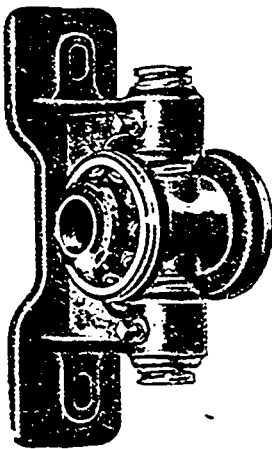
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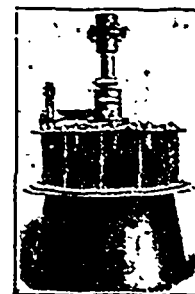
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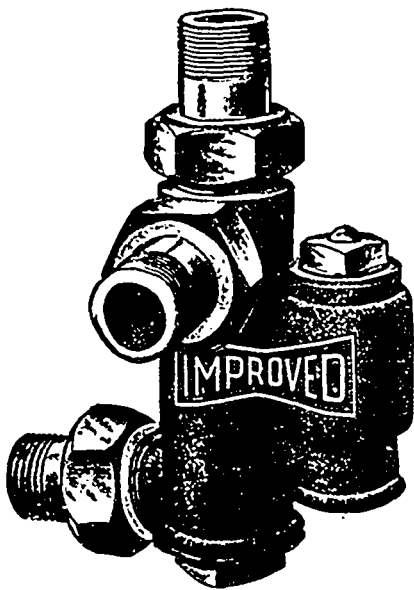
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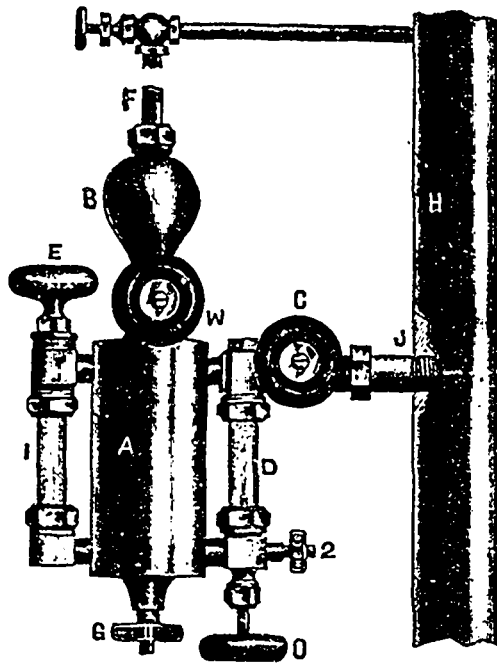


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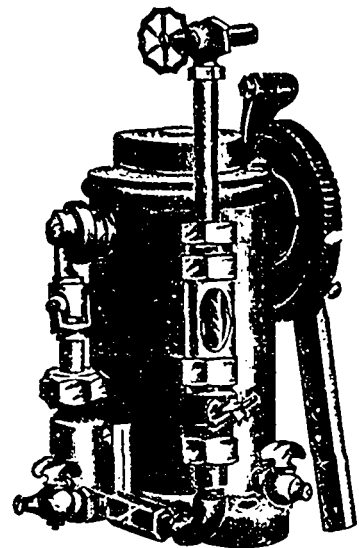
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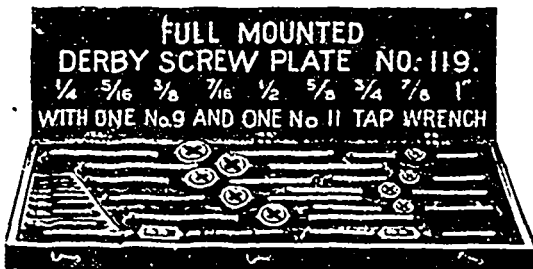


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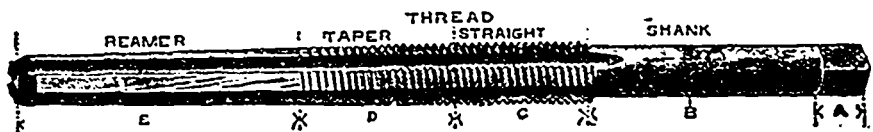
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Classified IndexPage 42

Index to AdvertisersPage 49

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THE JOINT HIGH COMMISSION.

Washington despatches report that Senator Fairbanks is seeking to revive the now dormant joint high commission. This body was organized in 1897 for the purpose of effecting, by friendly conference, the adjustment of a number of issues between Canada and the United States, the determination of which would be of mutual advantage. The commission met in Quebec on August 23, 1898, and sat until October 10. It reassembled in Washington in November and remained in session until February 20, 1899. Its deliberations were suspended through inability to reach a satisfactory conclusion of the Alaska boundary question. This matter was settled by the Alaska boundary tribunal, which met in London in September, 1903. While its outcome was far from pleasing to the Canadians, the ill-feeling was directed against England rather than against the United States, with which country few Canadians were offended because the decision went against them. Their criticism fell upon England and Lord Alverstone, who voted with the American commissioners. There still remain a number of questions which American statesmen think it would be well to decide now, and their consideration by the joint high commission is desirable. Should that body be reconvened, one subject should be left entirely out of official discussion. That is, reciprocity. On neither side of the line are matters ripe for an official treatment of this matter. Canada is indifferent, and American interest in it is as yet local rather than general. It is virtually certain that if reciprocity were to be made the main theme of discussion the meeting would promptly dissolve without result and leave behind it an undesirable memory. It would be best, in the event of a meeting, that there should be a mutual understanding that the object of the convention was friendly discussion and conference upon certain subjects, such as the lake and ocean fisheries, the alien labor laws, the bonding privilege, the seal fisheries, with a further understanding that no specific action should be taken on any other basis than that of harmony and full con-

currence. In other words, it would be better to leave matters as they are than to change their status by any proceedings which would cause resentment. Both countries desire cordial and friendly relations with their neighbors. Social and commercial relations with them are close, and any step that will bring them closer, that will tend to cement friendship and promote neighborly sentiments and harmonious action between the two nations whose boundaries touch for 3,000 miles, should find active support.

RECIPROCITY.

Very little talk is being indulged in in Canada regarding reciprocity between this country and the United States. Not so is the case in that country. The remarkable results of some of the recent elections there have given heart to the movement, and encouragement to those who favor it; while it is being most vigorously combatted by those who oppose it. Canada takes a languid interest in the question, but a natural curiosity impels one to know how it is viewed by both sides by our neighbors. The Literary Digest, summing it up, says:

A flurry of talk during the last few days about reciprocity with Canada has been accompanied by a suggestion that closer trade relations will lead to annexation, and has been followed by assertions that there will be neither annexation nor reciprocity. Sir Wilfrid Laurier, the Canadian premier, is represented by a correspondent of the Boston Transcript to be mildly favorable to suggestions of a reciprocity that would remove duties from "all sorts of crops, coal, ores, fish and fish products, fruits, fowls, lumber, and various raw materials for manufacture." Senator Lodge says he favors a reciprocity treaty "which will prove advantageous to both countries," but declines to tell what he thinks the details of such a treaty should be. The usual history of our attempts at reciprocity treaties has been that every one has favored the idea in the abstract, but when it comes down to the actual reduction of duty on any particular article, such an outcry is raised by the interested parties that nothing is

done. The feeling in Canada is sketched thus by the Baltimore American:

"By every consideration of geography, language, institutions, and blood, the people of the United States and Canada are one. Unwise American statesmanship alone is responsible for the fact that an unfriendly nation has been developing to the northward. The correction of some of these blunders is of more consequence to this country than even an excessive protection of the Massachusetts codfish industry, but we should hardly expect the Lodges in Congress to see it. They can never see the woods for the trees."

The first step—reciprocity—is yet to be taken, however, and some think it will be a long time before it is taken. An influential Canadian business man who is visiting in Washington said to a Tribune correspondent the other day:

"In Canada we hear the echoes of the reciprocity talk going on in Boston and some other parts of the United States, and we simply laugh. It is very fine for Mr. Foss and others of your prominent statesmen to shout for reciprocity with Canada, but who informed them that the Dominion was herself in any humor to reciprocate?"

"It strikes me that this is a case where it takes two to make a bargain. We have adopted the same protective system that you have in the United States, only not quite so extreme, with the same good results, and we are going to adhere to that policy. I do not mean that there are not some trade agreements with the States we would not be willing to make. I think Canadians generally would be glad of a removal of duties on wheat and other cereals and on livestock. If the tax on these products of the farm were abolished it would be a good thing for the people on both sides of the line, but this could hardly be expected.

"As a matter of fact, Canada has been enormously benefited by the protective principle and isn't going to surrender it. To conclude a reciprocity agreement with the United States would simply mean the ruin of all of our flourishing industries. It would put us in the same condition in which England finds itself to-day, a dumping-ground for the products of other countries. Nobody in Canada wants this, and hence, while your New Englanders can go blithely on in their plausible arguments for reciprocity, we are content to stand pat and wonder how it would profit them if they should convert the whole Yankee nation to their views."

"Year after year Canada pleaded for reciprocity and sent to Washington delegations of distinguished statesmen, who met with scant courtesy, and this has never been forgiven. She was badly worsted, moreover, in the boundary controversy, and, all things being equal, she is not likely to agree to any terms that would be acceptable to the United States."

Alarm is felt in Great Britain, however, lest commercial reciprocity lead to political union. The London correspondent of the New York Times cables:

"Despatches received in London from the United States since the Presidential election have aroused considerable

anxiety in some quarters in regard to the future relations between Canada and the Mother Country.

"It looks to many English statesmen as though there were serious danger of closer commercial relations between Canada and the United States, which would result immediately in great damage to England's colonial trade, and eventually, perhaps, in the dissolution of the political ties that unite England and her American colony."

"It is possible that one effect of the agitation in the United States will be to scare the Britishers who now oppose Mr. Chamberlain's tariff scheme into support of it. Certainly the English people would regard the establishment of anything like a commercial union between the two American countries as a direct menace to the British Empire.

"In a mild form reciprocity between the two countries would not, *per se*, so alarm England as to suggest that the dismemberment of the empire had begun, but it is felt here that the Americans who demand reciprocity do not mean to stop at mild reciprocity, but want to get as near free trade as possible, and free trade between the United States and Canada, or anything approximating it, would, many Englishmen think, lead up to relations between those countries that could not exist while Canada continued to be a part of the British Empire."

The New York World speaks favorably of the reciprocity-annexation idea in the following editorial:

"The political question involved is of infinitely more importance than any two-penny commercial interests that may be concerned about maintaining a Chinese wall along the border.

"If Canada is ever to become part of the United States it must be conquered through a commercial union. We have tried the experiment of starving the Dominion into submission, and have nothing to show for our pains except a feeling of increased hostility. Under the settled policy of retarding Canadian development we have been driving Canada into closer relations with Great Britain, which is precisely the thing that a wise statesmanship would have sought to prevent.

"Merely as a political proposition Canada should be dependent commercially on the United States, not on Great Britain. She should seek in New York and Boston, not in London, the money to develop her resources. She should find the market for her raw materials in the United States. She should rely chiefly on the United States for the things she cannot make for herself."

CANADIAN TRADE CONDITIONS.

At the recent annual meeting of the shareholders of the Bank of Montreal, held in Montreal, Sir George A. Drummond, speaking of Canadian trade conditions, and the bright outlook for the coming year, said:

"In reviewing the general condition of the country it may be noted that the Stock Exchange, reflecting as it does the views of investors, has apparently entered on a period of revival, securities have now a higher range of value, and confidence in the lasting character of this im-

provement appears to be spreading. It is evident that any marked increase of immigration or in the production of cereals must come from the North-West. We have there an immense territory, of which the area stated in figures conveys no adequate idea, but taking only that portion to the south of the 55th parallel of latitude, which, as you know, passes through the north of England, the Government expert estimates that the portion suitable for cultivation in Manitoba, Assiniboia, Saskatchewan and Alberta, that is, from Manitoba to the mountains, reaches an extent considerably exceeding the total area of the Empire of Germany, while referring to the much larger extent to the north of the 55th parallel, he says. What proportion of these vast districts will be capable of the profitable growing of crops is as yet a matter of conjecture. Striking proofs of progress in this part of the Dominion are everywhere visible. The population of Manitoba and the Territories, which in 1901 was 422,000, became in 1904, 870,000. The homestead entries, which in 1901 numbered 8,157 and represented 1,305,120 acres taken for cultivation, had in 1904 reached the number of 31,383 and covered an acreage of 5,021,281, and to this may be added land sold for settlement by the companies, bringing the total up to 9,387,501 acres. The number of immigrants which ten years ago, in 1895, was 25,788, and for years made little progress over this figure, last year reached 150,329, and is believed during the present year to have largely exceeded that number, but statistics are not yet obtainable. While the evidences of progress are, as already said, most marked in our Western Territories, the rest of the Dominion has not been standing still. One feature is noteworthy, the number of new manufacturing enterprises springing up all over the country; some of them are essentially Canadian, others are branches of important American industries. It is impossible to give data, even approximately correct, of their extent or number, but I hold in my hand a list of over thirty in Ontario and Quebec, and may say that for three only in this city and neighborhood sites have been secured averaging about fifty acres each.

"Of trade in general, I submit the following brief summary, which, taken in conjunction with the remarks of the General Manager, may be useful:

"Dry Goods—A fairly good year's business, the woolen industry somewhat better, collections good.

"Lumber—Not so good; the production this year will be reduced, and better prices expected.

"Provisions—The export of bacon shows large increase, and considerable quantity of provisions are going to South Africa.

"Live Stock—Exports show large decline; prices of cattle being very low.

"Leather—Good year's business at fair prices.

"Boots and Shoes—A very unsatisfactory year, consequent on labor troubles and high prices of material.

"Groceries—Business reported good and fairly profitable; the farmers reported prosperous everywhere.

"Dairy Produce—Cheese has been disappointing, but butter has been satisfactory, upon the whole fairly good.

"The grain trade of the port shows a marked falling off.

"The hay crop of this province has been exceptionally good, and exports fetched remunerative prices.

"Iron and Hardware—Not so good as last year, which was phenomenal."

THE FUEL BRIQUETTING INDUSTRY.

In Europe, during the past quarter of a century, the briquetting industry has been developed until at present it has impressed its importance amongst the world's industries. In this manufacture the lower qualities of combustible fuels are utilized, placing them in compact forms for manufacturing, marine, railroad, and domestic uses. The expansion of this industry, with its increasing value in economizing waste products, has been brought into notice in the United States mainly through the agencies of the consular service.

The combustible elements used in this manufacture consist of slack coal or screenings, anthracite culm or dust, coke breeze, lignite coal, charcoal dust, bog turf, carboniferous mud, and petroleum. The manufacture consists in pulverizing these elementary materials to a fine condition and then mixing them thoroughly with the necessary bonding matter, consisting chiefly of coal tar or pitch; the composition is then pressed into several shapes to meet the consumer's needs.

Evidently this industry is in its most advanced condition in countries inheriting large areas of inferior qualities of coals, or with broad localities of peat bogs, and where fuel is high priced, says John Fulton in an article in *Mines and Minerals*. It has also been largely developed in the countries in which retort coke ovens are in large use, producing coal tar as one of the chief by-products, which can be used in its crude state or boiled to pitch, thus contributing the important bonding material in the manufacture of briquets.

It may be noted in this connection, that in most of these countries, producing briquets, the price of good coal, especially for domestic use, is nearly prohibitory, ranging from \$3 to \$20 per ton. To insure a market for the briquet products, the price must be considerably under that of good coal in the several countries in which briquetting has been established.

At this time Germany is the largest producer of briquets, and also of varieties of briquetting machines. France, Belgium, Austria, Netherlands, Norway, and Great Britain have also taken up this manufacture with much energy and have made hopeful progress. These examples of the economy of utilizing the less valuable fuels in briquets are extending the industry to other countries, especially to those having large deposits of the raw material suitable for the manufacture of briquets. In 1882 4,000,000 metric tons of briquets were produced; it is now estimated that nearly 25,000,000 tons are produced, or almost 3 per cent. of the total product of coal and lignite.

Fuel briquetting has for its aim the accomplishment of the following objects. (1) The utilization of the fine material unavoidably made in mining and handling of

coal; (2) the creation of a good hard fuel to burn practically without smoke or odor; (3) the concentration of the greatest number of heat units into the smallest space practicable, by cleaning and compressing material of inferior heating value.

In the mining of coal, a large proportion of the output of a mine is often necessarily dust, slack, or culm, of which a certain amount is wasted. In the case of coking coals, the slack is generally charged into ovens, but anthracite coal dust is usually wasted.

To appreciate the advantage of using fuels which burn without smoke or odor, one should contrast some American cities with those of Germany. The dense trailing clouds of smoke from mill and factory chimneys, which are so familiar a sight in Pittsburg and other cities in the United States, extensively burning raw coals rich in bitumen, are stated to be rarely seen in those sections of Germany in which briquets are largely used. In this latter country the indiscriminate shoveling of raw bituminous coal into steam and other furnaces is considered an ignorant and wasteful proceeding.

The third object—that of obtaining concentrated fuel—is one not to be overlooked when fuel is to be transported long distances before it is used, and also when storage room is limited.

Many coals require washing to remove impurities before coking, and a similar process is sometimes advantageously employed in briquetting processes to clean the material used.

The characteristics desirable in fuel briquets, are enumerated in the following specifications issued by the French Navy and the Belgian State Railway. (1) The briquet must be hard, homogeneous in density and size, only very slightly hygroscopic, and it should burn almost without smoke or odor; (2) the dust and breakage caused by handling and transportation should not exceed 5 per cent.; (3) the specific gravity should not be less than 1.19, (4) the briquet should ignite readily, burn with a cheerful flame, and retain its shape until completely burned; (5) the ash should not exceed 9 per cent. and the evaporation results should at least equal those of the best lump coal, from the screenings and dust of which the briquet was made.

WILL YOU HELP IT?

The Hospital for Sick Children, Toronto, appeals for funds to maintain the thousands sick children that it nurses within its walls every year.

The Hospital is not a local institution. The sick child from any place in Ontario who can't afford to pay has the same privileges as the child living in Toronto and is treated free.

The Hospital had last year in its beds and cots 761 patients, 267 of these were from 196 places outside of Toronto.

The cost is 98 cents per patient per day, and there were 129 sick little ones a day in the hospital.

Since its foundation the Hospital has treated 10,371 children—about 7,500 of these were unable to pay and were treated free.

Every dollar may be the translator of your kind thoughts into the Hospital kind deeds.

Everybody's dollar may be the Friend in Need to Somebody's child.

Let the money of the strong be mercy to the weak. The Hospital pays out dividends of health and happiness to suffering childhood on every dollar that is paid by the friends of little children.

If you know of any sick child in your neighborhood who is sick or crippled or has club feet send the parent's name to the Hospital.

See what can be done for club-foot children. There were 14 cases last year and hundreds in 28 years.

Please send contributions to J. Ross Robertson, chairman, or to Douglas Davidson, secretary-treasurer, of The Hospital for Sick Children, College Street, Toronto.

EDITORIAL NOTES.

In a recent speech, speaking of tariff revision, United States Senator Beveridge said:

Men talk of tariff revision as though it were a simple thing—an easy task. No problem is more intricate. What is the tariff? It is not an artificial structure to be taken apart and put together like the trick box of a juggler. It is the development of a theory of statesmanship. It is a growth and not a creation. Those who prepared the soil of this nation planted in that soil the seeds of the American industrial independence which men call protection. If here and there a branch now needs pruning those who planted the tree and have guarded its growth should do it, not those who resisted its planting in the first place and who for years have sought to lay the axe at its roots. Even the changing of a single schedule is no work for the prejudiced or ignorant. For other schedules are related to it and to all these adjusted the vast business of the greatest of business nations. Republican revision of any schedule means the thoughtful consideration of every other schedule.

In other words, as with other commercial problems call in the expert and not the bungling Jack-of-All-Trades.

The results accomplished by the reciprocity treaty between the United States and Cuba during the first quarter of the current calendar year are described by Minister Squiers in a brief but significant report just received at the State Department. This report shows that Cuba's import trade has risen from \$17,343,433 to \$19,381,633, an increase of \$2,038,200, in the first quarter of 1904, as compared with the same period of 1903. Of this amount more than one-third, or \$735,298, was gained by Great Britain; more than one-fourth, or \$558,993, by Spain; and more than one-sixth, or \$298,607 by Germany. The United States ranks fourth in the amount gained, being credited with only \$290,010. Thus it appears that the United States, with a concession of 20 per cent. or more on all its products, has secured but 14 per cent. of the normal increase in the business of the island, while Great Britain, for example, although competing at an apparent disadvantage, has obtained more than one-third of the total new business. In commenting upon these figures Mr. Squiers says:

"The imports into Cuba from the United States show an increase of but 3 per cent., while those from England, Germany, Spain, and France increased 20, 21, 16, and 8 per cent., respectively, and I am unofficially informed that the Cuban exports to the United States have very largely increased."

Nearly all the advantage gained by American exporters from the reductions of the reciprocity treaty was promptly lost by the 30 per cent. advance in the principal schedules made by the Cuban Government soon after the convention went into force.—*The Bulletin*.

No concern can be considered up-to-date, nor completely equipped, if it does not subscribe to its trade papers, says an exchange. If a business house had in its employ a dozen travelers, each scouring a certain territory for news, it is safe to say that the sum total of work done by those twelve men would not be so great as that of a trade paper. The information they secured might be of the greatest diversity, but they do not represent an iota of the resources at the command of a well-organized trade paper. The twelve travelers would be confined in their interests to the actual firm they represent.

The trade paper grasps the whole trade. Captained by a man familiar with the trade community in its many phases and aspects, the trade paper is able by its resources to gather in the threads of business from every part, and by the interchange of ideas, which the courtesy of contemporary "exchanges" facilitates, is enabled to present to its readers a survey and review of the trade it represents, a thousand times more complete and comprehensive than any travelers. Moreover, the trade paper is a permanent record, not merely a fleeting view or impression. The trade paper is one of the biggest factors in modern commerce it is possible to conceive, and the man who refuses to support his own trade paper is guilty of a culpable negligence of the interests of the community of which he has the honor to be a member.

The better the trade paper is supported, the greater and more valuable the work it is enabled to achieve. Cripple it with insufficient support and it is a stigma on the trade, and a reflection on the trade's intelligence. The well-supported trade paper can champion the cause of the oppressed, of which in every trade there is a large proportion; it removes abuses, and watches over the well-being of the trade or commercial community whose name it bears.

It is noteworthy that the complaints of Mr. Fielding's anti-dumping duties come from British merchants, not from shippers in the United States. British goods, which are less generally "dumped," are kept out by the requirement of a certificate which no shipper can sign upon absolute knowledge, whereas the dextrous Yankee sends his merchandise along just the same as usual. The dumping clause discriminates against the conscientious trader every time.—*Mail and Empire*.

Canadian merchants and importers are the "traders" who purchase both British and American merchandise, to the value of hundreds of millions of dollars every year,

the proportion being largely in favor of American goods. The *Mail and Empire* suggests that the Canadian buyers of American goods, and the sellers of them also, are without "conscience" in their dealings, i.e. dishonest, while all the goodness is possessed by the British seller. This is rather rough on Canadian buyers of American goods.

The stonemasons of Toronto have a new trouble. They are being hit by an innovation by which contractors saved themselves in a measure from defeat at the time of the building strike and brick shortage. When the strike occurred contracts had been taken for a large number of works, chiefly warehouses. There were no laborers to do the work incidental to the laying of foundations. There were no bricklayers. There was a meagre supply of brick. The contractors proceeded to make their foundations of concrete, and, finding it successful, went on to make a considerable part of the walls of concrete. They found concrete to be a good thing for warehouses, so they put it also into the fabric of uptown residences, and again they found it good. When the laborers went back to work and the brickyards caught up with the demand for brick, a new situation had arisen. There was a new factor to be reckoned with—concrete. Concrete had come to stay. The substitution of concrete for stone and brick, and the consequent danger to the financial welfare of bricklayers and stonemasons is under consideration by the bricklayers' union. It may yet be the subject of some defensive action on the part of the unions, but many members of the bricklaying and stone working trades are reaching the conclusion that it might be best worth their while to accept the new conditions.

Mr. George Pattinson, of Preston, Ont., has been selected by his friends as the representative of their interests in the approaching elections for members of the Ontario legislature. Mr. Pattinson has been for years closely identified with the woolen manufacturing industry of Canada. As is well known, he has heretofore served the province well as one of its best legislators. He has always been a persistent advocate for adequate tariff protection to all Canadian manufacturing industries. He has been an active member of the Manufacturers' Association for many years; and has helped to shape its tariff policy, and is, at this time, a member of its tariff committee. Not being a candidate in a Toronto constituency he may not, in his campaign, have to face the opposition of the chairman of the Toronto branch of the Association, as Mr. A. E. Kemp did a few weeks ago when running for a seat in the Dominion House of Commons. Mr. Pattinson, true to the policy of the Association, advocates an immediate revision of the tariff.

The first issue of this journal was published on the first Friday in January, 1880, since which event it has been published regularly on the first and third Fridays of every month. The present issue closes the twenty-fourth year of the prosperous and happy existence of THE CANADIAN MANUFACTURER.

AN AUTOMATIC ELECTRIC PUMP AND RECEIVER.

The annexed illustration shows a motor-driven, triplex, boiler-feed pump and receiver with automatic switches and motor starter for automatically draining heating systems and factory apparatus which depend upon a free circulation of steam for their efficiency. By doing this it serves a double purpose, first, it automatically relieves the system of the water of condensation constantly collecting in it, thus insuring a free and unobstructed circulation and, incidentally, preventing snapping and hammering in the piping, which is in many cases due to entrained water; and second, it automatically delivers this water directly to the boiler without the intervention of tanks or other commonly used devices. Not only does it relieve the system of a troublesome factor, but it introduces a supply of feed water into the boiler at a temperature impossible otherwise without the use of a special water heater.

In modern hotels and apartment houses it is necessary that machinery should operate with the least possible noise. One of the greatest annoyances is water hammer in the pipes reaching to every part of the building, but by the use of this pumping outfit such noise is entirely eliminated.

Electric pumps can be installed in locations to which it is impossible to carry any other motive power, and as this pump, by reason of its automatic control, runs only when occasion demands, no special attendance is necessary and the total cost of operation is for current actually used.

The following description will make the action of the apparatus plain: A is the pump, B the motor, C the receiver and D a lever, operated by a pail float within the receiver,

which rises and falls as the water level changes. E is the main-line switch, which operates by hand and is used to cut out the line when necessary. F is a switch operated by the float in the receiver through the chain and counter-weight, G H is the automatic switch which admits current to the motor starter, I, when the switch F is thrown in by action of the float. I is the motor starter which delivers current gradually to the motor and is operated through the solenoid, J. K is the fuse block and L, the line wires.

The switch E being closed, water in the receiver rises and throws in the float switch F, thereby turning the current through the automatic switch H, which, in turn, delivers it to the solenoid J, thus gradually pulling up the lever I and gently starting the pump. As the water is pumped out and the float falls, the operation is reversed and the pump stops.

The illustration shows the standard type of double-acting pump and receiver, with electrical connections and motor, as usually installed. The pump may be either single-acting or double-acting as desired, the arrangement in either case being the same. The receiver is of the vertical form, and consists of a cylindrical closed chamber or tank mounted on a bed-plate secured to the base of the pump, so that the apparatus is compact and self-contained. An opening at the bottom of the receiver is provided with a pipe connection to the suction of the pump, and the water of condensation flows into the receiver through the inlets shown near the top. Three separate inlets are provided for convenience in connecting the returns.

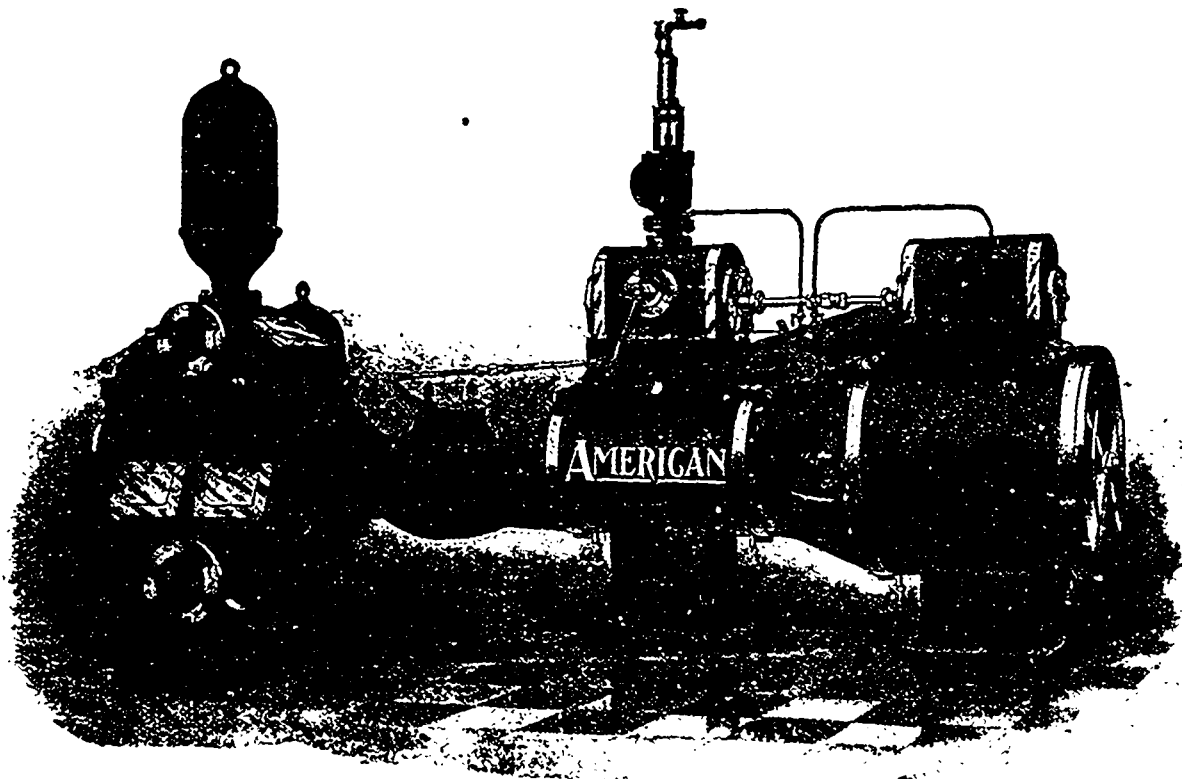
The receiver float is of a patented type and is a simple pail, open at the top and hung from a lever having a counter-weight so placed as to over-balance the weight of the pail. The pail is kept filled with water, and

when the receiver is empty the weight of this water causes the pail to hang in its lowest position. As soon as the water rises in the receiver above the pail, the weight of the float is immediately reduced to the mere weight of the pail and the counterweight causes the pail to rise to its highest position and to throw the float switch F to start the pump. This style of float is very simple in construction and sensitive in operation. It is so guided as to hang in the centre of the receiver without swinging, and the receiver inlets are provided with hoods to prevent the entering water from interfering with the action of the float.

The outfit is made by the International Steam Pump Co., New York.

ANOTHER LARGE FACTORY FOR CANADA.

The American Axe & Tool Co., Glassport, Pa., one of the largest manufacturers in the world of axes, hatchets, scythes, etc., will build a branch factory in Canada so as to better take care of their rapidly increasing business on this side of the border. The exact location of the factory has not as yet been finally determined upon, but it will be in Montreal, Toronto, Hamilton or Niagara Falls, Ont., with the chances in favor of the latter place. In the new factory the American Axe & Tool Co. will manufacture all such goods as now come from their American plants and by reason of the very promising possibilities in the agricultural section of the North-West recently opened up by the Dominion Government in addition to the usually heavy demands from this class of trade, the company contemplate also adding harvest tools to their other lines. The Canadian sales offices of the company are located in the Coristine Building, Montreal, under the management of Mr. J. Hoffmann.



AUTOMATIC ELECTRIC PUMP AND RECEIVER.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER

A NEW COMPOUND STEAM PUMP.

The accompanying illustration shows a new compound steam pumping engine recently put on the market by the American Steam Pump Co., Battle Creek, Mich. This pump presents features of construction and design particularly adapted to high-service duty in elevator or pumping station work.

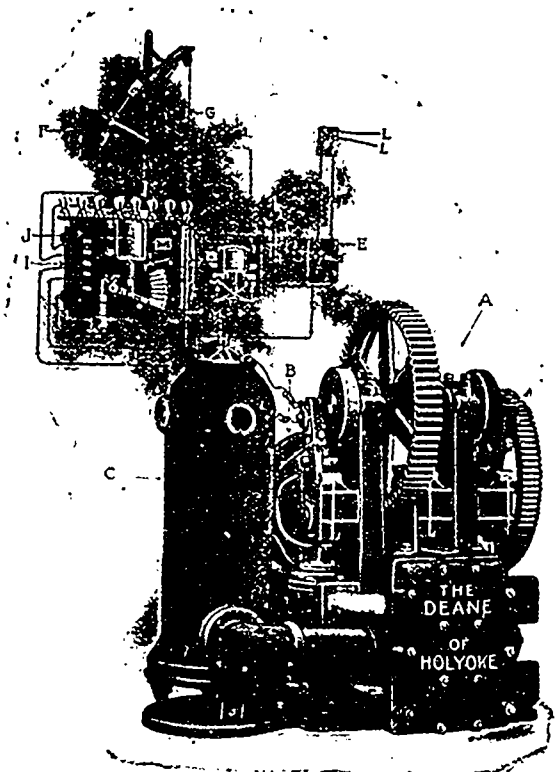
The high and low-pressure steam valves are arranged in line with an adjustable stem-coupling. Both are operated by valve-moving pistons of ample size, having ports opening to pressure and exhaust alternately by means of an auxiliary valve actuated by link and lever connections to a fixed link block carried by the piston rod.

The link connections to the auxiliary valve are so devised that the ports are opened and closed slowly at the stroke terminals to prevent a too emphatic reversal of the moving parts. The links are easily adjustable, even

neers in charge of plants that have had the worry and troubles attending "hung-up" pump will appreciate this positive feature of the "American."

The steam valves are self-governing to the extent that the suction may be broken when throttle is wide open without danger to pump or fittings, as well as insuring the most economical use of steam.

The construction of the "American" is unquestionably of the best. The rod between the steam pistons is of steel, turned perfectly true, the water piston rod is of Tobin bronze; the water-cylinder lining, water-valve seats, caps, valve-stem nuts, studs and all cushion valves of bronze; all cylinders are cast separate and mounted on substantial bases, with heavy yoke connections; the water cylinder is provided with ample air and vacuum chambers, the steam cylinders and chests are lagged with heavy sheet steel having asbestos filling, a false



NEW COMPOUND STEAM PUMP.

while the pump is in motion, to change the stroke, and as all the parts of same operate in fixed bearings without lost motion or tappet contacts, the gear is noiseless in action.

In this new "American" pump the pistons are brought to a rest and again started so gradually that a high intermediate speed is possible if required, and even when so working under high water pressure the pulsations of the pump valves are hardly noticeable, so soft is the action.

The construction and arrangement of the steam and auxiliary valves is such that the prompt and certain action of the engine under all conditions is assured, as the parts cannot assume such a position as would cut off steam from both main and auxiliary valve ports at the same time, and it is obvious that if either is in position to take steam when the pump is stopped by throttle or automatic governor the engine will start again immediately when steam is applied. Engi-

neers in charge of plants that have had the worry and troubles attending "hung-up" pump will appreciate this positive feature of the "American."

head of polished bronze caps the outside steam cylinder, an oil pump is provided properly piped to both steam cylinders. An automatic governor, a revolution counter, drain valves, wrenches and extra packings are furnished with each pump. All chest and cylinder heads, flanges, valve rods, stems and levers are nicely polished, and the lagging is secured with polished brass bands.

The maker guarantees this pump to be perfectly satisfactory in every way; that the steam consumption shall not exceed 45 pounds of dry steam per horse-power hour at nominal speed, further, that the best of material and workmanship is employed throughout, and any part proving defective from fault of either will be replaced without charge.

The A. R. Williams Machinery Co., Toronto, and Messrs. Williams & Wilson, Montreal, are Canadian agents for the American Steam Pump Co.

A NEW CORE MACHINE.

The Sherwin No. 3 Stock and Standard Core Machine, manufactured by Turner, Vaughn & Taylor Co., Cuyahoga Falls, Ohio, is being rapidly introduced in foundries, etc., in the United States and Canada. Machine made cores are all in one piece vented from end to end, they are strong, straight, smooth and of exact size. With the Sherwin machine cores from one-half to three inches can



A NEW CORE MACHINE.

be made on the one machine. Half core boxes and pacted cores are done away with. With this improved machine a boy can make from 100 to 200 two-foot cores per hour. Among the other advantages of the Sherwin core machine may be mentioned the large hopper and heavy parts, the gears being well protected from the dust. The change from one size to another is readily made. The machine complete sells for a very low figure and persons interested in this line of work should examine the new core machine.

The Philip Carey Mfg. Co., Cincinnati, Ohio, inform us they have been awarded the gold, silver and bronze medals at the St. Louis Exposition for the superiority and general excellency of their magnesia steam pipe and boiler coverings; also gold medal for their magnesia flexible cement roofing. This company were awarded the gold medal at the Toronto Exposition of this year.

The Postmaster-General warns postmasters throughout the country to be careful to see that all parcels for Great Britain or for any foreign country be accompanied by a Customs declaration as to the contents and value of the parcel, and that the parcel be fully prepaid.

The Belgian cement trade has to deplore the almost total loss of the American market. The United States was formerly one of the best customers of Belgian manufacturers, but within the last two or three years has practically emancipated itself from European manufacturers, and produces a surplus which it is expected will be offered on European markets. This has caused a serious depression in Belgium, where prices reached in 1903 their very lowest limit.

CAPTAINS OF INDUSTRY.

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

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

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

The Roofers' Supply Co., Toronto, will increase their capital from \$20,000 to \$60,000.

The Imperial Chemical Co., Toronto, have been incorporated with a capital of \$50,000, to manufacture chemicals, oils, druggists' supplies, etc. The provisional directors include W. H. Richardson, J. M. Sinclair and C. Sawdon, Toronto.

The Art Metropole, Limited, Toronto, have been incorporated with a capital of \$50,000, to acquire the business of the Art Metropole and to manufacture art materials and supplies, photographic supplies, etc. The provisional directors include C. R. Beswetherick, Toronto; W. H. Rutters and J. H. Hough, Montreal.

The Commercial Art Co., Toronto, have been incorporated with a capital of \$40,000, to carry on a printing and publishing business. The provisional directors include Jas. Milne, J. L. Ross and A. W. Holmsted, Toronto.

The Western Coral Marble Co., Chatham, Ont., have been incorporated with a capital of \$40,000, to manufacture coral marble, mycenean marble, etc. The provisional directors include B. Blonde, W. M. Drader, and F. Mount, Chatham.

The Newell & Higel Co., Toronto, have changed their name to the Otto Higel Co., Limited.

The Canadian Otis Elevator Co., Hamilton, Ont., have recently closed the following contracts for elevators:—Messrs. Smallman & Ingram, London, Ont., one electric passenger; Woodstock, Ont., General Hospital, one electric passenger; Paris Plow Co., Paris, Ont., one freight elevator; the Rathbun Lumber Co., Deseronto, Ont., one freight elevator; Messrs. Gunn, Langis & Co., Montreal, one electric freight, and in Toronto to Jessop & Sons, one electric passenger; A. Ansley & Co., one electric passenger; John Fiske, one electric passenger; and Robt. Simpson Co.'s new factory, two hydraulic freights.

The Ontario Cereal Co., Singhampton, Ont., have been incorporated with a capital of \$15,000, to manufacture cereal food and other milling products, etc. The provisional directors include Chas. Russell, Toronto, J. R. Hamilton and A. J. Sprott, Singhampton.

The T. C. Milloy Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture fancy goods, smallwares, etc. The provisional directors include John Parsons, Owen Sound, Ont.; Geo.

Parsons, Sarnia, Ont. and T. C. Milloy, Toronto.

The Empire Cream Separator Co., of Canada, Toronto, have been incorporated with a capital of \$40,000, to manufacture cream separators, dairy and creamery machinery, etc. The provisional directors include H. C. Sparling, W. R. Pringle, Toronto, and H. D. Petric, Hamilton, Ont.

The Michigan Central Railway Co. have completed the reconstruction of their bridge over Kettle Creek near St. Thomas, Ont.

The extensions to the Grand Trunk Railway Co.'s shops at Stratford, Ont. are about completed. The company will employ about 1,000 men in these shops.

The High School building at Cornwall, Ont., will be enlarged at a cost of about \$8,000.

The egg and produce warehouses at Wingham, Ont., owned by Messrs. Gunn Bros., Toronto, were destroyed by fire December 3. Loss about \$25,000.

Word has been received at Fort William, Ont. that Messrs. C. Joy and A. Jennings have arrived in Wabigoon from Gold Rock, with the news that the miners at the Paymaster's property of the Northern Development Co., had encountered a wonderfully rich body of ore while sinking a shaft from the 100 foot level. Two specimens of highly mineralized bluish quartz which has been a characteristic feature of the shaft since the first sink, were literally seamed with streaks of gold and were valued at \$20,000 per ton.

The Disston Saw Works, Philadelphia, Pa., have completed arrangements for the erection of a factory in Toronto, to cost \$150,000.

The Cook-Fitzgerald Co., London, Ont., is being organized with a capital of \$50,000, to manufacture boots and shoes, etc. The charter members include J. P. Cook, P. Cook, Jr., London, and C. J. Fitzgerald, New York City. The company will erect a three-story factory building.

The Dominion Natural Gas Co., Brantford, Ont., will furnish natural gas to the town of Dundas, Ont.

The Ross Rifle Co., Ottawa, Ont., are turning out rifles at the rate of 100 per day.

The new plant of the Imperial Steel & Wire Co. at Collingwood, Ont., was put in operation December 5. Major Currie, the manager, had booked the tonnage of the mill as far ahead before starting as possible.

The result is that the orders now on the books will keep the plant running until well into May next.

The Department of Railways and Canals, Ottawa, are inviting tenders for the construction of the Atwater Avenue bridge.

The Ottawa & New York Railway Co.'s workshops at Santa Clara, N.Y., will be removed to Ottawa, in consideration of that city granting them a bonus of \$75,000.

The Upper Spanish Improvement Co., Biscotasing, Ont., have been incorporated with a capital of \$20,000, to construct dams, piers, etc., necessary to facilitate the transmission of timber down the Spanish River near Biscotasing Lake. The provisional directors include R. Booth, P. Shannon, Pembroke, Ont., and J. A. Shannon, Biscotasing.

Messrs. Wm. Wainwright, F. B. Morse and Mr. Stephen, of the Grand Trunk, were in Ottawa a few days ago filing plans with the Railway Department in connection with the construction of the Grand Trunk Pacific. Mr. Wainwright says that it is the intention of the company to commence the work of construction early in the spring. A beginning would be made with the Lake Superior branch, which would run north from the lake to connect with the Grand Trunk Pacific.

The Southwestern Traction Co., who are building a line between London, Ont., and Port Stanley, Ont., are negotiating with the St. Thomas, Ont., city council for the purchase of that city's street railway.

Messrs. Lewis & Co., Chicago, Ill., have been awarded the contract for the erection of the bridge at Byron, Ont., at a cost of about \$16,000.

The ratepayers of Peterborough, Ont., will vote on a by-law to raise \$20,000 for water-works extension and improvements.

John Ferguson's business block at North Bay, Ont., was destroyed by fire December 8. Loss about \$30,000.

The Hamilton, Ont., City Council will consider a by-law to raise \$15,000 for a shelter for the wholesale butchers.

A by-law will be submitted to the ratepayers of Galt, Ont., to raise \$5,000 towards a new factory building for the Grand River Metal Works.

The ratepayers of St. Thomas, Ont., will vote on a by-law to raise \$200,000, for the purchase of the gas and electric light plants.

The Parry Sound Steamboat Co. is being organized at Parry Sound, Ont. They propose to build and equip two composite steamers, fitted for passengers and package freight, to be in operation in 1905. One steamer is to be placed on a route from Parry Sound to Midland and Penetanguishene and the other from Parry Sound northerly.

The Department of Marine, Ottawa, has prepared plans for ice-breaking steamers for use on Lake Superior, which will probably be ordered early in the year and delivered about November, 1905. One of the steamers will be kept at Fort William and the other at Port Arthur, Ont.

The London Machine Tool Co., London, Ont., have just completed a large iron-working planer for the Intercolonial Railway Co. at Moncton, N.B. This planer is one of the largest machines built by this company. It is powerfully geared and has four cutting

heads, capable of removing a total of fifteen tons of iron planings a day. It will be used to plane big cast iron frames. It is 40 feet long, 12 feet high, 10 feet wide, and weighs 120,000 pounds, or 60 tons.

The Bell Telephone Co. are considering the erection of a new building for the installation of a new central energy plant in Brantford, Ont.

Sir Wm. Mulock, Ottawa, has gone to Mexico to negotiate with the Mexican Government for the establishment of a steamship service between Canada and the Atlantic ports of the Southern Republic.

Leases covering a large number of lots on Hunter's Island, Rainy River district, Ont., comprising timber and mineral claims, have been issued to F. S. Kenaston; F. B. Wood, and H. A. Hunter, Minneapolis, Minn.; L. S. Hackney and H. Richardson, St. Paul, Minn.; W. H. Phipps, Hudson, Wis., and W. S. Trimble, Jamestown, N.D. Operations during 1905 to the extent of \$25,000, second year, \$40,000, and third year \$35,000 are undertaken.

Toronto and Toronto Junction will probably have electric power and light from the Credit River which is now being dammed at Erindale, Ont., and poles have already been erected through the Township of Etobicoke. The main dam, which is of concrete, is situate near Dundas Street, and the water will cover an area about a mile in length and a quarter of a mile across. There are small rapids in the Credit after it leaves the bridge on Dundas Street, so that the water is about 30 feet lower on that side of the promontory opposite the dam. The scheme is to tunnel, during the present winter, from the dam, under Dundas Street, and under the village of Erindale, a distance of 900 feet. The opening to this tunnel will be 18 feet below the level of the water in the dam, and will have a head of 30 feet where it comes out on the other side of the hill. It is here the machinery for generating the power will be placed. Gates will be placed at each end of the tunnel, so that the water can be let out and the tunnel repaired when necessary. The tunnel will be built of brick and concrete and will cost about \$250,000. About 20,000 to 50,000 h.p. will be generated. A large icehouse will be built, and the ice from the lake stored there in the winter for shipment to Toronto in summer.

A Royal Canadian mint will be erected at Ottawa at a cost of \$200,000.

The 20,000 tons of steel rails made for the Canadian Government in the Algoma Steel Works have been inspected, and over half of them shipped to Montreal. They are of the 80-pound class, and are to replace some 67-pound rails on the Intercolonial Railway. The rails were inspected as to shape, strength, and weight, and were found to be up to the requirements.

During the coming winter the Hackett Dredging Co., Amherstburg, Ont., will build a new tug office near the mouth of the Detroit River, and will install an up-to-date water-gauge, which will show night and day, giving up-bound vessels the depth of water over the Lime Kiln Crossing. Captain Hackett has closed a deal for the addition of a powerful sea-going tug to his fleet there, which will be specially adapted for ice breaking and wrecking operations.

The erection of the new plant of the Ross Engine Works at St. Catharines, Ont., has been completed and the company are now purchasing new machinery.

The Manitoba Peat Co. will erect a peat fuel manufacturing plant with a capacity of 50 tons per day at Fort Frances, Ont.

The Militia Department, Ottawa, have arranged for the expropriation of a hundred acres of land at Victoria, B.C., which will be used for the erection of a large magazine.

T. A. Smider, Cayuga, Ont., will receive tenders for the erection of a house of industry at Dunnville, Ont.

Messrs. Mariaggi & Skinner, Winnipeg, Man., have purchased the Northern hotel at Port Arthur, Ont., and will remodel and enlarge it.

The water commissioners at Peterborough, Ont., are considering the construction of a new concrete waterworks dam at a cost of about \$80,000.

The public school at Port Carling, Ont., was destroyed by fire a few days ago. Loss about \$3,000.

Mr. D. O'Connor, Temagami, Ont., reports that the Arsenical Ore Reduction Co., New York City, are building a concentrating plant at Net Lake, three miles from Temagami. It is the intention to send the concentrates from this plant to Niagara Falls, where the products will be put through the finishing processes by electrical energy.

The Roman Catholic Church at Bradford, Ont., was destroyed by fire recently. Loss about \$90,000.

W. Fritch's chopping mill at Richwood, Ont., was destroyed by fire December 8.

Messrs. Ford & Greer, Stoneleigh, Ont., are rebuilding their sawmill which was destroyed by fire recently.

Mr. Wayper, Hespeler, Ont., has purchased 400 acres of timber land near South River, and is building a large saw mill.

The Laurentian Sanitarium Co., Montreal, have been incorporated with a capital of \$140,000, to erect hospitals for the treatment of tuberculosis, etc. The provisional directors include S. W. Jacobs, L. Garneau and W. J. Helmer, Montreal.

Messrs. Wayland Williams & Dadson, is a new Montreal firm of manufacturers' agents representing John Birch & Co., of London, England, manufacturers of machine tools, engineers' supplies, etc. The firm was recently formed by Wayland Williams and A. T. Dadson, who have had considerable experience in this line of work. Their offices are in Board of Trade Building.

The following are the patents recently secured through the agency of Messrs. Marion & Marion, patent attorneys, Montreal and Washington, D.C. Wm. Cadwell, New Hamburg, Ont., hoof expanders, Messrs. Gutteridge & McConnell, Hamiota, Man., machine for forming building blocks; E. Gagne, Point St. Charles, Que., trolley guard; H. O. Gale, Quebec City, insulation conduit; W. Whiteford, Virden, Man., grain measuring apparatus; G. B. Southmayd, Garland, Man., improvements in wagons; E. Paquette, Rougemont, Que., fire escape.

The Johnson-Richardson Co., Montreal, have been incorporated with a capital of \$100,000, to manufacture dye-stuffs, wood

stains, chemicals, etc. The provisional directors include A. E. Richardson, Burlington, Vt., C. M. Johnson and G. G. Foster, Montreal.

The Electrical Flour Patents Co., Montreal, have been incorporated with a capital of \$250,000, to manufacture electrical machinery for making flour, etc. The provisional directors include E. S. Clouston, Sir Geo. A. Drummond and C. R. Hosmer, Montreal.

The United Lumber Co., Montreal, have been incorporated with a capital of \$250,000, to acquire the business of the Three Rivers Planing Mills, and to manufacture furniture, doors, sashes, etc. The provisional directors include G. A. Forbes, P. F. Richardson and G. H. Bisset, Montreal.

The Montreal Belting Co. are now occupying new and greatly enlarged quarters at 589 St. Paul Street, Montreal. The business of the company has been growing very rapidly and the new factory will enable them to handle the business in the best possible shape.

F. B. Menaugh, 25 Bleury Street, Montreal, has made a number of improvements to his aluminum casting business and has a number of contracts now on hand.

Alfred Hawksworth, Canadian agent for the Arabol Mfg. Co., New York, has opened a general mill and manufacturers' supply house at 551 St. James Street, Montreal, and has put in a complete stock of all kinds of the above supplies.

The Laurentian Sanitarium Co., Montreal, will erect a health resort hotel at St. Agathe, Que., early next spring at a cost of about \$140,000.

The Robert Simpson Co., Toronto, are considering the establishment of a large departmental store in Montreal.

The new ice breaker Montcalm, built by Messrs. Fleming & Ferguson, Paisley, Scotland, for the Dominion Government for use in the St. Lawrence River has proceeded to Quebec. She is 245 feet long, 40 feet beam and 18 feet deep.

The Lake St. Joseph Hotel Co., Lake St. Joseph, Que., have awarded the contract for the erection of a large hotel building at that place to E. T. Neslitt, Quebec City. The cost will be about \$50,000.

Messrs. C. W. Lindsay, Limited, Montreal, will erect a seven-story piano factory and warehouse in that city at a cost of \$150,000.

The King's Asbestos Mines, Quebec City, have been incorporated with a capital of \$300,000, to carry on a mining, milling and manufacturing business. The provisional directors include H. M. Whitney, Boston, Mass.; E. Slade, Quebec; B. Bennett, Thetford Mines, Que.

Messrs. Price Brothers' Co., Quebec City, have been incorporated with a capital of \$2,000,000, to acquire the business of Price Bros. & Co., and to manufacture lumber, etc. The provisional directors include Wm. Price, H. E. Price and R. Ritchie, Quebec.

Messrs. J. Steward & Co., Pittsburg, Pa., have been awarded the contract for the erection of the new plant for the Singer Mfg. Co. at St. John's, Que., which will cost \$1,000,000.

The Campbell Lumber Co., Weymouth, N.S., have been incorporated with a capital of \$75,000, to manufacture lumber, pulp,

paper, etc. The provisional directors include G. A. Kohl, W. P. Sharp and F. Wilkinson, Montreal.

Messrs. Stephens Bros' excelsior mill at Windsor Junction, N.S., was destroyed by fire November 28. Loss about \$5,000.

During the shipping season of 1904 the Dominion Iron & Steel Co. brought to Sydney, N.S., for the use of their iron and steel plant 290,680 tons of iron ore. Of this amount 222,050 tons came from the company's mines at Wabana, Nfld., 25,050 tons were imported from Carthagena, Spain, 24,650 tons from Sweden, and 18,930 tons from Lake Superior mines.

Messrs. J. H. Plummer and Fred Nichols, who returned from Sydney, N.S., a few days ago, state that the rod mill has been a success. It has been decided to put in a double shift to enable them to supply the full Canadian demand. The steel rail mill will be completed in three months.

The Davidson Lumber Co. are constructing their new saw mill and logging railway at Springfield Lake, N.S.

A. R. Wilson is building a new saw factory at St. John, N.B., which will be 100x40 feet, two stories high.

The Hewson Woolen Mills Co., Amherst, N.S., are installing new machinery. The capacity of the plant, when completed, will be 1,000 yards of cloth per day.

The Valley Woolen Mills Co., Southampton, N.S., will be reorganized with a capital of \$15,000. Steam will be substituted for water power and new machinery will be installed.

Messrs. Jas. A. Tufts & Son, Limited, St. John, N.B., have been incorporated with a capital of \$25,000, to manufacture fancy goods, stationery, china, etc., and to acquire the business of Jas. A. Tufts & Son. The provisional directors include J. A. Tufts, F. L. Tufts and M. H. Dunlop, St. John.

The Miramichi Pulp & Paper Co., Chatham, N.B., have been incorporated with a capital of \$300,000, to acquire the business of the Maritime Sulphite Fibre Co., and to manufacture pulp, paper, etc. The provisional directors include G. T. Keyes, East Pepperell, Mass., C. A. Hight, Boston, Mass., and J. Beveridge, St. John.

The Moncton Pasteurized Milk Co., Lewisville, N.B., have been incorporated with a capital of \$15,000, to manufacture condensed milk, cheese, etc. The provisional directors include G. R. Jones, C. L. Jones and F. C. Jones, Lewisville.

The New Brunswick School for the Deaf, St. John, N.B., have been incorporated with a capital of \$10,000, to erect a building for deaf children. The provisional directors include A. O. Skinner, O. H. Warwick and R. T. Hayes, St. John.

The Rosebank Lumber Co., Rosebank, N.B., have been incorporated with a capital of \$75,000, to manufacture lumber, etc. The provisional directors include O. W. Nordin, K. Nordin and A. M. Sundin, Rosebank.

The Richibucto-Rexton Telephone Co., Richibucto, N.B., have applied for incorporation with a capital of \$20,000, to acquire the telephone system of the Kent Electric Co., and of the Kent Telephone Lines Co. The applicants include A. B. Carson, A. J.

Girvan, Rexton, N.B., and R. O'Leary, Richibucto.

Messrs. J. & A. McMillan's printing establishment at St. John, N.B., was destroyed by fire December 5. Loss about \$45,000.

The Golden Gate Milling Co., Sinoit, Man., have been incorporated with a capital of \$15,000, to manufacture flour, butter, cheese, and to erect mills, and elevators, etc. The provisional directors include G. C. Howard, J. D. Campbell, St. Ouens, Man., and W. H. Moore, Winnipeg, Man.

Messrs. G. F. Stephens & Co., Winnipeg, Man., manufacturers of paints, oils, etc., have increased their capital from \$150,000 to \$500,000.

Messrs. Chandler & Fisher, Limited, Winnipeg, Man., have been incorporated with a capital of \$50,000, to acquire the business of Messrs. Chandler & Massey and to manufacture surgical instruments, pharmaceuticals, etc. The provisional directors include W. K. C. Fisher, Hon. C. H. Campbell, Winnipeg, and W. H. Chandler, Toronto.

The Canadian Stores, Limited, Winnipeg, Man., have been incorporated with a capital of \$300,000, to carry on the business of general manufacturers and agents, etc. The provisional directors include W. J. Parks, N. Sommerville and T. A. Drummond, Toronto.

The Canadian Pacific, Great Northern, Canadian Northern and Minneapolis, St. Paul & Sault Ste. Marie Railway Companies will erect a new international depot at Emerson, Man.

An arrangement is being entered into between the Canadian Northern Railway Co. and the Town of Fort Saskatchewan, N.W.T., to build a joint traffic and railway bridge over the Saskatchewan River at that place. It is understood the company will receive a free site for a station for the consideration of helping to pay the cost of building the bridge.

Messrs. Chambers & Grady, are erecting a large hardware warehouse at Frank, N.W.T.

Messrs. E. M. Mayor & Co., Winnipeg, Man., are considering erecting a factory for the manufacture of school furniture in Calgary, N.W.T.

W. S. Brock, Winnipeg, Man., has been awarded the contract for the installation of machinery in the Regina Steam Laundry Co.'s new works.

H. Armstrong will erect a new fish warehouse at St. Laurent, Man.

The Standard Brick & Tile Co., West Selkirk, Man., are applying for incorporation.

The Thomas Drug Co., have been incorporated at Victoria, B.C., with a capital of \$15,000, to manufacture drugs, chemicals, etc.

The Interior Coal Mining & Development Co. have been incorporated at Victoria, B.C., with a capital of \$10,000 to carry on a mining, smelting and refining business.

The School Board of Nelson, B.C., will ask the City Council for an appropriation of \$25,000 for the erection of a new school building.

The Mt. Angel Gold Mines, Limited, have been incorporated at Victoria, B.C., with a

capital of \$90,000, to carry on a mining, smelting and reduction business.

The Small & Bucklin Lumber Co. have been incorporated at Victoria, B.C., with a capital of \$100,000, to manufacture lumber, sashes, doors, shingles, etc.

The Quatsino Pulp & Power Co., Quatsino Sound, B.C., are preparing plans for their new mill which will have a capacity of 125 tons of pulp per day.

The Ellwood Tinworkers Gold Mining Co., owning the Silver Dollar Mine, near Camborne, B.C., will install a compressor plant on that property.

The Kootenay Ore Co., Kaslo, B.C., have commenced the erection of an addition 100x80 feet to their works, in which will be installed machinery for zinc separation.

The directors of the British Columbia Copper Co., Victoria, B.C., have authorized the preparation of plans for two additional 400-ton smelting furnaces.

A by-law will be submitted to the ratepayers of Vancouver, B.C., to raise \$50,000 for the improvement of English Bay.

Arrangements are being made for the erection of a ten-stamp mill and cyanide plant at the Juno mine, near Nelson, B.C.

The Cranbrook Sash & Door Co., Cranbrook, B.C., have been reorganized under the name of the Kimberley Milling & Mfg. Co.

The Pacific Coast Pipe Works, Vancouver, B.C., have been awarded the contract for 12,000 feet of 16-inch heavy wire bound wooden pipe for the Trail smelter. It will be used in connection with the three miles of fluming to carry water to the smelting works.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., through their agents, Messrs. G. & O. Bramiff & Co., Mexico, have been awarded the contract for all the electrical apparatus to be installed at the El Oro Mining & Railway Co., El Oro, Mexico. This contract amounts to nearly \$100,000.

The American Trimotor Co., Sharon, Pa., have sold their Canadian patent rights to a syndicate in this country for \$500,000. The trimotor is the invention of Col. Wm. K. Heckert, who claims it will revolutionize prevailing methods for the production of heat and power.

An innovation in chimneys is a concrete stack recently erected in Cincinnati. It is 160 feet high, and has a foundation 30 feet square at the base. The chimney proper is 7 feet in diameter at the point where the intake enters and 6 feet in diameter at the top. There is an outer wall, with an air space of six inches all around between it and the inside core.

It is said that American firms with branches in Canada, or when they can buy as cheaply in Canada as in the United States, are commencing to fill their South African orders from Canadian ports. This practice is rendered profitable by the tariff preference which Canada has in South African entries.

The McCullough-Dalzell Crucible Co., Pittsburg, Pa., have completed the erection of a new dry house, which is one of the buildings used in connection with the manufacture of crucibles, it being necessary to dry the imported clay and expose it to considerable heat for some time before using it in the manufacture of crucibles.

ELECTRICITY.

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

The Lincoln Electric Light & Power Co., St. Catharines, Ont., have lately closed the following contracts with manufacturing firms of that city for electric power: The Welland Vale Mfg. Co. have contracted for 75 h.p. which will be used in their factories and run in connection with their water wheels; also ten additional horse power, if required. The A. M. Ross & Sons Co., for an immediate delivery of 60 h.p. with the privilege of getting another 25 h.p. as soon as required. The Packard Electric Co., 25 h.p. for use in their new automobile factory which will shortly commence operations.

A by-law was passed at Westmount, Que., in favor of the town owning an electric lighting and power plant.

Messrs. H. M. Holt, C. R. Hosmer, and F. W. Thompson, Montreal, have purchased the Kakabeca Falls, 12 miles from Fort William, Ont. Arrangements are being made for the construction of a plant that will produce 30,000 horse power.

The Ogilvie Flour Milling Co., Winnipeg, Man., will take out their present power equipment and install an electric power plant.

The Winnipeg Electric Street Railway Co., and the Winnipeg General Power Co. have amalgamated under the firm name of The Winnipeg Electric Railway Co., with a capital of \$4,000,000. The new company will operate the street railway systems of Winnipeg and St. Boniface, Man., the commercial electric lighting business, commercial electric power business and a gas plant. There is now under construction an addition to the gas plant which will cost about \$500,000. Work on the immense dam now being constructed on the Winnipeg River will be rushed forward and it is expected that about 30,000 h.p. will be developed in a year's time. The directors of the company include Wm. Mackenzie, president, Wm. Whyte, vice-president; F. M. Morse, secretary-treasurer and W. Phillips, manager.

The Bell Telephone Co., Winnipeg, Man., will construct about 200 miles of line in Winnipeg.

E. Beaudry, Montreal, has purchased the electric light plant at St. John's, Que., at a cost of \$300,000.

The Hamilton, Ancaster & Brantford Radial Co. have been organized to construct an electric radial line between Hamilton and Brantford, Ont. Major J. K. Leslie and Major Parsons, Toronto, are interested.

The city of Kingston, Ont., have accepted the Bell Telephone Co.'s offer for a period of five years. The offer is as follows:—The company will erect a new building; install metallic lines with the most approved instruments; pay the city \$700 a year; allow the city free use of their poles for fire alarm wires; supply subscribers with the Blake instruments. \$30 per annum for business premises and \$25 for residences; for two party lines for residences \$18 each, for two and not more than four \$15 each. The com-

pany will proceed with the erection of a building at once.

The Montreal Street Railway Co. have closed a contract for 4,000 additional horse power from the Montreal Light, Heat & Power Co., which brings the amount of power used by the company to 9,000 h.p. In their efforts to secure control of all the available water powers around Montreal the Power Co. have purchased the St. Lawrence Electric Co., the Canadian Electric Co., and the Provincial Electric Co.

CANADIAN POWER FOR WESTERN NEW YORK.

An announcement of considerable importance as concerning the future application of a portion of the power to be developed on the Canadian side of Niagara Falls, is to the effect that the Ontario Power Co. have entered into a definite contract with the Niagara, Lockport & Ontario Power Co., whereby the former is to deliver to the latter 30,000 electrical h.p. by July 1, 1905, and an additional 30,000 h.p. by January 1, 1907, making 60,000 h.p. in all. The contract is made for a period extending to April 1, 1950, but may be renewed 60 years longer, or until 2010. Under the agreement this power is to be delivered by the Ontario Power Co. at the boundary line in the vicinity of the whirlpool, where the Niagara gorge is narrow, and at which point a transmission line is likely to be erected. The indications are that the Niagara, Lockport & Ontario Power Co. will build a transformer station at or near the whirlpool, and under the agreement they are to build a transmission line extending as far east as Rochester by July 1, 1905. The performance of this contract is guaranteed by the forfeiture of a specific sum as liquidated damages in case of nonperformance.

It is estimated that this contract is made with the Ontario Power Co. by the Lockport Co. for the reason that they would require a long time to develop power in the vicinity of Lockport, and thus indications are that the long reported prospective development at or near Lockport is very remote, for this contract is for 50 years, with privilege of renewal for 60 years more. The Ontario Power Co. are erecting a power station at the water's edge in the gorge on the Canadian side of the river, and have already installed their first steel flume, which has a diameter of 18 feet. The company's plan is to place three of these flumes, each of which is intended to supply water enough for developing 60,000 h.p.

TELEPHONES IN THE FOREST.

Up in the dense timber along the Big Blackfoot, Montana, where the logs are cut that keep the big mills at Bonner in motion, the traveller is often surprised as he journeys through the logging district, to see small telephone stations located at intervals in the forest. There are several of these stations, and they enable the loggers to keep in touch with the mills, and, when the drive is in progress, with the rivermen as they chase the logs down the stream.

These timber telephones are of the greatest service in the conducting of the business of the country. They save a vast amount of time, and in case of an accident or any other trouble they are of inestimable value. During the last two or three years, such telephone

lines have come into use in most of the big logging regions.

Throughout the forests, from the St. John to Vancouver, lumber camps belonging to the same interests, are connected by telephone the lines running thence to the sawmills or wood pulp works at frontier towns, from which communication can be held even to the metropolis.

It was formerly the custom of each lumber interest to maintain a force of couriers, like the voyagers of the Hudson's Bay Co., and these hardy men, with knapsack, would travel 25 miles a day through the wilderness, over rough forest paths.

Now the mill calls each camp in turn at stated hours and receives reports and gives instructions to the foreman, and it is not necessary to dwell on the commercial advantages of maintaining such close touch between headquarters and outposts in any enterprise. Letters are read to men snowed in the forest 50 or 100 miles away, and answers are dictated by the lumbermen to a stenographer who transcribes them in the office and then mails them to their homes.

The relative contentment among the men which is established by this frequent communication is highly advantageous to the working force, and therefore to the employers. — Detroit Tribune.

FUEL.

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

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

Concerning the coal deposits of Nova Scotia, it may not be recognized that the province is nearer northern Europe than any other coal exporting country, and with the collieries situated at tidewater, should in the future find an outlet for a considerable quantity of coal in that market. The exports to Europe last year amounted to 40,000 tons, and the same quantity will probably be shipped this year. To successfully introduce an unknown coal into the markets of the older and more conservative countries of Europe, will probably require several years of patient and persistent effort, but in the end it should be crowned with success, and in the future these markets should from time to time become more attractive to the Nova Scotia coal owner, and prove a source of considerable profit. — British Columbia Review.

In a paper read before the Institution of Civil Engineers, Mr. James Clenhall, describing the Cambria coal-field of Wyoming, mentions the interesting fact that gold and silver are present in small quantities in the coal, says the Engineering and Mining Journal. From the occurrence of iron pyrite, which is distributed throughout the coal-seam, it is suspected that this mineral carries the precious metals. The coke made from the coal is used in the smelting-works at Deadwood, S.D., and averages from one to two pennyweights gold per ton, which is sufficient to compensate for a high ash content. In commenting on the subject the Australian Mining Standard calls attention to a similar occurrence in South Africa, de-

scribed by Mr F B Stephens, at one time assayer for the Buffelsdoorn Estates & Gold Mining Co. The coal occurred in small seams running through the quartzite or, and in places was quite rich in gold, the ash being colored a bright purple by the finely divided particles of metal.

The Dominion Coal Co. exceeded all former records in their coal shipments to St. Lawrence ports during the season which has just closed. The total water shipments, of which practically all came to Montreal, amounted to 1,116,191 tons, as compared with 840,137 tons for the season of navigation in 1903. This makes an increase of 276,054 tons for the present season. From the opening of the river last spring to the time the last coal boat arrived in port in November, there were 191 round figures 200 days of navigation. Dividing the total of 1,116,191 tons into days, it is found that the Dominion Coal Co. moved up the St. Lawrence river at the rate of 5,850 tons per day.

The Pittsburgh Coal Co. and the New Pittsburgh Coal Co., have opened an office in the Majestic Building, Detroit, Mich., in charge of N. W. Snow, who was formerly with the Kennedy & Snow Co. The new office of the Pittsburgh Coal Co. will serve all the territory of Detroit as well as portions of Ontario, while the States and other territory in the West will be managed through the Toledo office, which formerly had charge of the Detroit end of the business. The Pittsburgh Coal Co.'s fuel was handled in Detroit mainly by jobbers, who will now come under Mr. Snow's supervision.

Mr A Norman, who has been prospecting for coal in Newfoundland in behalf of a company of which Hon Geo. E. Foster, Toronto, is interested, returned from the colony a few days ago. Mr Norman has samples of coal from Coal Creek and Larkin Point. It is said to be splendid coking coal. The seams are said to range from three to 12 feet, with an aggregate of 27 feet. Six square miles have been bonded, and boring will be commenced this winter.

The new coke plant of the Colonial Coal & Coke Co., near Ligonier, Pa., on the main line of the Pennsylvania Railroad, was started November 29 with 50 coke ovens. More are being built. S. Garrison is president; A. Rasner, vice president; A. H. Schew, treasurer, and H. B. Schewe, secretary.

The output of the Crow's Nest collieries for the week ending December 2 was 17,342 tons, with an average daily output of 2,890 tons, compared with an output of 15,783 tons, daily average 2,030 in the same week last year.

This year the Canadian Pacific Railway Co.'s coal handling plant at Fort William, Ont., has taken from boats over five hundred thousand tons of coal, and the Canadian Northern Railway over two hundred thousand tons at Port Arthur, Ont.

The rapid development of Western Canada which is adding to its permanent population at the rate of 100,000 a year, is causing a corresponding activity in industrial enterprises, especially the production of coal. Taking the North West Territories and British Columbia only into account, the output which was a little more than 1,000,000 tons

three years ago, will be 2,000,000 tons next year, and probably double that in three years from date. Hitherto, however, the West has been heavily handicapped by dear iron and steel, the whole of which is brought from the East. Thus foundry pig all through the region referred to (excepting only the coast, where water transport comes into play,) costs from \$25 to \$30 per ton.

USE WATER INSTEAD OF COAL

In a recent Bulletin the Department of Health has some extremely practical suggestions to make on artificial heating of houses. The Bulletin advocates a greater degree of humidity and a less degree of temperature than commonly prevail in American homes. It quotes from a paper read by Dr H. M. Smith on "Indoor Humidity" as follows: "The neglect of the element of watery vapor in the air is the greatest cause of overheating our homes. A low humidity is the great cause of discomfort, the source of much ill-health, catarrh, colds and other diseases of the skin, mucous membranes, etc."

The average humidity in artificially heated houses is about 30 degrees; the average temperature, 70 to 74 degrees. It has been found by conclusive tests that a room with a humidity of 60 degrees and a temperature of 65 degrees seems warmer and more comfortable than a room of 72 degrees of heat and humidity of 30 degrees.

Dr Smith says that if a room at 68 degrees is not warm enough for any healthy person it is because the humidity is too low, and water should be evaporated to bring the moisture up to the right degree. In other words, water instead of coal should be used to make rooms comfortable when the temperature has reached 68 degrees. As water is cheaper than coal, the rule should become a popular one if it is correct in principle.

There is no doubt that the air in the great majority of houses is too dry. To correct this faulty condition water should be exposed so that it may evaporate and increase the relative humidity of the atmosphere. Many diseases of the mucous membranes are aggravated by the change from the dry air of the house to the moist temperature without. A hygrometer, or moisture tester, should be in the house along with the thermometer. Especially if it is possible to make water do the work of coal. The advice of the department of health should be acted on in every household. - Chicago Tribune.

The John Steptoe Shaper Co., Cincinnati, Ohio, are about to place on the market their 20 and 25 inch back geared crank shaper, driven by Morse chain, and using a three and five h.p. Crocker Wheeler motor. These shapers will have speed variations of 70 to 285 revolutions for driving shaft.

A somewhat unique departure from established methods in electric traction has recently been undertaken at Warren, Pa. The Warren & Jamestown Street Railway Co. are equipping an A.C. single phase electric railway system to operate between Warren, Pa., and Jamestown, N.Y., for which power will be supplied by gas engines operating upon natural gas. The equipment is now being constructed by the Westinghouse Companies at East Pittsburg, Pa.

OPPORTUNITIES.

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

The London correspondent of the Birmingham Daily Post reports that several prominent engineering firms, believing that the opportunities presented by India, Persia, Siam, and the Far East are of more immediate value than those offered by South African enterprises, are devoting their attention to a larger extent than before to the East. Electric trams, punkhas, motor wagons, improved methods of lighting, artesian well machinery, and domestic conveniences are just now living problems in South Asia, and the field has been covered only to a slight extent. There is a constant demand for inexpensive plants which utilize the latest results of mechanical inventions. The doctrine of physical comfort as distinct from mere ostentation is being more absorbed by well-to-do natives and independent princes, but in all this class of enterprise Continental makers have the advantage of patience and aptitude, and they are reaping a full share of the results.

The municipality of Carlsbad has just resolved to build a new bath house at a cost of \$300,000. There may be a chance for firms in the sanitary, china, and fixture trade, and catalogues giving details of manufactures and prices should be forwarded to the Stadtrath of Carlsbad.

The Montreal City Clerk is inviting tenders for building and erecting at the pumping stations, Montreal.—One electrically driven five million imperial gallons turbine or improved centrifugal high lift pump, with direct connected motor, complete for the high level pumping station. One electrically driven twelve million imperial gallons turbine or improved centrifugal high lift pump with direct connected motor complete, for the low level pumping station. Also, one twelve million imperial gallons high duty steam pumping engine for the low level pumping station.

Mr. G. H. Dudley, Harrisburg, Pa., wrote that his firm wanted to locate an extension-table factory in some Canadian town that would give a site and other courtesies.

W. H. Bemis, Baracoa, Cuba, is in the market for coconut oil-pressing machinery.

Ferreto Bucarest, Sos Bonaparte No. 14, Bucarest, Roumania, wants catalogues of water meters.

Plans and specifications for the proposed National Theater have been completed by John Boarr, architect, city of Mexico. The government will erect this structure at a cost of \$3,000,000. White stone, marble, steel and glass will be the principal materials used.

N. Espinosa, Calle de Freire 190, Concepcion, Chili, wants information and prices on complete plant for making wool thread.

plant to include three machines for arranging the wool from which it will emerge without twist, one machine with 200 to 300 spindles from which the wool will issue in the form of properly twisted (spun) yarn, also wants six to eight h.p. motor to consume lightwood as fuel.

The Street Railway Co., Mexico City will, it is reported, build a double track on San Juan de Letran street for the new lines to the Los Angeles and Nino Perdido suburbs.

H. L. Hall, lessee of the Sanz Hotel, City of Mexico, is having plans and specifications prepared for the erection of two additional stories to that structure. Fifty rooms will be added.

The Parral & Durango Railroad will build an extension to Guanacevi. The line will be about 90 kilometers long. James I. Long of Parral, Chihuahua, Mexico, is general manager of the line.

PUBLICATIONS.

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

The B. Greening Wire Co., Hamilton, Ont., inform us that they are printing for publication in January a series of catalogues having reference each to a separate department of their business. This, they say, they do every five years. We have already received from them an advance copy of one of these catalogues which has reference to "Wire Cloth and Perforated Metals," mention of which is made elsewhere. It is apparent from an inspection of the book before us that a large amount of care and labor has been expended upon its production. The general get-up and appearance as regards paper, illustrations, printing, etc., are highly creditable. Copies of the publication here alluded to will be sent on application to the company.

The Jeffrey Mfg. Co., Columbus, Ohio, have acquired the patents of pulverizing machinery from the Schoellhorn-Albrecht Machine Co. and have issued a handsome catalogue pertaining to same. Among the numerous illustrations are the Jeffrey swing hammer pulverizer and its sections, screening, drilling and mining machinery, etc. Several of these machines were prominently displayed at the St. Louis Exposition. Copies of this catalogue will be furnished upon application to the above company.

The Cassella Co., New York City and Montreal, have issued a folder containing samples of yarn dyeings discharged with Hyrallite also valuable information pertaining to such dyeings.

The Engineers' Club of Toronto have sent us a programme of their December meetings. The topic for discussion on December 22, will be the Development of Water Power by A. F. McCallum. The annual meeting for the election of officers will be held between January 3 and 15, 1905, further mention of which will be made in another issue.

The Canadian Westinghouse Electric Co., Hamilton, Ont., have issued a booklet re-

lating to Westinghouse Type D voltmeters and ammeters.

Pumping Machinery is the title of a handsome catalogue just issued by Henry R. Worthington, 114 Liberty St., New York City. The apparatus described in this book comprises many types of pumping, condensing and measuring devices developed by this company.

The Cassella Color Co., 182 Front St., New York City, and Montreal, have issued a folder containing samples of dyeings on woolen cloth discharged with Hyrallite W. "Dyestuffs" for November, published by this company, contains an item relating to Hyrallite W.

The Ohio Brass Co., Mansfield, Ohio, have sent us a neat illustrated folder entitled "Rail Bond Talks" which contains valuable information regarding their All Wire Rail Bond.

The Canadian General Electric Co., Toronto have sent us a brochure entitled "A Side Talk on Motor Bearings." It describes and illustrates the genuine ball, metal bearings and the babbitted motor bearings.

"What We Do" is the title of a handsome pamphlet just issued by the Wellman-Seaver-Morgan Co., engineers and manufacturers, Cleveland, Ohio. It contains views of their plants at Cleveland and Akron, Ohio, and illustrations of their machinery, among which are shown the electric coke pusher, for by-product coke ovens, four of which were installed in the Dominion Iron & Steel Co.'s works at Sydney, N.S., the Wellman rolling open hearth furnaces installed in the Hamilton Steel & Iron Co.'s works, at Hamilton, Ont., and the blast furnaces at Algoma Steel Co.'s works, Sault Ste. Marie, Ont. The company manufacture blast furnace equipment, gas producers, cranes, ore and coal handling machinery, power and mining machinery, hoisting engines, steel and iron castings, etc.

A recent number of "Mines and Minerals" Scranton, Pa., contains an exhaustive report of comparative tests of various rock drills used by the City and Suburban Gold Mining Co., Johannesburg, South Africa. The tests were made by that company, and are highly complimentary to the "Sluggo" and "Little Giant" drills of the Canadian Rand Drill Co. A full report is published in this issue of THE CANADIAN MANUFACTURER.

The Wm. Hamilton Mfg. Co., Peterborough, Ont., have sent us their catalogue of Improved Shingle Mill machinery. Many of the machines illustrated are so well known as to need little description, having gained for themselves a reputation for durability and simplicity of operation, and have given excellent results wherever used. Among the machines illustrated are the Grand Triumph shingle heading and box board machine, the Perfection shingle heading and box board machine, the Grand Mogul double block shingle machine and others.

The Clayton Air Compressor Works, 114 Liberty Street, New York, have sent us a copy of their Bulletin 2001. It describes and illustrates an extensive line of air compressors and vacuum pumps.

The American Steam Pump Co., Battle Creek, Mich., have issued a neat folder entitled "American Power Pumps and Air Compressors" which contains some fine illustrations of such machinery.

The Jones Magazine, issued by the Underfeed Stoker Co., Toronto, is devoted to the interests of the Jones Underfeed Stoker and contains several illustrations showing the Jones stokers in operation.

The Deane Steam Pump Co., Holyoke, Mass., are distributing a new catalogue on condensers. It reviews the principles and advantages of the several types of condensers as applied to steam engines, including surface and jet condensers, and discusses also vacuum pumps, exhausters, air and circulating pumps, and other auxiliaries.

The Chicago Pneumatic Tool Co., Chicago, Ill., have issued the November number of their brochure entitled "Something Pneumatic." It contains some very fine illustrations showing their pneumatic tools in use and also some very valuable information.

Mr. Geo. M. Aylesworth, Collingwood, Ont., has sent us a folder which contains a complete description of the 20th Century Hot Air Radiator System.

As regularly as the procession of the equinoxes and the revolution of the earth around the sun, so comes the regular annual calendar of the B. Greening Wire Co. It is always on hand on time, and the always "want" of it never has the opportunity of becoming "long felt." That for the ensuing year retains all the notable features of its predecessors, the only alteration being in the design of the heading which was necessitated owing to the addition of new buildings during the past year.

An admirable bulletin on the great resources of Canada, by Dr. Chalmers, of the Geological Survey, Ottawa, has been issued. It gives the total known peat areas of the Dominion at 37,000 square miles, but Dr. Chalmers considers that future explorations will show a much greater area. The bulletin describes the different manufacturing processes which are being used in the Dominion, and the best known deposits.

The Methodist Magazine and Review for December completes the sixtieth volume and thirtieth year of this family magazine, by far the oldest in Canada. It abounds in articles of interest, as "Canterbury and Its Memories," "From the Andes to the Sea," "Dante," by the late Dean Farrar, and other well illustrated papers. Quite a Christmas flavor is given by clever Christmas stories, poems and pictures. With the January number, this magazine will appear in enlarged and improved form. Its programme for the year is particularly strong in illustrated articles on Canada, its extent and resources, industries and public men, also in papers on religious and social progress, character studies, popular science, the romance of missions, serial and short stories by popular writers.

The Beardmore Belting Co., Toronto and Montreal, have sent us a booklet pertaining to their waterproof cement leather belting.

The B. Greening Wire Co., Hamilton, Ont., have sent us their 1905 catalogue having reference to "Wire Cloth and Perforated Metals," special reference being made to double crimped heavy hard steel wire screening, described by space or opening, for mining, coal and gravel, cotton and wool drying floors, etc. Instructions are given as to the correct way for ordering screens, having reference space of the opening and the size

of wire used. A section of the book refers to double crimped steel wire cloth by meshes, for locomotive smoke stacks, mining screens, malt and oat kiln floors, cotton and wool dryers, threshing machines, fanning mills, and all grain cleaning machinery.

Booklet No. 10, issued by the Northern Engineering Works, Detroit, Mich., treats in a condensed form of a few of the many types of cranes manufactured by the company.

The Greenaway Co., Detroit, Mich., have issued a neat catalogue relating to separators which contains several illustrations of such machinery.

THE SAND-LIME BRICK INDUSTRY

An industry which was to revolutionize the manufacture of brick has in recent years been frequently described in the trade journal. The claim has been made that brick to be suitable for all purposes, could be made from sand with a small addition of lime, at a cost far less than that of ordinary brick. Time has not yet proved the truth of this statement, nevertheless according to a paper written by S. V. Peppel and included in the annual report on "The Clay Working Industries," recently published by the United States Geological Survey, the sand lime brick industry seems to have established itself and to have a promising future in certain sections of the United States. Where clay of good quality is not available but comparatively pure sand is abundant, the manufacturers of sand lime brick may reasonably hope for success. There are many such localities in Canada.

There are in the United States at present about 50 plants with a total capacity of approximately 1,000,000 brick a day. The experience of these plants indicates that sand lime brick can usually be manufactured at a cost below that of common clay brick. When however, sand lime brick is desired, equal to the fine clay front brick, the cost of production naturally is increased beyond that of common clay brick. Sand lime bricks have been in use long enough to prove that when properly made they have sufficient strength, and sufficient water and weather resisting qualities to make them a safe building material.

The sand lime brick of to-day is the natural outcome of the improvements made in the old mortar brick, which has been known for years. This mortar brick was at first never more than a moulded mixture of lime and sand mortar which was allowed to harden in the air. About 25 or 30 years ago one Doctor Michaelis patented a process for the hardening of mixtures of lime and sand by steam under pressure, which is the fundamental principle on which the manufacture of sand lime brick is based.

The commercial development of the industry dates back only 15 years in European countries and not more than four years in the United States. In 1896 Germany had only five factories where sand lime brick was made, but now it has about 200, with an actual annual output of between 350,000,000 and 400,000,000. Early in 1901 a plant was built in Michigan City, Ind. In 1902 about 20 plants were in existence and 6,000,000 bricks were actually sold. Full and accurate data are not obtainable to the actual output in 1903, but about 20,000,000 bricks have been reported as sold in that year. Many of the factories had just started and were not manu-

facturing to their full capacity during the year.

Mr. Peppel's report contains a great many interesting details about the sand lime brick, its history, and its manufacture. He discusses its properties, such as porosity, crushing strength, resistance to weather and to fire, and its color. He describes its composition, and dwells on the condition essential to success in its manufacture. These include, first, suitable raw materials—in comparatively pure sand, with the preference in favor of a quartz sand, and a comparatively pure lime of either type, with the preference in favor of a high calcium lime—and secondly, adequate machinery, which should consist of power and transmission, lime preparing machinery, mixing apparatus press hardening cylinder, shaft conveyor, tracks, and trucks. A well-equipped sand lime brick plant, with a capacity of from 16,000 to 20,000 bricks in, 10 to 12 hours, will cost, independent of site, from \$20,000 to \$25,000.

Mr. Peppel closes his report with a list of the places in the United States and Canada where companies have been incorporated for the manufacture of sand lime brick. A copy of the report may be procured by writing to the Director of the United States Geological Survey, Washington, D.C., or the pamphlet entitled "Statistics of the Clay Working Industries in the United States, in 1903," with which it is published. Both reports will also be included in the forthcoming volume "Mineral Resources," 1903, which the survey has now in press.

PERSONALS.

The third annual meeting of the Ontario Clayworkers' Association was held at Waterloo, Ont., December 7 and 8. Among those present were: T. A. Randall, editor of the Ontario Clayworker and secretary of the National Clayworkers' Association of America, Indianapolis, Ind.; H. Dejeannis, editor of The Brick, Chicago, Ill.; Prof. W. G. Miller, provincial geologist, Toronto, A. Johnston, secretary Ontario Clayworkers, London, Ont.; J. H. Jones, treasurer, Delaware, Ont.; W. Adamson, Walkerton, Ont.; and S. J. Fox, M. L. A., Lindsay, Ont. B. E. Bechtel, of Bechtel Bros., Waterloo, is president of the Association.

The quarterly meeting of the Canada Paper Makers' Association was held at Ottawa, December 7, and was largely attended. Among those present were W. H. Rowley and George Millen, of the E. B. Eddy Co., J. R. Barber and Wm. Barber, of the Toronto Paper Co., Howard Wilson, of the Wilson Paper Co., Montreal; J. C. Woodruff, of the Lincoln Paper Mills, and Robert Curry, of the Canadian Paper Co.

Mr. J. G. Jardine, commercial agent for Canada in South Africa, finds that the climate of South Africa does not agree with him and will return to Canada, leaving Cape Town on the 21 inst.

The Canadian Forestry Association, Ottawa, will send ten and the Canadian Forestry Service five delegates to the Forest Congress, which meets at Washington on January 6. The subjects to be dealt with at the different sessions are as follows: (1) Relation of the public forest lands to irrigation; (2) Relation of the public forest lands to grazing; (3) The lumber industry and the forest; (4) Importance

of the forest public lands to mining; (5) Forestry in relation to railroad supplies; (6) National forest policy; (7) State forest policy. On the afternoon of January 5 a special meeting will be held in the Lafayette Theatre, which will be addressed by the President of the United States and other men prominent in industrial and national life.

C. B. Smith, who for three years has been resident engineer of the Canadian Niagara Power Co., Niagara Falls, Ont., has tendered his resignation and will go to Montreal to accept an important position there.

The Canadian Niagara Power Co., have appointed Mr. A. H. Van Cleve, the now resident engineer of the Niagara Falls, N.Y., Power Co., but he will not resign from that position. He has appointed Mr. W. B. Robbins as his assistant on the Canadian work and Mr. Rodolf Rose as his assistant on the work on the American side of the river.

The new railway department of McGill University at Montreal have a council of administration composed of C. M. Hays, president of the Grand Trunk Pacific Railway; Sir Thomas Shaughnessy, president of the Canadian Pacific Railway; C. B. Greenshield-R. B. Angus and C. J. Fleet. These gentlemen will act largely in an advisory capacity, but they will also determine upon the curriculum to be adopted by the faculty.

Franklin H. Bristol of Naugatuck, Conn., vice-president of the Bristol Co., Waterbury, Conn., was instantly killed in an automobile accident November 21. Mr. Bristol was 45 years of age. He was one of the founders of the Bristol Co., which began business in 1889, and since that time had taken an active part in the development of the well-known recording instruments for pressure, temperature and electricity, and also in the development of the company's patent belt lacing. His father, Benjamin H. Bristol, is treasurer of the company. His brothers are also associated with it. William H. Bristol as president, who is also professor of mathematics at the Stevens Institute of Technology at Hoboken, N.J., Bennett B. Bristol as secretary, and Edgar H. Bristol as director.

Commander Spain has been appointed commissioner of wrecks for the Dominion, in succession to Capt. Salmon, resigned.

At a recent meeting of the shareholders of the Raven Lake Cement Co., held in Toronto, the following officers were elected: President, Dr. L. Teskey, Toronto; first vice-president, D. Robertson, Toronto; second vice-president, S. Gillies, Hamilton, Ont.; and secretary-treasurer, Thos. McLaughlin, Toronto.

Wm. Abbott, Montreal, read a paper on Aluminothermics, or Thermit welding, before the Canadian Railway Club in Montreal recently. Thermit is a heating compound consisting of aluminum in a divided state mixed with oxide of iron. Among other purposes, it is used for welding embedded trolley rails, exposed T-rails and third rails, also for repairs, in particular maritime repairs, shafting, etc.

The city of St. Thomas, Ont., owns and operates the six miles of electric street railway within its corporate limits. The road gives general satisfaction as to service, but at the expense of a deficit ranging between \$3,000 and \$4,000 per annum. The city

owns and operates the waterworks system very successfully. This plant nets a small annual surplus and at the same time gives entire satisfaction. The city is now about to take over the plant of the Gas & Electric Co., and a board of arbitration is at present engaged in settling a difference of valuation between the city and the private corporation owning the property.

MINING IN ONTARIO.

A comprehensive report of the condition of the mining industry in Ontario is that issued under the authority of the Legislative Assembly. The Director of Mines, Mr. Thomas W. Gibson, has done his work with thoroughness and ability. Each working mine is dealt with, the property described and its prospects indicated.

The report covers not only the precious and economic metals, but the industries represented in the non-metallic class, like cement and petroleum. The total mineral productions of the year amounted to \$12,870,593, and the wages paid to \$4,222,386. Of this total \$7,628,018 was of the non-metallic class and \$5,242,575 in the metallic. The total production of gold was 10,383 ounces, valued at \$188,036, giving employment to 493 persons, who were paid in wages \$245,490. Including the cost of supplies it required an expenditure of almost two dollars to extract one dollar's worth of ore.

The same story is told of silver mining. The total quantity produced was 16,688 ounces, the value being \$8,949, and the wages paid \$8,000.

The operations in pig lead were still more unprofitable, although restricted. The amount mined was 25 tons, valued at \$1,500, at a cost of \$5,189. Copper and nickel properties, on the whole, gave an excellent return. With a combined value of \$3,215,794 the wages paid aggregated \$872,302, leaving a large margin for supplies and a satisfactory profit. In the non-metallic class a good showing is made by petroleum and cement. The wages paid for the production of petroleum amounted to \$165,700, while the value of the product was \$1,586,674.

The expansion of the cement industry is a marked feature of the mineral development of the province. The rapid growth in output is indicated by the figures supplied in the report. In 1899 the increase was 45 per cent. over 1898, in 1900 it was 38 per cent. over 1899, in 1901 it was 14 per cent., in 1902 it was 49 per cent. over the previous year, and in 1903 there was a further increase of 33 per cent. over 1902. Notwithstanding this remarkable expansion we imported in the year ending June 30, 1903, 2,572,088 hundredweight, valued at \$901,063, upon which the duty paid was \$271,004. As the uses to which cement is put have multiplied and the industry grown the price has fallen. It was \$2.50 a barrel in 1891 and \$1.70 in 1903. The erection of new plants is proceeding in Canada at a rate that the Director of Mines seems to think promises "an era of over-production in Ontario with attendant curtailment or extinction of profits." This is a warning that investors will be inclined to heed, for since the capacity of "the present plants, if fully exercised, would seem to be nearly, if not quite, sufficient to fill the demand," the success of the industry will depend upon the discovery of new uses for the product.

COMPARATIVE TESTS OF ROCK DRILLS.

The Canadian Rand Drill Co., Montreal, have sent us the particulars showing the recent tests of rock drills at Witwatersrand, South Africa, which attracted world-wide attention. They inform us that in response to numerous enquiries as to the exact details of this test, they have published the information, in which is given full details, conditions and tables, copies of which they will have pleasure in sending on request.

The table is compiled from the official journal of the Mechanical Engineer's Association of the Witwatersrand, and shows the free air used by the various drills tested, through a range of customary air pressures. The tests were made by J. B. Carper, M.E., from whose report we extract as follows.

The trials were made at the mines of the City and Suburban Gold Mining Co., during September, October and November, 1903, and the object of the trials was to obtain the quantity of air consumed by the different makes and sizes of drills while doing the same work. The method adopted of making the trials was as follows: All the holes were drilled in a block of red granite, 4 feet 9 inches by 4 feet 9 inches by 2 feet thick, having density and hardness the same as that of Peterhead granite. This block was supplied by Messrs. Weightman & Amery, from their Bank granite quarry, and was chosen for this purpose and set by the late Major Seymour, who originally intended to carry out trials on these lines. This granite block was firmly set in the ground in a bed of concrete, and had a quarry bar fixed across it, at a height of 3 feet, supported at each end by posts and "A" frames, firmly set in the concrete. A second quarry bar had one end clamped to the fixed bar, with its outer end supported by a post with broad flange base, and could be traversed the whole length of the fixed bar. The machines were clamped either on the fixed bar or the traversing bar, thereby rendering possible the drilling of any spot on the face of the stone. All the test holes were drilled vertical.

There were two air receivers, each 5 feet in diameter by 20 feet long, placed side by side, about 2 feet apart, the receivers were connected by one piece of 8-inch diameter pipe with a valve, this valve being kept full open during the tests. An iron pipe 2 inches in diameter and 18 feet long led the air from the receivers to the test stone. It was provided with a stop valve at the end, and was fitted with a pressure gauge and a thermometer tube near the valve stop. A flexible hose attached to the end of the 2-inch pipe supplied the machines. The capacity of the two receivers, including piping up to the stop-valve, was 756.6 cubic feet. At the time of the tests, the pipe connection from the receivers to the mine was entirely disconnected and blank flanges put on the receivers.

Each run was conducted as follows. The compressor was worked until the gauge on the receiver showed the required starting pressure (say 80 pounds). The stop-valve was then shut, closing connection with the compressor. The machine, being in position on the bar and all ready, was then started and drilling continued until the terminal pressure of that stage (say 70 pounds) was shown on the receiver. The machine was then stopped and the depth of the hole carefully measured and recorded. The times of stopping and starting were taken, and lengths of any stoppages during the run noted, the net time

of the run being thus found. The machine was then re-started at 70 pounds pressure, and run to 60 pounds and again measured, and so on for each stage down to 35 pounds. Before starting a hole the bit was carefully measured. On starting and stopping each stage of the run, the pressure and temperature of the air passing through the machine was observed, as well as the atmospheric pressure shown by barometer.

It was intended originally to go through all the stages of pressure for each drill with one hole, but the stone being proved too thin by the first holes drilled, this scheme had to be modified, and the plan was adopted of running the first two stages only, viz., 60 to 50 pounds, 50 to 40 pounds, and 40 to 35 pounds.

Runs Nos 1 to 8, inclusive, were carried on for various stages below 60 pounds pressure, but the results have been omitted from tables, several of the holes having gone right through the stone, and the observations in consequence are not considered reliable. All these machines were started at 60 pounds for their next run.

In working out the results the capacity of the receivers was calculated for every pressure observed, corrected for temperature and barometer reading, and reduced to the equivalent of free air at a temperature of 70° F and 24.8 inches barometer. The capacities of the holes drilled were calculated. The results may be summarized as follows:

Machines, 3½ inch. One 3½-inch bore machine was tested, the "Hercules," which gave fair drilling result, with an air consumption of 16.86 cubic feet per cubic inch drilled.

Machines, 3¼ inch. The new machines tested were the following, "Climax, Little Vixen," "Ingersoll," "Hilman, Slugger," "Hirnant," and "Little Giant." Comparing the 3¼ inch diameter new machines, the "Slugger" showed the lowest average air consumption for the whole range of pressures from 80 pounds to 35 pounds, viz., 11.08 cubic feet per cubic inch drilled, and in addition showed the lowest air consumption for any single stage of the whole test, viz., 8.70 cubic feet per cubic inch drilled.

The second best result was obtained from the "Little Giant," which showed an average consumption of 11.4 cubic feet of air per inch drilled.

These two machines gave the most satisfactory runs, working the most smoothly and without interruption, and giving the least trouble in every way. In every stage of air pressures these two machines also showed the lowest air consumption.

Old machines. It was intended to test some worn machines for comparison, and a "Little Giant," Table 1 (runs Nos. 49 and 50), about 3 months old, was brought straight up from the mine at City and Suburban Gold Mining Co., and put on the bar. A "Climax Vixen" was obtained from the manager of the Ferreira Gold Mining Co., but owing to a misunderstanding a practically new machine was sent, which was overhauled and adjusted before reaching the test bar, so that the runs of these machines are not properly comparable.

Machines, 3¼ inch. Two new 3¼-inch "Slugger" machines were tested, one being taken out of its packing case at the test bar, Table 2 (runs Nos. 5 and 35), which gave a consumption over the whole range of pressures of 10.92 cubic feet of air per cubic inch drilled. This machine worked stiffly at first, and in

consequence did not show so good a record in the higher stages. The second 3 1/2 inch "Slugger" was quite new also, but before starting the test was adjusted for sinking work by the removal of a plug in the valve chest provided for that purpose—which gives a more free movement of the air in the machine. The average consumption of this machine, Table 3 (runs Nos. 8 and 34), was 10.52 cubic feet of air per cubic inch drilled. This is the most economical in consumption of air of the machines of 3-inch bore and upwards.

Machines, 3-inch.—There were four makes of machines of 3-inch bore tested, "Hercules," "Little Vixen," "Water Leyner," and "Daw," of which the "Hercules," Table 4 (runs Nos. 9 and 28), proved the most economical with a consumption of 15.11 cubic feet of air per cubic inch drilled. This appears to be a good and handy machine and worked very satisfactorily.

The "Water Leyner" machine was given two runs, Table 6 (runs Nos. 19 and 20.) at the higher stage pressures, 80 pounds to 60 pounds, with an average of 21.52 cubic feet of air per cubic inch drilled, but was not tried below 60 pounds, the agent not considering that this machine—the only one available at the time—was suited for use at lower pressures.

Machines, 2 15-16-inch.—An "Ingersoll" machine of 2 15-16-inch bore was tested, Table 5 (runs Nos. 53 and 54), at the special request of Mr. S. Hancock, manager, Jumpers Deep, Limited. It consists of an ordinary 3 1/2-inch machine, fitted with a cast-iron bush bored to 2 15-16-inch diameter with piston turned down to suit. This machine was in first-class condition, and did very good work. Its average consumption was 13.92 cubic feet of air per cubic inch drilled, and it showed drilling power equal to that of the full bore 3 1/2-inch machine with a greater economy of air used.

Machines, 2 1/2-inch.—Tests were made on two 2 1/4-inch bore machines, a "Climax" and a "Slugger," each machine being run with both 2-inch and 3-inch drill bits, with the idea of finding whether a small machine was capable of drilling a full size hole economically.

The tests could not be carried through in exactly identical stages owing to difficulties entailed by the use of small drill bits and machines—the feed running out, as well as the drill going right through the stone in several cases.

The "Slugger" machine showed the ad-

vantage with both small and full size bits, the air consumption being 10.45, Table 7 (runs Nos. 44 and 45), and 11.00, Table 8 (runs Nos. 55 and 56), cubic feet per cubic inch drilled, respectively.

It may be noted that, in both the depth of hole drilled with the full size bits, the economy of air used, the 2 1/4-inch machine was quite equal to the larger machines.

Machines, 2 1/2-inch.—One 2 1/2 inch bore machine, the "Climax, Little Vixen," Table 9 (runs Nos. 7 and 32), was tested at the special request of Mr. Marley, manager, South Norse, Limited, and is understood to be the machine he has in general use in development work at the mine. This was run with a small drill bit (2-inch) and gave very satisfactory results as regards working, but had a consumption of air of 20.29 cubic feet per cubic inch drilled, or nearly double that of the 2 1/2 inch "Slugger" with the same size of bit.

Machines, 2 1/2-inch.—Two 2 1/2 inch bore machines were tested through some of the stages, the "Hercules," Table 10 (runs Nos. 37 and 38), and "Little Giant," Table 11 (runs 12 and 31), of which the "Little Giant" was the more satisfactory in its working, and with an air consumption of 19.48 cubic feet per cubic inch drilled showed the greater economy.

In preparing and presenting the foregoing facts Mr. Carper says that it is almost impossible to measure the actual work done by rock drills in underground mining work, and in general practice it has seemed enough that their work pays, and that there is a minimum of annoyance and anxiety involved in keeping them working. He carried out these trials and now makes public the results; realizing that they form only the commencement of a series of tests of rock drills which are possible and which are needed to give this information.

CANADA'S PRIZES AT ST. LOUIS EXPOSITION.

Canada carried off grand prizes in each department in which exhibits were made at the recent St. Louis Exposition—fish and game, forestry, agriculture and mines. The live stock awards have already been published. The other Canadian awards are given here in detail.

There is, unfortunately, a conflict of authority between the Exposition Company and the National Commission, the latter claiming the right to revise the prize list.

The question, which affects the 40,000 awards of the fair, has been submitted to arbitration, but the result will not, it is hoped, change the Canadian awards, which are as follows.

DEPARTMENT OF AGRICULTURE

Group 79—D'Artois & Brouillet, Waterloo, Ont., mowing machine, bronze medal.

Group 81—Dominion of Canada, Ottawa, Ont., tobacco, silver medal.

Group 84—Dominion of Canada, Ottawa, Ont., collective exhibit, trophy, grand prize; Ruby King, peppers, bronze medal.

Group 85—A. F. McLaren, Imperial Cheese Co., Toronto, cheese, gold medal; Truro Condensed Milk & Canning Co., Truro, N.S., condensed milk, cream, etc., gold medal; Ingersoll Packing Co., Ingersoll, Ont., cheese, gold medal.

Group 87—Flour, Dominion of Canada, Ottawa, Ont., grand prize; Ogilvie Flour Mills Co., Montreal, diploma; Lake of the Woods Milling Co., Keewatin, Man., diploma; Lake Huron & Manitoba Milling Co., Goderich, Ont., diploma; James Goldie Co., Ltd., Guelph, Ont., diploma; Archibald Campbell, Toronto, Ont., flour, diploma; Eby, Blain Co., Toronto, breakfast food, gold medal; Tilson Co., Ltd., Tilsonburg, Ont., oats, gold medal; P. McIntosh & Son, Toronto, cereal foods, gold medal; Robert Greig Co., Toronto, cereal foods, gold medal; Edwardsburg Starch Co., Cardinal, Ont., starch, gold medal; Frontenac Cereal Food Co., Kingston, Ont., orange meat, silver medal; Imperial Starch Co., Prescott, Ont., starch, gold medal; White Swan Milling Co., flaked barley, peas, rice and wheat cakes, silver medal.

Group 88—Christie, Brown & Co., Toronto, sweet cakes, biscuits, grand prize; E. W. Gillett Co., Ltd., Toronto, baking powder, silver medal.

Group 89—Eby, Blain & Co., Toronto, fruits in cans, gold medal.

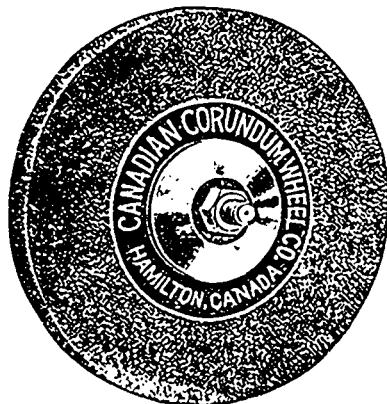
Group 90—Dominion of Canada, Ottawa, Ont., sugar and syrups, gold medal; Edwardsburg Starch Co., Cardinal, Ont., corn syrup, silver medal.

Group 93—Hiram Walker & Sons, Limited, Walkerville, Ont., whiskey, grand prize.

Group 94—John Labatt, London, Ont., ale, silver medal.

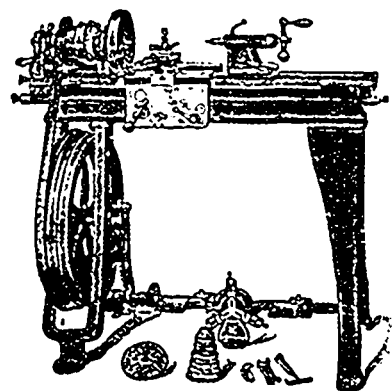
Group 95—Dominion of Canada, Ottawa, Ont., hops, bronze medal.

Group 96—Dominion of Canada, Ottawa, Ont., comb honey, strained and beeswax, gold medal.



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Ontario Agent:
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DEPARTMENT OF FORESTRY.

Group 112 Dominion of Canada, publications, maps, etc., bronze medal

Group 113—Dominion of Canada, whole exhibit, specimens, etc., grand prize

DEPARTMENT FISH AND GAME.

Group 121—Government Department of Agriculture, mounted and living animals, grand prize; photographs of game districts, silver medal; Intercolonial Railway of Canada, Moncton, N.B., mounted game heads and fish, gold medal.

Group 122—Grand Trunk Railway, bromide enlargements of hunting and fishing scenes, gold medal; animals' heads and mounted fish, gold medal; Dominion of Canada, sea moss, bronze medal.

DEPARTMENT OF MINES.

Among the winners in the Department of Mines were Johnson's Asbestos Co., Thetford Mines, Que., gold medal; Bells Asbestos Co., Thetford Mines, Que., gold medal; King Bros., Limited, Thetford Mines, Que., gold medal; the American Asbestos Co., Black Lake, Que., gold medal; Fortin & Gravelle, Hull, Que., gold medal; Dominion Coal Co., Glace Bay, N.S., gold medal; Black Lake Chrome & Asbestos Co., Black Lake, Que., silver medal; Reed Asbestos Co., Reedsdale, Que., silver medal; Broughton Asbestos Co., East Broughton, Que., silver medal; Danville Asbestos Co., Danville, Que., silver medal; Brown Bros., Gantley, Que., silver medal; Samuel Winter & Co., Moncton, N.B., silver medal; Cumberland Railway & Coal Co., Springhill, N.S., silver medal; Nova Scotia Steel & Coal Co., Sydney Mines, N.S.,

silver medal; Atlantic Grindstone Co., Lower Cove, N.S., silver medal; Canada Paint Co., Montreal, silver medal; West Lake Gold Mining Co., Mount Uniacke, N.S., silver medal; Colonial Copper Co., Cape D'Hor, N.S., silver medal; Dominion Antimony Co., Halifax, N.S., silver medal; John McDougall & Co., Montreal, silver medal; Forsythe Granite & Marble Co., Montreal, bronze medal; Milne, Coutts & Co., St. George, N.B., bronze medal; Intercolonial, Limited, Buckingham, Que., silver medal; Stellarton Colliery, Stellarton, N.S., bronze medal; Lambert Lynn, C.E., Chimney Corner, N.S., bronze medal; Inverness Railway & Coal Co., Inverness, N.S., coal, bronze medal.

CALIFORNIA.

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

STEEL SHIPBUILDING IN NOVA SCOTIA.

At a recent meeting of the Halifax Board of Trade the president reported in connection with the effort being made to establish a steel shipbuilding industry at Halifax,

that it was proposed at first to organize a promotion company with \$100,000 capital to secure a suitable site for a shipbuilding yard, and to arrange other preliminaries incidental to the establishment of a large shipbuilding company. The president added that Mr. Spence, a member of a shipbuilding firm in the north of England, was visiting Canada to look into the steel shipbuilding question in the Dominion, and had spent two months traveling from Vancouver to Halifax. He would subscribe for one-half of the capital of the promotion company. A joint committee consisting of two members of the Halifax Board of Trade, two of the Dartmouth Board of Trade, and two of the Halifax City Council, under the chairmanship of the mayor of the city would solicit private subscriptions for the other \$50,000 to get the project under way.

In an interview granted to one of the Halifax papers Mr. Spence, who is a member of the firm of Swan & Hunter, said the steel shipbuilding industry was expected to improve in the near future, and following the war between Russia and Japan there was likely to be brisk times in the building of war ships. He thought that with a Dominion bounty of six dollars per ton, the business would be a success in Canada.

A site for the proposed plant has been held under option for more than a year near the Narrows on the Dartmouth side. It is partly a property known as the Faulkner fields and adjoining ground.

Other property in Bedford Basin is held under option also. The plan is to have part of the works at Faulkner's fields, part at Tuff's Cove in the Basin and some of the

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engineering buildings on the Halifax side. At this point the harbor is narrow and is likely to be bridged in the near future with a general traffic structure, which will also enable the new Nova Scotia Eastern Railway, to be built from Canso to Dartmouth along the eastern shore, to effect a direct entrance into Halifax.

Messrs. Reid & Kilmer, Hamilton, Ont., will remove their electrical plant to Toronto.

The Dominion Government paid the following sums in bounties during the last fiscal year ending June 30. Pig iron, puddled bars, and steel ingots, \$893,641; wire rods, steel angles, etc., \$15,320, binder twine, \$25,452; lead, \$182,229. The bounty on wire rods is \$6 a ton, on structural steel \$3 a ton, on rolled plates \$3 a ton, and on lead refined in Canada \$15 a ton. The law providing for a bounty of one and one-half cents a gallon to the producers of crude oil in Canada went into force on June 8, and for the period between that date and December 1 the sum of \$123,088 has been paid out on the strength of 365 applications. This represents a total production of 18,403,200 gallons.

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A medium sized foundry, machine, wood and blacksmith shops, all equipped with first-class machinery and tools, a short distance out of Toronto. Will be sold at a sacrifice, or would take a managing partner with a few thousand capital at good salary. This is a safe investment and will stand inspection. Address—

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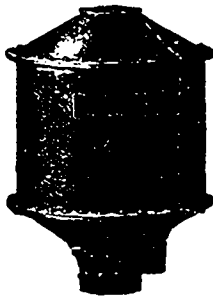
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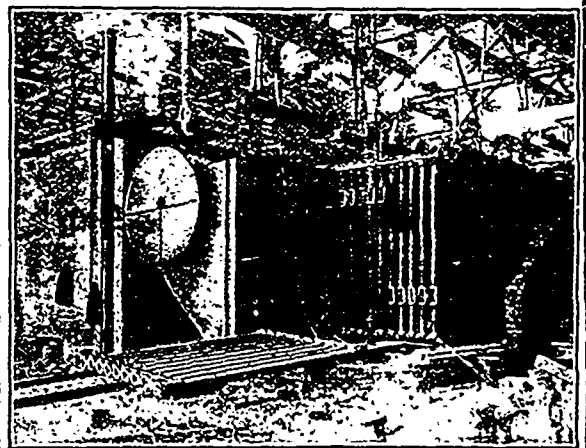
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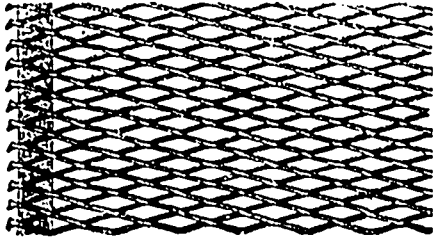
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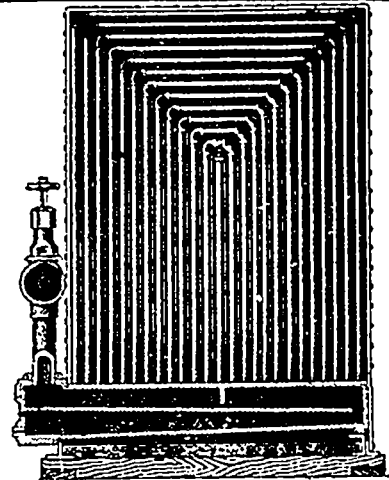
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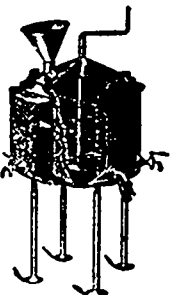
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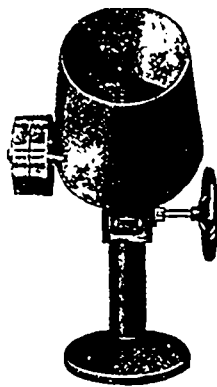
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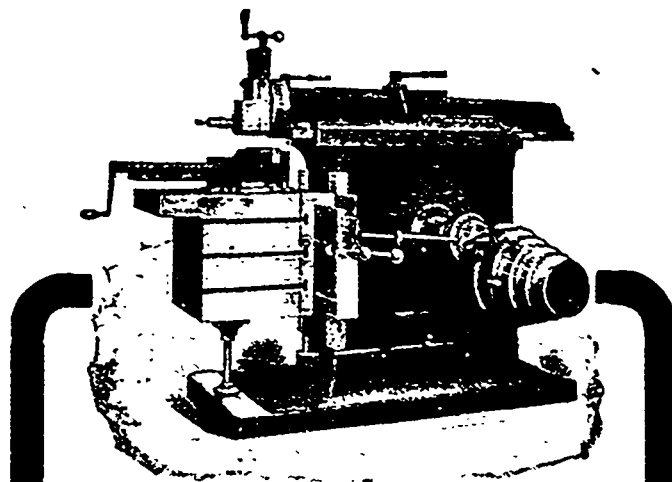
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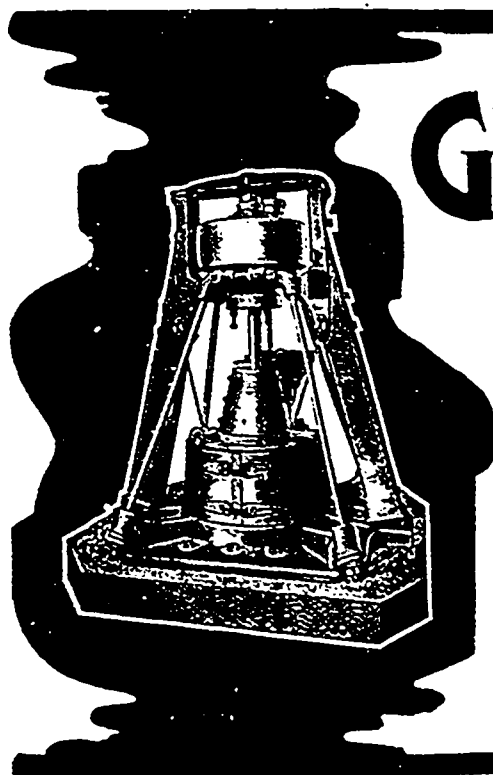
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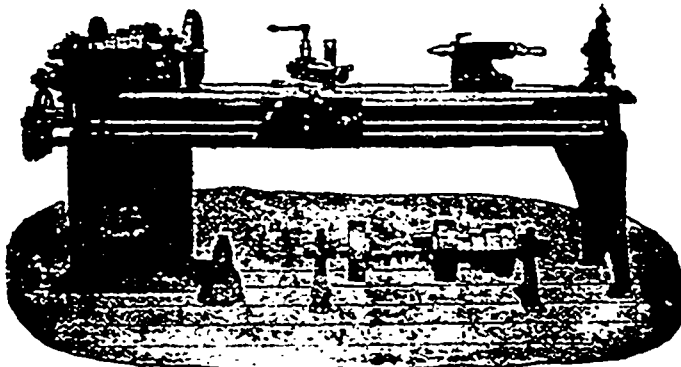
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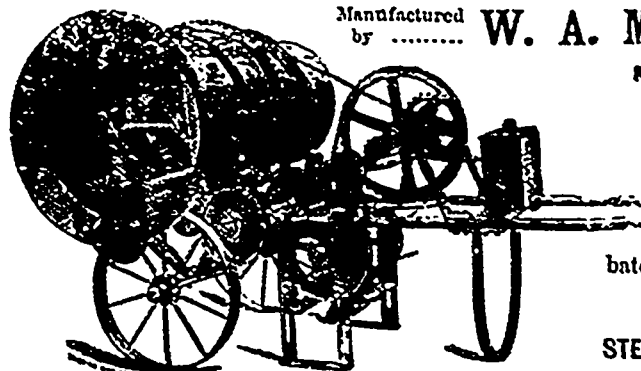


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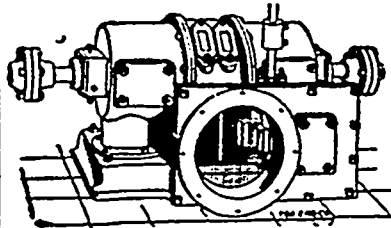
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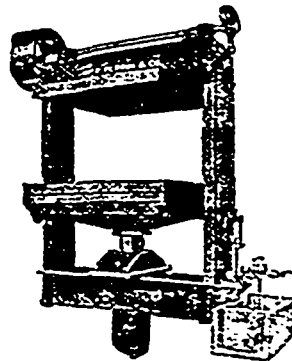
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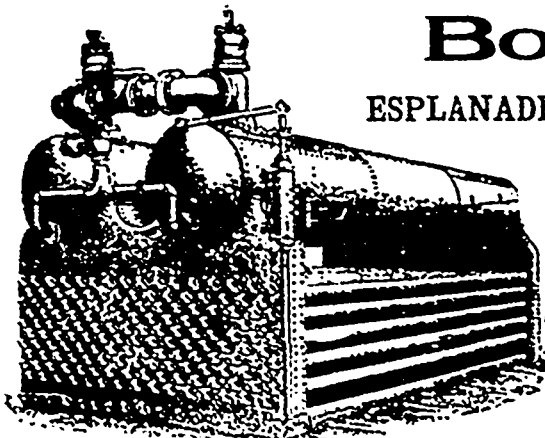
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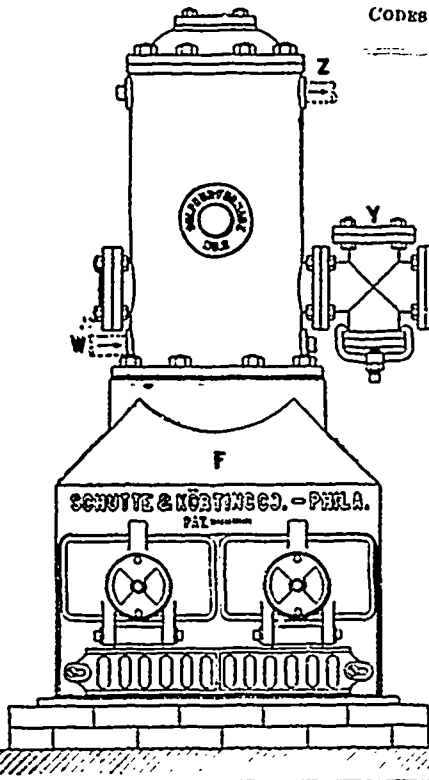
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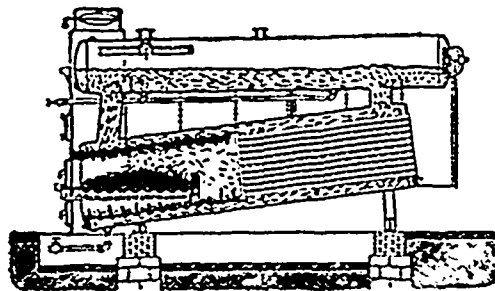
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Hopkins, F. H. & Co., Montreal.
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Pittsburgh Shafting Co., Detroit, Mich.
Ryall Machine Screw Co., Montreal.
Worth & Martin, Toronto.

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

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

Miners' Lamps

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

Mining Machinery

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

Motors and Dynamos

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

Moulding Sand

Hamilton Facing Mills Co., Hamilton, Ont.

Novelty Manufacturers

Worth & Martin, Toronto.

Nozzles

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

Office and Bank Fittings

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

Oils and Lubricants

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

Oil Cloth

Dominion Oil Cloth Co., Montreal.

Oil Cups

Penberthy Injector Co., Windsor, Ont.

Paints and Colors

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

Paper Manufacturers

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

Patents

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

Perforated Metals

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

Personal Accident

Canadian Casualty & Boiler Insurance Co., Toronto

Phosphorizers

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

Pig Iron

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

Pipe (Riveted, Iron and Steel)

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

Pipe Threading Machines

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

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

Plaster

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

Plates

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

CLASSIFIED INDEX.

(CONTINUED).

Plumbago

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

Pneumatic Tools

Allis-Chalmers-Bullock, Limited, Montreal.
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Canadian Portland Cement Co., Deseronto, Ont.
Owen Sound Portland Cement Co., Owen Sound, Ont.
Rathbun Co., Toronto.
St. Lawrence Portland Cement Co., Montreal.

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

Presses (Tile, Sewer Pipe, Nozzles and Sieves)

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

Pulleys

Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
Greay, Wm. & J. G., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co., Montreal.
McLaren, J. C., Belting Co., Montreal and Toronto.
Petrie, H. W., Toronto.
Pittsburgh Shafting Co., Detroit, Mich.
Wilson, J. C. & Co., Glenora, Ont.

Pumps and Pumping Machinery

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

Punches and Shears

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

Purifiers

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

Purifying and Softening Systems (Water)

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

Railroads

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

Railway Supplies

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

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

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Metallic Roofing Co., Toronto.

Rubber Goods

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

Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Washing Tubs

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

Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

Safes and Vaults

Goldie & McCulloch Co., Galt, Ont.

Screws

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

Screw Plates

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

Sewer Pipe

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

Shafting

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

Shapers and Carvers

Advance Machinery Co., Toledo, Ohio.

Shear Knives

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

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Abbott, William, Montreal.
Bourne-Fuller Co., Cleveland, Ohio.
Leslie, A. C. & Co., Montreal.
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Globe Machine & Stamping Co., Cleveland, Ohio.
Metallic Roofing Co., Toronto.

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Metallic Roofing Co., Toronto.
Ryall Machine Screw Works, Montreal.

Ship Builders

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

Smoke Stacks

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

Solder

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

Special Machinery

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

Speed Recorders

Bristol Co., Waterbury, Conn.

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J. J. CASSIDY, Manager.

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CLASSIFIED INDEX.

(CONTINUED).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Tanks (Oil and Water)
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.
Petroleum Iron Works Co., Washington, Pa.

Taps and Dies
Butterfield & Co., Rock Island, Que.
Cleveland Twist Drill Co., Cleveland, Ohio.
Globe Machine & Stamping Co., Cleveland, Ohio.
Hamilton Stamp & Stencil Works, Hamilton, Ont.

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

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

Textile Supplies
Greyc, Wm. & J. G., Toronto.
McLaren, J. C. Belting Co., Montreal and Toronto.

Thermometers (Recording)
Bristol Co., Waterbury, Conn.

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

Tool Grinders
Barnes, R. F. Co., Rockford, Ill.

Tool Steel
Abbott, William, Montreal.
Bourne-Fuller Co., Cleveland, Ohio.
Hopkins, F. H. & Co., Montreal.
Leslie, A. C. & Co., Montreal.

Trucks
Corbett, R. B., Brooklyn, N.Y.
Greyc, Wm. & J. G., Toronto.
Hopkins, F. H. & Co., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Sheldon & Sheldon, 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.

Tugs
Bertram Engine Works Co., Toronto.

Tumbling Barrels
Globe Machine & Stamping Co., Cleveland, Ohio.

Turbines
Canada Foundry Co., Toronto.
Greyc, Wm. & J. G., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Wilson, J. C. & Co., Glenora, Ont.

Typewriters and Supplies
United Typewriter Co., Toronto.

Valves
American Steam Pump Co., Battle Creek, Mich.
Babcock & Wilcox, Limited, Montreal.
Canada Foundry Co., Toronto.
Hamilton Brass Mfg. Co., Hamilton, Ont.
Kerr Engine Co., Walkerville, Ont.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto.

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

Varnishes
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Ventilators
Darling Bros., Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.

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Hore, F. W. & Son, Hamilton, Ont.

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

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Sleeth, D., Montreal.

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Ontario Wind Engine & Pump Co., Toronto.

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

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Dominion Wire Rope Co., Montreal.
Greening, B. Wire Co., Hamilton, Ont.
Leslie, A. C. & Co., Montreal.
Phillips, Eugene F. Electrical Works, Montreal.
Pittsburgh Shafting Co., Detroit, Mich.
Wire & Cable Co., Montreal.

Wire Rope Fittings
Dominion Wire Rope Co., Montreal.

Wire Cloth
Greening, B. Wire Co., Hamilton, Ont.

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

Wire Specialties
Mendows, Geo. B. Wire, Iron & Brass Works Co., Toronto.

Wood-Working Machinery
Advance Machinery Co., Toledo, Ohio.
Cowdrey, C. H., Machine Works, Fitchburg, Mass.
Goldie & McCulloch Co., Galt, Ont.
London Machine Tool Co., London, Ont.
Petrie, H. W., Toronto.
Sheldon & Sheldon, Galt, Ont.
Stephoe, John Shaper Co., Cincinnati, Ohio.
Williams, A. R. Machinery Co., Toronto.

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Bertram Engine Works Co., Toronto.

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Leslie, A. C. & Co., Montreal.
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INDEX TO ADVERTISEMENTS.

Where the follo is not given the Advertisement appears at intervals.

See Classified Index Beginning on Page 39

ofc..... outside front cover.		obc.... ..outside back cover.	
A	PAGE	PAGE	PAGE
Abbott, William, Montreal	5	Canadian Corundum Wheel Co., Hamilton, Ont.	32
Advance Machinery Co., Toledo, Ohio	37	Canadian General Electric Co., Toronto	13
Agriculture, Ontario Minister of, Toronto	38	Canadian Heine Safety Boiler Co., Toronto	41
Albert Mfg. Co., Hillsborough, N.B.	35	Canadian Manufacturer Pub. Co., Toronto	47
Alexander, John H., Windsor, Ont.	7	Canadian Office & School Furniture Co., Pres- ton, Ont	40
Algoma Steel Co., Sault Ste. Marie, Ont.	4	Canadian Otis Elevator Co., Hamilton, Ont.	ofc
Allis-Chalmers-Bullock, Ltd., Montreal	11	Canadian Portland Cement Co., Deseronto, Ont	35
American Carpet & Upholstery Journal, Phila- delphia, Pa.	47	Canadian Rand Drill Co., Sherbrooke, Que	14
American Steam Pump Co., Battle Creek, Mich.	9	Canadian Westinghouse Co., Ltd., Hamilton, Ont	51
Anton, John & Son, Monongahela, Pa.	40	Carlin's, Thomas Sons Co., Allegheny, Pa.	14
Archbold, Dr. Geo., Prescott, Ont.	10	Casella Color Co., New York and Montreal	36
Armstrong Mfg. Co., Bridgeport, Conn.	39	Central Ontario Power Co., Peterboro, Ont.	35
		Chapman Double Ball Bearing Co., Toronto	15
B		Chicago & North-Western Railway, B. H. Ben- nett, General Agent, Toronto	34
Babeock & Wilcox, Limited, Montreal	ofc	Cleveland Twist Drill Co., Cleveland, Ohio	obo
Bailey-Underwood Co., New Glasgow, N.S.	40	Continental Iron Works, New York, N.Y.	3
Bank of Hamilton, Hamilton, Ont.	45	Corbett, R. B., Brooklyn, N.Y.	40
Barber, Wm. & Bro., Georgetown, Ont.	43	Cowdrey, C. H., Machine Works, Fitchburg, Mass	11
Barnes, B. F. Co., Rockford, Ill.	32	Crocker-Wheeler Co., St. Catharines, Ont.	12
Bellhouse, Dillon & Co., Montreal	36		
Bell Telephone Co.		D	
Benson, W. T. & Co., Montreal	36	Darling Bros., Montreal	
Berry Bros., Walkerville, Ont	33	Delano-Oshorn Engineering Co., Toronto	10
Bertram Engine Works Co., Toronto	15	Dixon, Jos., Crucible Co., Jersey City, N.J	41
Blagden, Waugh & Co., London, E.C., England	36	Dominion Belting Co., Hamilton, Ont.	38
Borden & Selleck Co., Chicago, Ill.	40	Dominion Oil Cloth Co., Montreal	10
Bourne-Fuller Co., Cleveland, Ohio	4	Dominion Wire Rope Co., Montreal	5
Bradley Pulverizer Co., Boston, Mass	39	Dover Fire Brick Co., Cleveland, Ohio	8
Bradstreets, Toronto and New York	45	Downie Pump Co., Downieville, Pa.	40
Bristol Co., Waterbury, Conn	ofc	Drummond, McCall & Co., Montreal, Que	4
Brown & Co., Paris, Ont.	44	Dun, R. G. & Co., Toronto	45
Brownlee, J., Galt, Ont	7	Dunbar Fire Brick Co., Pittsburg, Pa	9
Brunner, Mond & Co., Northwich, England			
Budden, Hanbury A., Montreal	10	E	
Buhl Malleable Co., Detroit, Mich.	obo	Edwards, R. J., Toronto	38
Burt Mfg. Co., Akron, Ohio	34	Electrical Construction Co., London, Ont.	13
Butterfield & Co., Rock Island, Que.	16	Electrical Supervision Society, Toronto	10
Burton, Beidler & Phillips Co., Cleveland, Ohio	7		
		F	
C		Ferguson, J. D., Hamilton, Ont.	6
Canada Corundum Co., Toronto	2	Fetherstonhaugh & Co., Toronto	ofc
Canada Foundry Co., Toronto		Firstbrook Box Co., Toronto	10
Canada Iron Furnace Co., Montreal	4	Fleming, W. A. & Co., Montreal	39
Canadian Casualty & Boiler Insurance Co., To- ronto	38	Forman, John, Montreal	16-40
		G	
		Gartshore, John J., Toronto	10
		Gartshore-Thomson Pipe & Foundry Co., Hamil- ton, Ont	3
		Geigy Aniline & Extract Co., New York, N.Y.	38
		Globe Machine & Stamping Co., Cleveland, Ohio	38
		Goldie & McCulloch Co., Galt, Ont.	3
		Greening, B. Wiro Co., Hamilton, Ont	5
		Greay, Wm. & J. G., Toronto	obo
		Gutta Percha & Rubber Mfg. Co., Toronto	ofc
		H	
		Hamilton Brass Mfg. Co., Hamilton, Ont	16
		Hamilton Facing Mills Co., Hamilton, Ont	obo
		Hamilton, Wm. Mfg. Co., Peterborough, Ont	15
		Hancock, J. M. & Co., Niagara Falls, N.Y	7
		Harbison-Walker Refractories Co., Pittsburg	9
		Hay, Peter Knife Co., Galt, Ont	14
		Heys, Thomas & Son, Toronto	10
		Hoffman, Jules G., Detroit, Mich	6
		Hopkins, F. H. & Co., Montreal	
		Hore, F. W. & Son, Hamilton, Ont	44
		Hunt, Robert W. & Co., Chicago, Ill.	10

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When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

INDEX TO ADVERTISEMENTS (Continued).

I		PAGE		PAGE		S		PAGE	
Imperial Oil Co., Petrols. Ont.	36	McKinnon Dash & Metal Works Co., St. Catharines, Ont.	ofc	Sadler & Haworth, Montreal and Toronto	50	Schutte & Koerting, Philadelphia, Pa.	42	Shawmut Coal & Coke Co., St. Mary's, Pa., and Hamilton, Ont.	6
International Correspondence Schools, Scranton, Pa., and Toronto	41	Molaren, D. K., Montreal and Toronto	38	Sheldon & Sheldon, Galt, Ont.	12	Shepard, Charles G., Buffalo, N.Y.	40	Shipman, O. W. Co., Detroit, Mich.	7
J		N		O		T		PAGE	
Jeffrey Mfg Co., Columbus, Ohio	15	Neff & Postlethwaite, Toronto	10	Oakey, John, & Sons, London, England	37	Toronto & Hamilton Electric Co., Hamilton, Ont.	13	United Electric Co., Toronto	ofc
Jones & Moore Electric Co., Toronto	13	Northern Aluminum Co., Shawinigan Falls, Que. and Pittsburgh, Pa.	5	Ohio & Michigan Coal Co., Detroit, Mich.	7	Toronto Paper Mfg Co., Cornwall, Ont.	43	United Typewriter Co., Toronto	37
Jones, J. L., Engraving Co., Toronto	46	Nova Scotia Steel & Coal Co., New Glasgow, N.S.	4	Ontario Wind Engine & Pump Co., Toronto	40	Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio	10	U	
K		O		P		V		PAGE	
Kelley's Directories, Toronto and London, England	37	Owen Sound Portland Cement Co., Owen Sound, Ont.	35	Packard Electric Co., St. Catharines, Ont.	12	Vogel, C. H., Ottawa	10	W	
Kerr Engine Co., Walkerville, Ont.	37	O		Parke, Roderick J., Toronto	10	Volta Electric Repair Works, Toronto	13	PAGE	
L		P		Penberthy Injector Co., Windsor, Ont.	2	Von der Osten, E. & Co., Toronto	10	PAGE	
Lealie, A. C. & Co., Montreal	37	Pennsylvania Fire Brick Co., Lock Haven, Pa.	8	Perrin, William R. & Co., Limited, Toronto and Chicago, Ill.	41	W		PAGE	
Lewis, Rice & Son, Toronto	40	Peterborough Canoe Co., Peterborough, Ont.	44	Petrie, H. D., Hamilton, Ont.	10	W		PAGE	
London Machine Tool Co., London, Ont.	40	Petrie, H. W., Toronto	11-12-32	Petroleum Iron Works, Washington, Pa.	14	W		PAGE	
London Rolling Mill Co., London, Ont.	2	Phillips, Eugene F., Electrical Works, Montreal	13	Pittsburgh & Buffalo Co., Buffalo, N.Y.	6	W		PAGE	
Lord, The Geo. W. Co., Philadelphia, Pa., and Montreal, Que.	10	Pittsburgh Coal Co., Pittsburgh, Pa.	6	Pittsburgh Crucible Works, Pittsburg, Pa.	34	W		PAGE	
Lowell Crayon Co., Lowell, Mass.	10	Pittsburgh Shafting Co., Detroit, Mich.	ofc	Q		W		PAGE	
Lysaght, John, Limited, Bristol, England and Montreal	ofc	Q		Queen City Oil Co., Toronto	ofc	W		PAGE	
M		R		R		W		PAGE	
Marion & Marion, Montreal	45	Ramage, Edward, Toronto	10	Ramond, Edward, Toronto	10	Wardlaw, T. D., Toronto	36	PAGE	
Meadows, Geo. B. Wire, Iron & Brass Works Co., Toronto	15	Reese-Hammond Fire Brick Co., Bolivar, Pa.	9	Retail Coalman, Chicago, Ill.	46	Westinghouse Electric & Mfg. Co., Pittsburg, Pa.	51	PAGE	
Metallic Roofing Co., Toronto	43	Retailer & Advertiser, Deposit, N.Y.	46	Rice Lewis & Son, Toronto	37	Wick, H. K. & Co., Buffalo, N.Y.	8	PAGE	
Meyercood Co., Chicago, Ill.	40	Robb Engineering Co., Amherst, N.S.	42	Robb Engineering Co., Amherst, N.S.	42	Wilby, P. H., Toronto	ofc	PAGE	
Mills, S. D., Toronto	10	Rochester & Pittsburg Coal & Iron Co., Buffalo, N.Y.	8	Rochester & Pittsburg Coal & Iron Co., Buffalo, N.Y.	8	Williams, A. R. Machinery Co., Toronto	5-9-38	PAGE	
Milnes, J. H. & Co., Toronto	7	Rossendale Belting Co., Toronto	ofc	Winn & Holland, Montreal	ofc	Winn & Holland, Montreal	ofc	PAGE	
Montreal Pipe Foundry Co., Montreal	3	Rountree Publishing Co., Birmingham, Ala.	48	Wilson, H. T. Coal Co., Detroit, Mich.	7	Wilson, H. T. Coal Co., Detroit, Mich.	7	PAGE	
Morrison, T. A. & Co., Montreal	10	Ryall Machine Screw Co., Montreal	40	Wilson, J. C. & Co., Glenora, Ont.	41	Wilson, J. C. & Co., Glenora, Ont.	41	PAGE	
Morrow, John, Machine Screw Co., Ingersoll, Ont.	43	R		Wire & Cable Co., Montreal	ofc	Worth & Martin, Toronto	44	PAGE	
Myles', Thos., Sons, Hamilton, Ont.	8	R		Wynn, W. H. & Co., West Decatur, Pa.	10	Wynn, W. H. & Co., West Decatur, Pa.	10	PAGE	
Mc		S		PAGE		PAGE		PAGE	
McArthur, Corneille & Co., Montreal	ofc	S		PAGE		PAGE		PAGE	
McCullough-Dalsell Crucible Co., Pittsburg, Pa.	34	S		PAGE		PAGE		PAGE	
McDougall, John, Caledonian Iron Works Co., Montreal	51	S		PAGE		PAGE		PAGE	
McEachren Heating & Ventilating Co., Galt, Ont.	37	S		PAGE		PAGE		PAGE	
McKelvey W. A., Toronto	40	S		PAGE		PAGE		PAGE	

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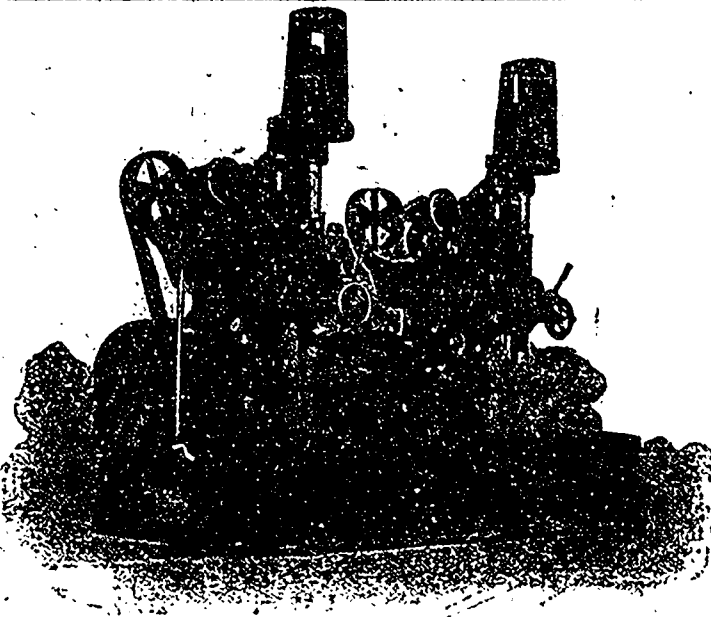
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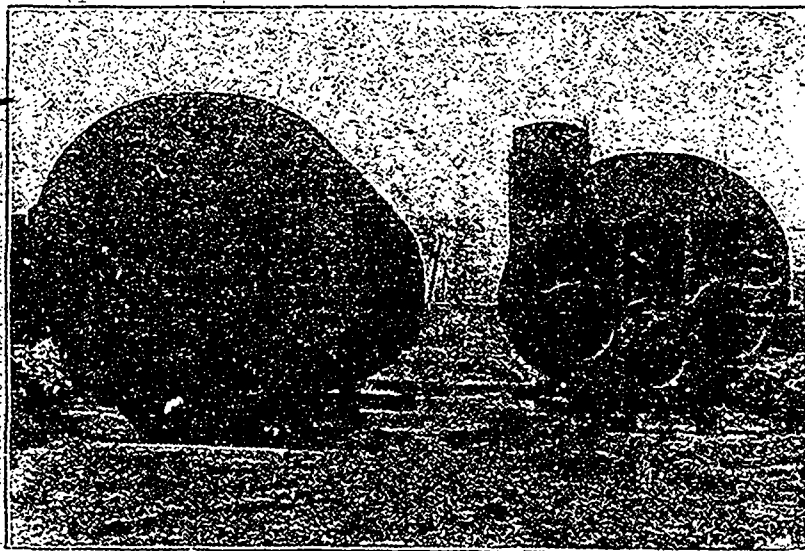
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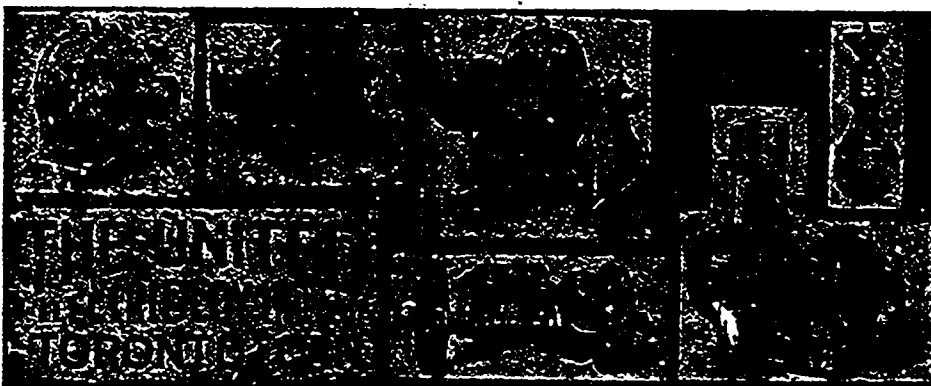
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