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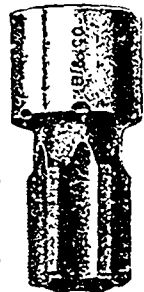
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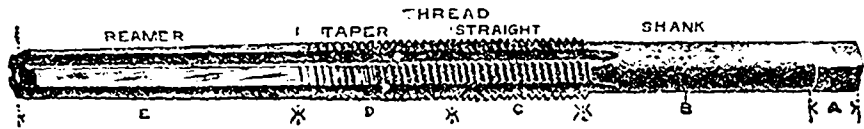
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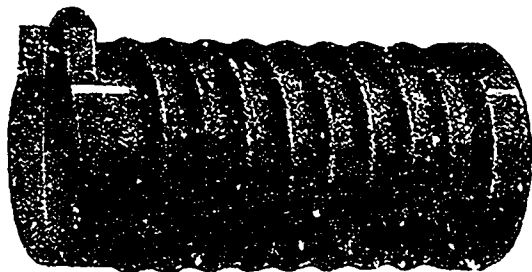


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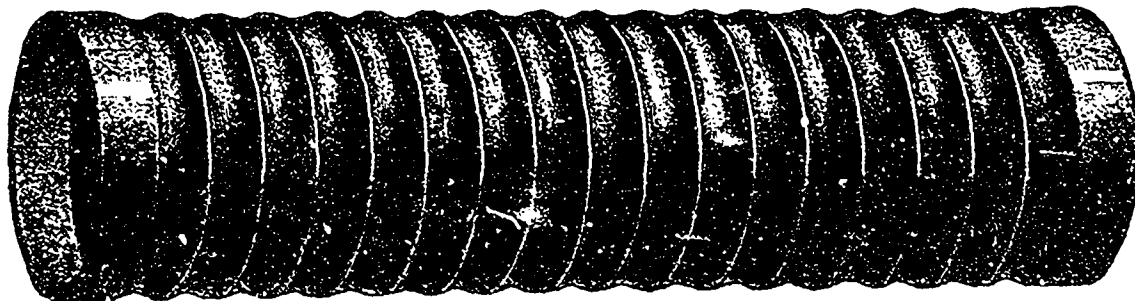


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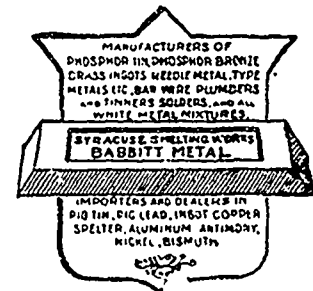
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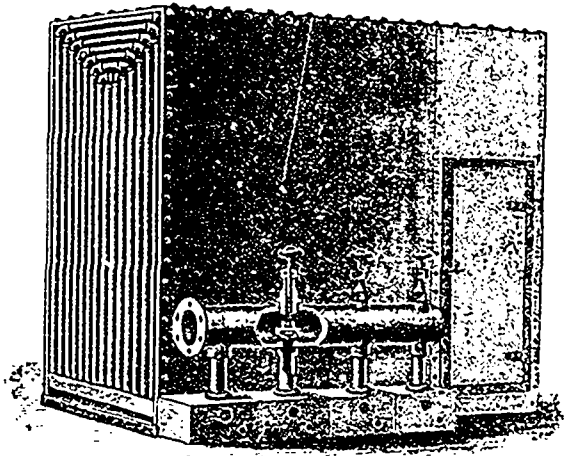
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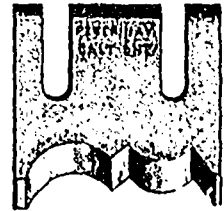
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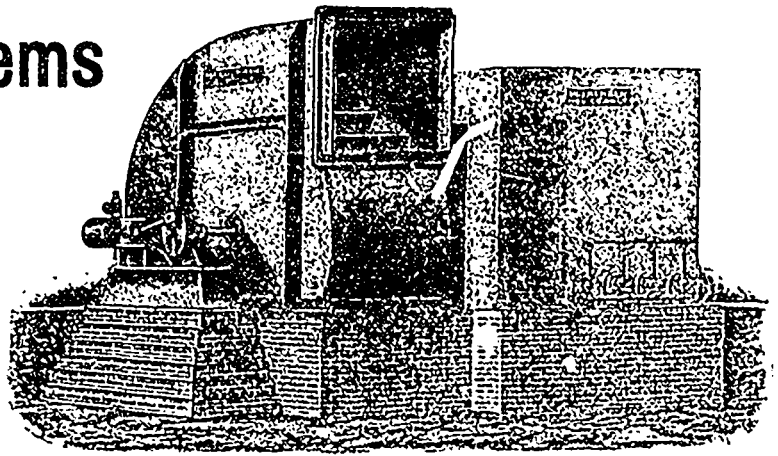
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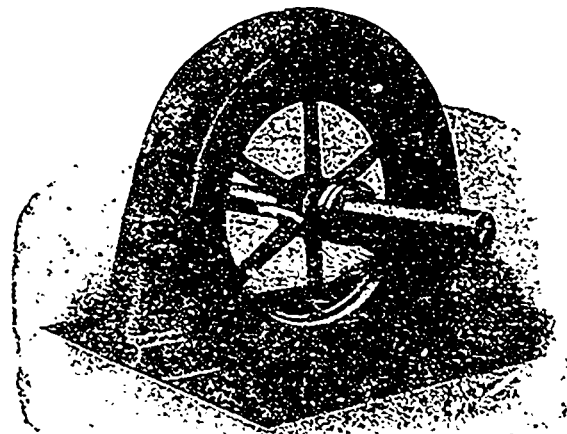
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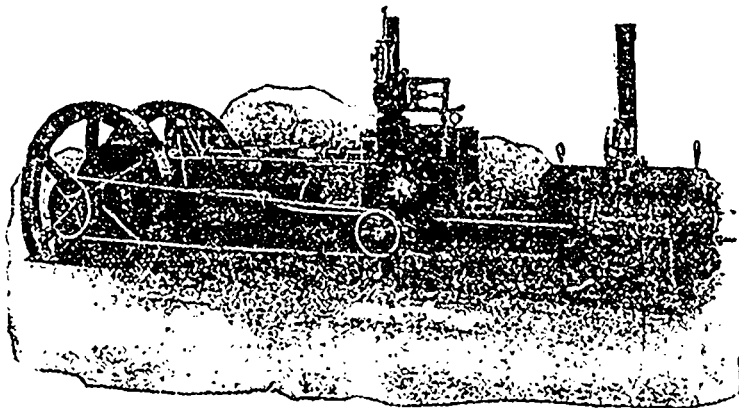
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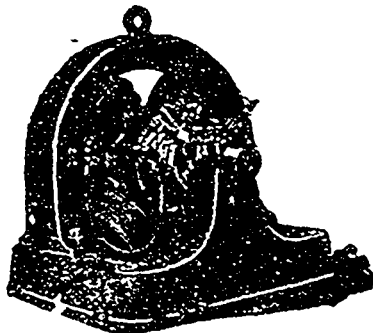
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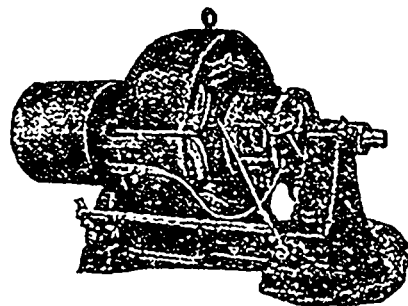
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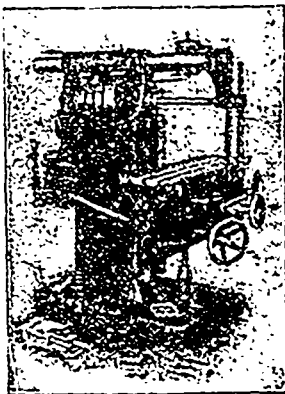
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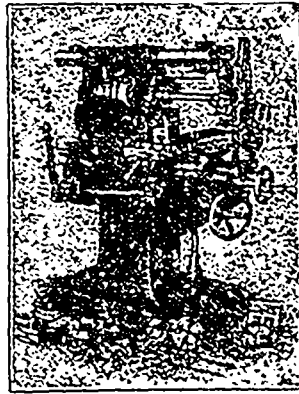
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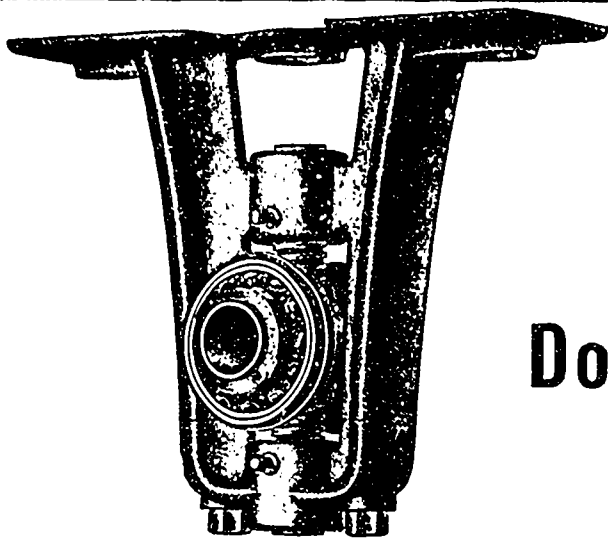
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The Canadian Manufacturer Publishing Co., Limited.

McKinnon Building, Cor. Melinda and Jordan Sts., Toronto.

Cable address: "CANADIAN." Western Union Telegraphic Code used.

SUBSCRIPTIONS:

Canada and United States \$1.50 per year. All other Countries in Postal Union ten shillings sterling, including postage.

J. J. CASSIDY, - - - Editor and Manager.

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CANADIAN PIG IRON STATISTICS.

The American Iron and Steel Association has received direct from the manufacturers the statistics of the production of pig iron in Canada in the first six months of 1905. The figures show a large increase as compared with either of the two halves of 1904, as will be seen by the following table, which gives the production by fuels, in gross tons, in half-yearly periods.

Fuel used Gross Tons.	First half of 1904.	Second half of 1904.	First half of 1905.
Coke.....	111,840	139,831	188,541
Charcoal.....	8,803	10,468	21,665
Total.....	120,643	150,299	210,206

The Canadian production of pig iron in the first half of 1905 was the greatest in any half year in the history of the Dominion, exceeding by 48,453 tons that of the last half of 1902, the next highest half year, when 161,753 tons were made. It was also greater than the production of any whole year, prior to 1901. Down to that year the production of pig iron in Canada never amounted to 100,000 tons in any calendar year.

The production of Bessemer pig iron in the first half of 1905 amounted to 63,785 tons. There was no production of Bessemer pig iron in the first half of 1904, and only 26,016 tons were made in the second half of that year. The production of basic pig iron in the first half of 1905 amounted to 68,378 tons, against 28,981 tons in the first half of 1904, and 41,152 tons in the second half.

The unsold pig iron held by Canadian manufacturers on June 30, 1905, none of which was intended for their own consumption amounted to 35,629 gross tons, as compared with 35,119 tons on December 31, 1904, and 36,868 tons on June 30, 1904. Of the unsold stocks on June 30, 1905, a little less than 6,500 tons were made with charcoal, the remainder being coke iron.

On June 30, 1905, Canada had 16 completed blast furnaces, of which 11 were in blast and 5 were idle. Of this total 11 were equipped to use coke and 5 to use charcoal.

Another Tariff Edition.

As soon as the proposed revision of the tariff has been made and adopted by the Dominion Parliament, thus becoming the law of the land, a full and absolutely correct reproduction of it copied from the official document, will be published in the Canadian Manufacturer. It is impossible at this time to say just when that event will occur, probably about the latter part of next year. In the same special edition will be published in full, as heretofore, the tariff of the United States, both under the one cover, a convenience which will be fully recognized by our readers.

In addition three coke furnaces were partly erected on June 30, 1905. Work upon all these furnaces had, however, been suspended for some time.

During the first half of 1905 the total number of furnaces in Canada actually in blast for the whole or part of the period was 13, of which 8 used coke and 5 used charcoal. The number of furnaces that were idle during the whole period was 3, all coke furnaces.

The Dominion Iron and Steel Co., Limited, of Sydney, N.S., had 2 of its 4 coke furnaces in blast on June 30. One of the idle furnaces is to resume about October 1.

The Nova Scotia Steel & Coal Co., Limited, of New Glasgow, N.S., operated its new furnace at Sydney Mines, Cape Breton, for 180 days during the first half of 1905 and was running it on June 30. The company has virtually abandoned its Ferrona Furnace, at Ferrona.

Messrs. John McDougall & Co., of Montreal, had 1 of their 2 charcoal furnaces at Drummondville in operation on June 30. During the first half of the year both furnaces were running, one for 112 and the other for 49 days. The idle furnace may resume next winter.

The Algoma Steel Co., Limited, of Sault Ste. Marie, Ont., blew in its No. 1 Furnace (charcoal) for the first time on March 1, 1905, and it was running on June 30. Its No. 2 Furnace (coke) was in operation during the whole of the first half of 1905. The construction of furnaces Nos. 3 and 4 (coke) was not resumed in 1905.

The Deseronto Iron Co., Limited, of Deseronto, Ont., operated its furnace on charcoal for 181 days during the first half of 1905, and it was running on June 30.

The Hamilton Steel & Iron Co., Limited, of Hamilton, Ont., was operating its furnace on June 30. It ran for 150 days in the first half of 1905 on basic and foundry pig iron.

The Canada Iron Furnace Co., Limited, of Montreal, had its Radnor and Midland furnaces in operation on June 30. Radnor (charcoal) ran for 113 days and Midland (coke) for 167 days during the first half of the year. Bessemer pig iron was chiefly made at Midland.

The Northern Iron & Steel Co., Limited, of Collingwood,

Ont., did no work whatever in the first half of 1905 on the furnace for which excavations were made in 1902, but upon which work was suspended in 1903.

The Atikokan Iron Co., Limited, of Port Arthur, Ont., broke ground early in August for its new blast furnace at Port Arthur. It will be 75 by 15 feet, will be equipped with 3 Roberts stoves, will use magnetic iron ore from the Atikokan range, which is located about 130 miles west of Port Arthur, and will have an annual capacity of about 30,000 tons of foundry and Bessemer pig iron. Coke will be made in ovens near the furnace. The officers are D. D. Mann, president; J. C. Hunter, vice-president; Hugh Sutherland, secretary and treasurer; and Robert R. Jones, general manager.

A FINGER IN THE PIE.

At the last regular monthly meeting of the executive committee of the Canadian Manufacturers' Association, the following telegraphic message was cabled to the government of the Australian Commonwealth:

The Canadian Manufacturers' Association regrets to learn, through the cables published in the press, that there should be any difficulty in arriving at the correct valuations of imports into Australia for the collection of duties. If your Government should send an expert to this country to ascertain such values on exports from Canada, this association will be glad to render him any assistance in its power.

It will be remembered that a recent despatch from Melbourne stated that during an acrimonious debate in the Australian House of Representatives, Sir William Lyne, Minister of Trade and Commerce, referring to his re-assessment of the value of Canadian harvesters imported into that country, caused a sensation by reading a letter he had received from the Canadian Customs Department refusing to allow Canadian Customs officers to make enquiries which would enable the Australian Customs officers to ascertain the real value of merchandise sent from Canada to Australia. Our information is that the refusal complained of was made in no unkind or discourteous manner. The request was that Canadian officials should do for the Australian Customs what they should do for themselves. When the Canadian Customs officials are not satisfied with the valuation of merchandise imported from a foreign country, and they see proper to do so, they may send an investigating officer to the exporting country to obtain the desired information. Australia is free to adopt the same method; and no doubt should any Australian official visit Canada for such purpose Canadian officials would afford them every proper facility to obtain the information desired; but it is no part of the duty of Canadian officials to render such service on demand.

It is exceedingly gratifying to learn, therefore, that the Canadian Manufacturers' Association have taken up the matter and propose to do for Australia what the Canadian government decline to do; and we are sure that the authorities at Ottawa fully appreciate the extended functions of the Association which induced it to send the telegram.

CALCIUM CARBIDE AND ACETYLENE LIGHTING.

The manufacture of calcium carbide and the use of it for acetylene lighting in Canada seem to be things of the past, and are almost forgotten. Carbide may be made to some extent, and there may be some places where acetylene gas is used for illuminating purposes, but the opposition to their use seems to have crushed them out of active existence. But a few years ago a Canadian in Canada first demonstrated the fact that calcium carbide could be produced in commercial quantities at low cost, and the discovery soon resulted in the manufacture of apparatus for acetylene lighting that quickly jumped into popular favor, there being at one time perhaps a score or more of concerns engaged in that business. Like all other new and untried inventions many defects were discovered in the apparatus, and because of them the industry has declined and virtually gone out of existence in Canada.

Not so, however, in other countries, and to-day the production of carbide and the manufacture of acetylene lighting apparatus are numbered among the most remunerative industries in many countries, particularly Germany, France and Great Britain, about every country in the world being users of acetylene gas for illuminating purposes—except Canada.

Canada possesses the facilities for the cheap production of carbide—greater than any other country—limestone, charcoal or coke, and electric energy. The process is simple, and the demand large throughout the world—except in Canada. With a population of about six million people, Canada offers a field for the exploitation of the carbide and acetylene gas machine industries not appreciated by manufacturers, and not comprehended by capitalists of other countries, who may be looking for opportunities for profitable investment.

It is an untenable argument that acetylene gas generating apparatus is unsafe, and always liable to explosions with consequent loss of life and property. Even at the time when such apparatus was in use a few years ago, the opponents of it unduly magnified every so-called accident, doing all in their power to discredit its use; but the fact remains that to some extent acetylene gas is in constant and satisfactory use in Canada; and the other fact is potent that millions of capital are invested in the twin industries in about all the more important manufacturing countries of the world—except Canada. In other countries, as well as in Canada, the industry suffered from all the ills of infancy, but with them it has acquired the strength and vigor of youth. In the United States the industry is assuming larger and most gratifying proportions, the home market being in the control of the manufacturers, who, with their usual vigor, are pushing their goods in many foreign markets in competition with European makers.

Discussing the possibilities of the export trade from the United States, the New York Commercial says:

Acetylene lighting seems to be an industry which for many reasons is fully as adaptable to the requirements of many foreign countries as to those of the United States, notwithstanding the fact that this country alone offers an

immense field for its exploitation. Several nations are now many years in advance of the United States in their appreciation of this wonderful light, and these are countries which Americans look down upon as far beneath them in the matter of perfection in the mechanical arts. Among such countries might be named Cuba, China, Venezuela, and even the Fiji islands, which by many have been regarded as emblematic of the most primitive state of civilization.

Most American makers of acetylene supplies have given more or less attention to the export trade, and all of them with more or less success. If a complete list of American generators now in use abroad could be prepared, it would show that American apparatus could now be found in nearly every country of all continents but one. As competitors, the Americans have strong rivals in several European countries in the line of generators and burners, and in nearly as many European countries in the carbide trade. So far as the apparatus is concerned, it is generally conceded that the Europeans are competitors only in the matter of price, and that if mechanical excellence alone were considered, the Americans would stand absolutely alone before the world. The activity of the European manufacturers and the willingness of the European consumer to be satisfied with a distinctly inferior machine, which he can have at a much less price, make it an almost impossible proposition for the American to sell his goods in Europe. This applies not only to the generator, the burners and other appliances, but also to the carbide.

Still, Europe can be eliminated, and there yet remains an enormous export market, comprising practically all of Central and South America, Africa, Asia, and Australasia. A little local manufacturing is done in the generator line in South Africa, Australia and New Zealand, and one or two South American countries, but the apparatus offered there is mainly what would be termed in this country as of the 'tin can' type. It is dangerous as a competitor to American apparatus only where cheapness is the first and only consideration of the buyer.

It would be hard to discover the reason why certain countries have progressed so much more rapidly in the art of acetylene lighting than others which might have been expected to become the pioneers. Probably ability to obtain carbide has had much to do with it, and it is sure that much has depended upon the shipping facilities afforded to various ports. Now, however, there are very few countries in the world, if any, where carbide cannot be obtained, either from Europe or America.

REINFORCED CONCRETE CONSTRUCTION.

The results of the recent disastrous conflagration in Baltimore, writes Mr. Henry R. White, secretary of the Builders' Exchange, of Lowell, Mass., changed many of the preconceived ideas as to what actually constituted a fireproof building; that is, a building which would not be seriously injured, structurally, when subjected to a severe fire; for in this fire most of the so-called "fireproof" buildings failed to fulfil the requirements.

While a building constructed with stone or brick walls and unprotected steel columns and girders may, in itself, be considered fireproof in that it is non-combustible, it is not proof against destruction by fire.

In all such buildings, with the floors constructed in part or wholly of wood, with wooden finish and doors and the furniture required in even the ordinary office, there is enough combustible material to generate sufficient heat so to expand the metal, as either to cause it to buckle and

yield, or tear it from its fastenings at some vital point and cause a more or less serious collapse of the structure.

In order to render a building fireproof, in the construction of which structural steel forms a vital constituent, the metal must be of sufficient strength to withstand the strain; and it must be protected from excessive heat by some non-conducting material capable of resisting high temperature and of retaining its position about the metal under the action of both fire and the impact of water.

This form of fireproofing adds nothing to the strength of the column or girder, but is applied solely for the purpose of protecting the metal from the action of heat.

In reinforced concrete construction, the concrete performs a double duty in that it protects the metal reinforcement from the action of fire and assumes the entire compressive stress, leaving to the metal member only the tensile strain. For instance, in a girder the metal member, preferably medium steel, requires to be only of such strength as will sustain the load when the ends are properly secured. This steel rod or bar forms the lower cord of the girder and the depth and width of which are proportional to the length and the load it is to assume. When under the strain of the applied load there would be a tendency of the rod to sag, a compressive stress is immediately brought upon the concrete of the upper section or cord.

Within the territory burned over in Baltimore fire there were no buildings entirely constructed of reinforced concrete; but there were several instances where floors and columns of this form of construction resisted successfully the severest tests.

As to the practical utility of concrete construction the published report of Professor Norton, Massachusetts Institute of Technology, on the Baltimore fire says:

"Much is said about the uncertainty of concrete. The value of concrete in theory is often admitted by those who consider it unwise to use it because of the difficulty of getting materials properly proportioned, mixed and placed in position. I have never been able to see the force of this. It is quite as easy to lay concrete as it is to put somewhat irregular and confessedly brittle blocks of terra cotta into place with proper bonding. The main difference seems to be that poor concrete reveals its weakness, when it falls, on 'pulling the centers'."

As to the fire-resisting qualities of concrete, Professor Norton says:

"When brick or terra cotta are heated, no chemical action occurs, but when concrete is carried up to 1,000 degrees Fahrenheit its surface becomes decomposed, dehydration occurs and the water is driven off. This process takes a relatively great amount of heat. It would take as much heat to drive this water out of the outer quarter of an inch of the concrete partition as it would to raise that quarter of an inch to 1,000 degrees Fahrenheit. Now a second action begins. After dehydration the concrete is much improved as a non-conductor, and yet, through this layer of non-conducting material must pass all the heat to dehydrate and raise the temperature of the layers below, a process which cannot proceed with great speed.

"The strength and rigidity of reinforced concrete is well

illustrated in the testing of a beam which supports the gallery in a theatre building in Cleveland, Ohio.

"This beam, 55 feet long, supported only at the ends, carries the gallery, and is five feet deep, 12 inches wide, with an upper flange 20 inches wide, and 10 inches deep, reinforced with 17 longitudinal plain round rods of medium steel, in the top and bottom section and auxiliary rods and stirrups.

"In the test, the load was suspended at a point at the center of the beam and with a load of four tons concentrated at this point, there was no deflection. When this load was increased to 44 tons, the deflection was only nineteen thirty-seconds (19/32) of an inch, and upon removal of the load the beam returned to its normal position and there was no evidence of cracks or failure.

"In the test of a floor slab 15 feet square and nine inches thick, the slab was first subjected to a fire test, at 1,716 degrees Fahrenheit for four hours, followed by an application of water from a hose under 60 pounds pressure and then loaded with 600 pounds to the square foot (125,000 pounds). Under this load the deflection of the slab, at the center, was only five-eighths of an inch, without the slightest indication of cracks or failure.

"Under the action of heat, steel and concrete expand in practically the same ratio and as the cement in 'setting' or hardening grips the steel with a firm hold, the strain on one part of the beam or slab is distributed, in a diminishing degree, through the member.

"Reinforced concrete construction can be built for from 15 to 20 per cent. less than any other practical form of fireproof construction, and its plasticity is especially adaptable for ornamental work."

The comparatively recent advent of hollow concrete blocks into building construction is another of the most important innovations in the building industry, and one that is yet in its infancy. The use of concrete as building material is not recent, however, as there are still in existence dikes, dams, roadways, etc., built by the Romans of material corresponding almost exactly with our present-day concrete; it is the introduction of the hollow concrete building block machine that has made possible the gigantic strides taken by this new industry.

Experiments along this line have been in progress for many years, but it is only in the past few years that the results have been tangible. The natural cement which was formerly used in concrete construction, has been almost entirely replaced by its superior, artificial cement, and it is only with the latter that any advantageous results have been accomplished.

It is interesting to note, says the Scientific American, that where formerly European Portland Cement was specified as the standard of excellence, in recent years American Portland cement has been so improved by exhaustive and expensive experiments that the domestic production is now conceded to be superior in every way to the foreign article.

That an industry so new in the United States, as also in Canada, requiring, as it does, so high a degree of technical knowledge, has leaped to first place, is doubtless due to the superiority of both raw material and method of

production. Probably the best proof of this superiority is shown by a comparison of production in the United States in 1890 of 300,000 barrels with that in 1903 of 21,000,000 barrels.

TRADE DIRECTORIES.

United States Consul H. W. Harris, at Mannheim, Germany, writing to his government, calls attention to defects in certain trade publications that are sent to consuls. This communication has been published in one of the daily bulletins issued by the government, in which Consul Harris says:

Among the publications received at consulates are numerous more or less complete lists of American manufacturers and traders. Though not printed solely for consulates or foreign buyers, stress is usually placed by the publishers on the value of these publications for reference in a consulate, and as aids in bringing the trader and his foreign customers together. While such books are of much value, their usefulness is apt to be lessened by either one or both of two chief defects, namely, the omission of the names of many excellent concerns, and the insertion of those less worthy, and the omitting of anything to indicate whether the concerns named are engaged in foreign trade.

The first defect naturally arises from the fact that the publications are usually, if not always, prepared as a private enterprise, and the names of those firms only appear which desire to advertise in the book. The other defect could in most cases be corrected by giving the addresses of foreign agents or otherwise. As is well known, many first-class American concerns are fully occupied with domestic trade and do not care to sell in a foreign market. Manufacturers and traders naturally fall into two classes—those who trade abroad and those who do not. The foreign buyer is not seeking the concern which is indifferent whether it sells abroad or not, and which will fill an order only for cash and without further responsibility after the merchandise is placed on the cars. He is seeking the concern which is seeking him and is willing to go half way in the matter of trade.

The fact that an American concern has its foreign agents at London, Hamburg, or elsewhere is evidence on its face that the concern is at least attempting to do business abroad. That fact should appear in lists of American traders for use in a consulate or in the hands of a foreign buyer.

Two publications lately received at this consulate may be referred to as illustrations of the above. One, while fairly complete, omits many well-known firms in various branches, and inserts the names of others less well-known and less reliable. It makes no claims to insert the names of other than its "members." It gives, however, the addresses of the foreign agents of those having such agents, and is excellent in this respect. The other directory, a book of some 400 and more pages, gives exhaustive lists of manufacturers in certain branches, but no clue to what part of these manufacturers are engaged in foreign trade. For example, eighty different firms manufacturing a certain machine are named. Probably five or six of these have foreign agents. The others probably would not consider an order for a single machine at all.

What Consul Harris says about the directories reaching his office from the United States, prepared as they are as private enterprises, applies with equal force to the several editions of trade indexes which have been recently published by the Canadian Manufacturers' Association. These books have been heralded as representing the best

and most influential manufacturers of Canada, supposed to give important and accurate information to buyers in foreign countries regarding the exportable products of the country and the names of the makers of them. Like the books of which Consul Harris speaks, the usefulness of them is lessened by the omission of the names of many excellent Canadian manufacturing concerns—and there are thousands of them, who are not members of the Association, and the insertion of the names of many concerns who happen to be members who are not nor do they desire to be engaged in foreign trade, including many who are not manufacturers at all, some of whom are not even engaged in commercial pursuits. If these trade indexes, which are, we are told, distributed broadcast in all the important commercial centres of the world, contain only the names of members of the Association who are engaged in foreign trade, they would be of quite small proportions and few pages, and they would not announce that a member whose occupation it is to buy and sell codfish and potatoes was a representative Canadian manufacturer.

EDITORIAL NOTES.

The September 15 issue of THE CANADIAN MANUFACTURER will contain a full notice of the Canadian National Exhibition of Toronto, now in full progress, including a brief review of the more attractive features of it, names of principal manufacturers who have displays there, etc. The fair is, without doubt, the best and finest that ever was.

The operation of the dumping clause as regards steel billets has been suspended between July 24 and September 30, by a bulletin authorizing Collectors of Customs to grant permits for the importation of steel billets for use in rolling mills or forges, on payment of the ordinary duty, without special duty, subject to the condition that the quantity imported for any one such rolling mill or forge, shall not exceed one-quarter of the total quantity of steel billets rolled or wrought by such mill or forge during the calendar year 1904—the quantity to be established to the satisfaction of the collector at the port of entry by a declaration by a principal official of such rolling mill or forge. The rolling mill or forge for which the billets are required is to be described on the application for importation and on the face of the entry for duty, and the billets must be imported and entered for duty on or before September 30.

It is to be supposed that should the Australian government accept the suggestion of the Manufacturers' Association and send an expert to this country to ascertain the true values of Canadian agricultural machinery exported to Australia, the gladness of the Association to render him assistance would lead it to appoint a committee who are manufacturers of such machinery to prepare a suitable report on export prices when required for valuation purposes.

The National Association of Automobile Manufacturers is actively working for the abolition of the United States

internal revenue tax on denaturalized alcohol, and a bill to this effect will be introduced at the next session of Congress. S. A. Miles, general manager of the association, in a letter recently issued says: "This proposed legislation is of special interest to the manufacturers of motor vehicles, power boats and launches and stationary interior combustion engines, as its enactment would permit the use of alcohol for many purposes for which gasoline is now used. The price of gasoline has largely advanced during the past six or seven years and it is highly desirable that an alternative motor fuel should be secured. The supply of alcohol is, of course, unlimited, as it can be readily distilled from corn, potatoes and other farm products. In addition to their interest as the producers of the materials from which alcohol is distilled, the farmers would also be greatly benefitted through the possible use of alcohol as a motor fuel for running all kinds of farm machinery, pumping, etc."

The United States Bureau of Statistics reports that commerce through the Sault Ste. Marie canals at Sault Ste. Marie, Mich., and Ontario, Canada, during the month of June totaled 6,057,491 tons, as against a corresponding movement in 1904 of 3,139,236 tons, and in 1903 of 5,105,078 tons. Of the traffic for the month of June of the current year 5,137,885 tons moved eastward and 919,606 tons westward, while of the total movement in both directions 5,046,079 tons passed through the United States canal and 1,011,412 tons through the Canadian canal. Among the items prominent in the eastbound movement may be mentioned 4,672,467 tons of iron ore, 3,402,137 bushels of wheat, and 2,708,686 bushels of grain other than wheat. The principal item in the westbound movement consisted of 728,888 net tons of soft coal. During the present season, to and including June 30, 13,133,444 net tons of freight passed through the canals at Sault Ste. Marie, an amount nearly 10,000,000 tons in excess of a similar movement in 1904, and considerably over a million tons heavier than that for 1903. Of the present year's movement 10,995,233 tons represent an eastbound movement and 2,138,211 tons a westbound movement, while of the trade passing in both directions 10,815,299 tons moved through the United States canal and 2,318,145 tons through the canal in Canadian territory.

During the next five years Canada will probably increase its railway equipment by the construction of some 7,000 to 10,000 miles of new railroads. Whether this estimate is below or above what shall prove to be the facts, it is certain that the Dominion is entering upon a period of railroad construction which gives promise of eclipsing anything which the country has yet experienced. Beginning with the new trans-continental project of the Grand Trunk Pacific, and seconded by the plans of the Canadian Northern, and the inevitable growth of the Canadian Pacific, the total of railroad construction in Canada and particularly the great new northwest part of it, is certain to be large. There is room in western Canada for 50,000 miles of railway. To-day there are scarcely more than 5,000 miles.

MACHINERY AND ENGINEERING.

THE PREVENTION OF STEAM IN MACHINE ROOMS.

Any attempt to keep a machine room clear of steam emphasizes the truth of the old saying that "an ounce of prevention is worth a pound of cure." With proper equipment it is a simple matter to prevent the formation of steam and the deposit of moisture, but even with an elaborate system it is almost impossible to remove the steam when once it is made visible. Two elements are essential to a completely successful system. First, the supply of an ample quantity of warm, dry air, and second, the local removal of the saturated air as it leaves the cylinders and before it is cooled so as to show itself as steam. The accompanying photograph of an installation recently made by the B. F. Sturtevant Co., Boston, Mass., serves to illustrate the most advanced practice in this line. Fresh air from out of doors is passed through a heater and fan and forced through a system of piping, carried on the roof trusses and extending the entire length of the machine room. From this system the air is discharged horizontally through openings (which do not show in the photograph) directly against the roof. The result is the maintenance of a constantly changing volume of dry and warm air at the point where condensation most readily occurs. The cooling action of the roof is thereby overcome and the moisture is greedily absorbed and drips absolutely prevented. The exhaust system consists of a pair of hoods covering the entire area of both machines and connected

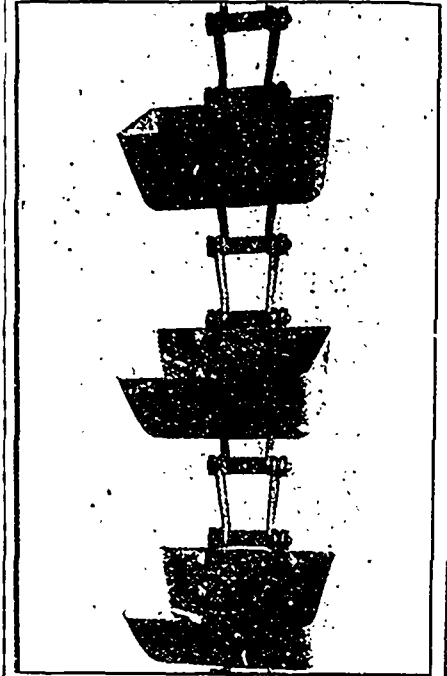
the hood and onward through the fan to the outer atmosphere.

The heating of the room is of secondary importance, but no system will succeed in which the air admitted is not already tempered sufficiently to prevent local condensation when it comes in contact with the moisture laden air of the room. For this reason an exhaust system without proper air supply is doomed to failure or only partial success. In the combination of a forced and an exhaust system the fans must be so proportioned that a slight pressure will be maintained within the room, thereby preventing any local inward leakage and consequent chilling of the air. Although the local exhaust provided through the hoods very much improves the operation of the system, it is not absolutely necessary to the prevention of steam. But it limits the escape of moisture and distribution about the room, reduces the amount of hot air thereby rendered necessary for its absorption and contributes to lower the temperature of the room. In a word, as a result of the application of this system the atmosphere is kept clear, condensation upon the roof and dripping therefrom is avoided, more rapid drying is secured and the room is rendered more comfortable for the workmen.

PRESSED STEEL ELEVATOR BUCKETS.

The Link-Belt Engineering Co., Philadelphia, Pa., are using pressed steel in the manufacture of elevator buckets. The new buckets, made in one piece, free from seams and rough surfaces, are from 20 to 40 per

cent. lighter than malleable iron buckets of corresponding sizes. The accompanying illustration shows the uniformity of gauge and the symmetrical design. The superiority of the new pressed steel buckets over cast buckets is obvious — compact and light, they

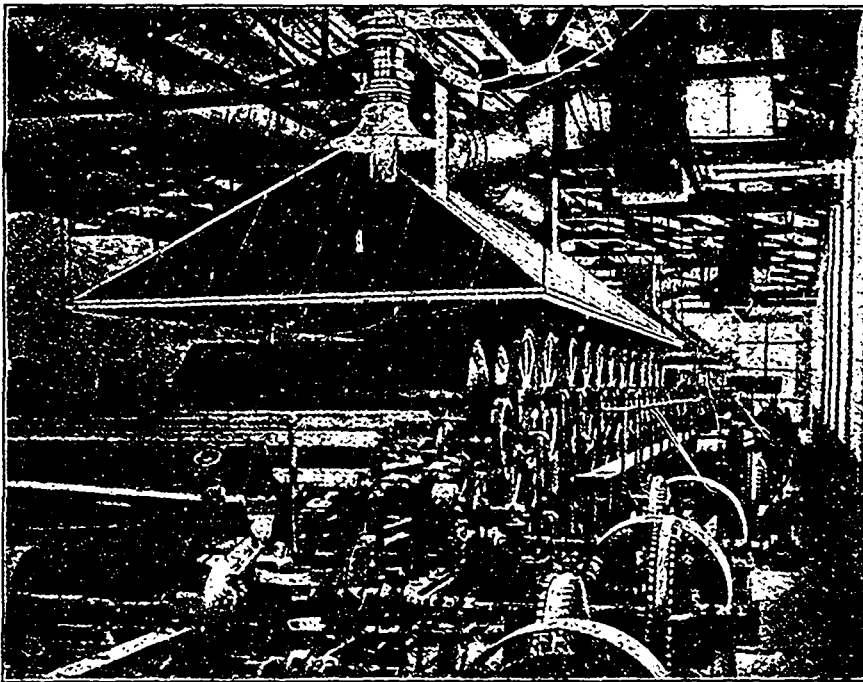


PRESSED STEEL ELEVATOR BUCKETS.

like nature are to be handled, the use of these buckets should prove materially advantageous. Users of japanned or galvanized buckets will recognize the superior qualities of pressed steel in the service demanded by the conditions that exact special surfaces in conveying buckets.

THIS MAY INTEREST YOU.

All manufacturers, of whatever nature are usually interested in anything that contributes to the safety of their plants, and the Eco Magneto Watchman's Clock, manufactured by the Eco Magneto Clock Co., Boston, Mass., should certainly interest our readers. The clock, the title of which explains its object, is operated by permanent magnets; no chemical solution, springs or other battery is employed. It works perfectly, under all conditions, and in damp as well as dry places, and cannot be tampered with. No electrician is required to keep it in order, the company feeling so safe in this regard that they agree to maintain the clock free of expense for five years. They also assert that in numerous instances its adoption has secured a reduction in insurance rates and have so many other splendid talking points that it should be easy to interest almost any manufacturer.



APPARATUS FOR THE PREVENTION OF STEAM IN MACHINE ROOMS.

through a system of piping to exhaust fans, one for each hood, supported overhead. Positive circulation of air is thereby maintained from the point of its first discharge overhead, thence downward by the cooling action of the walls, and then upward through

cent. lighter than malleable iron buckets of corresponding sizes. The accompanying illustration shows the uniformity of gauge and the symmetrical design. The superiority of the new pressed steel buckets over cast buckets is obvious — compact and light, they

The heating and ventilating equipment of the new Fort Pitt Hotel, Pittsburg, Pa., will consist of four steel plate fans and two steel pipe heaters built by the B. F. Sturtevant Co., Boston, Mass.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

PACKING MACHINERY FOR EXPORT.

Mr. Paul Roux, a member of the American Chamber of Commerce at Paris, has published a brochure having reference to packing machinery for export from which we quote:

In packing goods for export care should be taken to economize space, to avoid breakage and exposure, and to be ready for rough handling. Goods should, if possible, be kept within 40 cubic feet per ton. Projecting parts should be removed and packed separately. They increase space and increase risks of breakage.

The parts should be so marked as to absolutely preclude the possibility of error. Herein will be found more than half the success of securing foreign trade. Not a single piece, no matter how simple, should be packed without its localizing mark. It is impossible to emphasize this point too much. Always dismount all fragile and projecting parts. Leave no delicate parts exposed. Plug up oil holes. Put on the best possible coating. It pays. Be sure to put on enough, particularly on all exposed parts.

Merchants and manufacturers should look carefully into the matter of weights and measures. They mean much in the questions of trade. Rates are often regulated on the weight basis. For example, goods weighing more than 4½ tons pay, as a rule, twice as much as do those under 2 tons. Large and heavy bales increase the costs of loading and unloading. Packing is a science and an art. The making of boxes has been the subject of scientific and mathematical work of the highest kind. Before a box is bought or built the merchant or manufacturer should go carefully into the minutest details as to the character of the box wanted. Care should be taken to permit of easy and efficient examination of the machine or parts packed, even to the admission of a lantern to reveal the parts. For this purpose it is a good plan to fasten one side of the case with screws, usually the side that permits of the best examination. Care should be taken in lining, or not lining, with paper, sheet tin, etc. Here questions of atmospheric effects often are very important.

Every box should be accompanied by its own list of pieces, and, when possible, by drawings of the parts and the complete machine. This helps the adjusters. It is not a bad idea to send with each machine any particular or peculiar tool that may be found useful or helpful in adjusting the parts.

Next in importance to marking the parts of the machines is the marking of the cases. It should indicate the weight, gross, net (absolutely exact), volume, and port of destination, the latter in large letters, at least two inches long. Marks of identification on each end of a case are of great value. A mark of some kind should surround the heads of nails or screws, which should be removed to unpack the machine.

If merchants and manufacturers will follow the foregoing suggestions, if they will add an ounce of prevention to their packing, they will reap a rich harvest in the results. From the selection of the material, to the building and packing of the box, to its delivery in far off parts of the world no pains must be spared.

The B. F. Sturtevant Co., Boston, Mass. will install the hot blast heating and ventilating equipment for the addition to the American Pulley Co.'s plant at Philadelphia, Pa.

A FUEL PROBLEM.

When the eastern division of the Grand Trunk Pacific is ready for operation it must solve a fuel problem. At Quebec it will leave tide-water, and will take to the back country, heading straight for Winnipeg, 1 400 miles away, and for the prairies still further to the west. Coal can come from Nova Scotia and New Brunswick to Quebec, and there are mines at Edmonton and in the Rocky Mountains; but to what extent can it be carried from these two ends to supply the middle stretches? The Canadian Pacific draws its fuel from the Maritime Provinces for its eastern stretches, and for those portions of its line adjacent to and west of the great lakes it relies on Pennsylvania coal, carried by water. It has great coal piles at Fort William, and from them the line is supplied westward until it meets the coal from its Rocky Mountain mines. For adopting this policy the railway has two good reasons. The first, and in itself sufficient reason, of course, is the cheapness of water transportation. This is reinforced by the heavy grades and awkward curves of the Canadian Pacific line on the North Shore.

The eastern division of the Grand Trunk Pacific will traverse the back country many miles away from the lakes. It will, of course, have a branch to Lake Superior. Will it get its coal for its central stretches by this route? First, its main line will be far away from water transportation. Secondly, always presuming that the very low grades necessary to the success of the project are attained, the task of hauling the coal westward from Quebec will be immensely lighter than it is on the earlier transcontinental road. The engineers of the Construction Commission hope to see trains of 1,500 tons hauled westward by great Mogul locomotives. The coal can be laid down in Quebec for \$3.50 a ton, and carried in such loads, on a first-class line, they hope to see the railway able to ship it as far as Winnipeg for \$1.50 a ton. Coal at \$5.00 a ton is cheap fuel as railway practice goes. This calculation throws light on the numerous incidental advantages enjoyed by a road which has a first-class equipment. Its cars can have a larger capacity, its trains can carry a greater tonnage, its engines can be stronger, its fuel will be cheaper.

Coal, however, is not necessarily the only fuel of the future. Electricity has to be considered. If electric traction on trunk lines ever becomes practicable, the eastern division should possess great advantages. So far as we know the geography of the little known region beyond the height of land, there is a fairly level plain extending a long distance to the north. At a certain distance from James Bay this plain drops rather suddenly into a low-lying coastal region, largely made up of peat-bog. Plain and coastal region are seamed by numerous large rivers, all flowing northward. On many of them, at the point where they leave the plain, the "clay-belt," waterfalls, i.e., water-powers, occur.

For traffic reasons, the Commissioners intend to keep the railway as close to the northern edge of this plain as the grades will permit. As the country opens up each river will be a highway for development work. Lumbering, for instance, may be expected to become active. If the railway is down-stream from the lumber camps, the logs can be floated down to it. Other development

work may be expected to follow, and every river valley will gain by being able to send its products down-stream to the main line of the railway.

Thus the railway will virtually run along the line of northern water-powers. Details as to these powers are lacking; one considerable fall, near Abitibi, is able to develop a large amount of power, and others are known to exist. The railway, it may further be noted, will run very close to enormous peat deposits. The Construction Commissioners have issued directions to their locating engineers to examine and report fully upon all available water-powers, and also to note available peat deposits. They hope that the march of invention may enable electricity or peat, or both, to become serious motive powers, and in such an event the Grand Trunk Pacific would occupy a most advantageous position. The problem of utilizing peat as an industrial fuel has exercised men's brains for a very long time, and new devices are constantly being produced—so far with discouraging results. Neither is the outlook promising, for it must be remembered that peat, as found in bogs, is 97½ per cent. water, and the problem of eliminating that enormous proportion of water is exceedingly difficult.

The prospects of electric traction are better. Trolley locomotives have been manufactured which undoubtedly possess great speed and considerable hauling power. Not long ago, for example, on an American railway, one of these locomotives drew a train weighing 400 tons at a speed rapid enough to beat a light locomotive of standard type. For dense and continuous traffic the electric locomotive offers remarkable advantages. So far, however, electricity does not seem a practical motive power for the operation of an ordinary freight railway. With coal, the motive power is used only as it is needed. When there is no train to haul no coal is consumed. With electricity so far, the power must be available, whether the track is idle or is crowded with trains. The invention of a suitable storage battery locomotive may solve the difficulty. That improvement is in the future, but who can prophesy that it will not come. Should electric traction prove practicable, the eastern division will be in the extraordinarily favorable position of having been located with an express eye to the situation of the best water powers along its route.

One contingent advantage is almost certain to be reaped. If the hopes of the Construction Commission are realized, and if a line of good water powers are found, the incidental power needed by the railway can be derived from electricity. Machine shops can be run by electric energy, which for such a purpose is ideal. Stations can be lighted and heated by electricity. Switches and other apparatus can be worked with electric power. The saving to the railway, alike in the superiority of the power used, and in the lessened hauling of coal, should amount to millions of dollars. Thus the railway will start with an electrical equipment which should insure an economy of management unequalled elsewhere, and with a location which will enable it to take full advantage of every advance in the adaptation of electric locomotive to ordinary railway traffic.

A public school building will be erected at North Bay, Ont., at a cost of \$10,000.

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 in these pages, and to every concern in Canada interested in any manufacturing industry whatever, this interest extending to supply houses also.

The Grand Trunk Railway Co.'s round-house, at Mimico, Ont., is being constructed of concrete, under the supervision of Gustav Kahn, representing the Trussed Concrete Co., of Detroit, Mich. This company are also superintending the erection of the concrete building for S. F. Wilson, Toronto.

The American Chiclé Co.'s new works at Toronto are about completed, the main building of which is 250x60 feet, three stories high, the annex having a floor space of 7,000 feet. J. W. Siddall, Toronto, is the architect.

The Ontario Bureau of Mines is keeping the diamond drills belonging to the Government in activity, and owners of property find them of great value. One drill is resuming work where it was in use last winter, on the iron ore outcroppings in Temagami, on property owned by Mr. T. B. Caldwell, M.P., and others. The other drill is being brought down from Loon Lake, near Port Arthur, Ont., to Port Colborne, Ont., to test some limestone properties there.

The Board of Works, London, Ont., will shortly invite tenders for the construction of a new breakwater north of Blackfriars bridge that city.

The Woodruff-Robins Co., contractors, Toronto, are superintending the construction of the following concrete buildings. Galt Knitting Co.'s four story concrete factory at Galt, Ont.; Brantford Glue Co.'s works at Brantford, Ont.; Stauntons, Limited, Toronto, wall paper manufacturers, three story concrete factory; and the Fairbanks-Morse Canadian Mfg. Co.'s seven new concrete buildings, covering eight acres of ground in Toronto.

Gunn's, Limited, pork packers, will shortly commence the erection of their new building at Toronto Junction to cost about \$100,000.

Contracts have been awarded by the Dominion Government as follows:—Messrs. J. & C. Low, for alterations and additions to Rideau Hall, Ottawa; to the Carlyle Construction Co., for alterations to the Toronto Customs House; and to Edward Conroy, to build a bridge at Bryson, Que.

The Robert Stewart Lumber Co., Guelph, Ont., will erect a large addition to their planing mills. The new building will be 130x70 feet, three stories high and will cost about \$10,000. New machinery will be installed to cost \$5,000.

The Grand Trunk Railway Co. will erect a passenger station and freight shed at Walkerville, Ont.

The Imperial Paper Mills, of Canada, Sturgeon Falls, Ont., are erecting a new office building at a cost of about \$10,000.

The Brant Milling Co., Brantford, Ont., will rebuild their elevator which was destroyed by fire recently.

The Ingersoll Nut Co., Ingersoll, Ont., have awarded the contract for the erection of their factory to Messrs. Nagle & Mills. The building will be 154x50 feet.

A permit has been issued for the erection of a branch building of the Canadian Bank of Commerce on Yonge Street, Toronto. It will be a four story brick building and will cost \$50,000.

J. H. Clark's saw and shingle mill at Mitchell Square, Ont., was destroyed by fire recently.

A public school building is being erected at Sudbury, Ont., at a cost of \$20,000.

The Peterborough Cereal Co., Peterborough, Ont., in addition to erecting a large grain elevator as announced in our last issue, will enlarge their mill and install machinery for turning out oatmeal, rolled oats, etc.

The Dominion Thread Mills will shortly commence the erection of a large factory in Stratford, Ont.

The Northern Land & Lumber Co., Port Arthur, Ont., expect to have their mills, which were damaged by fire recently, in operation in a few days. New machinery will be installed.

The Grand Trunk Railway Co.'s station at Onondaga, Ont., was destroyed by fire August 24.

Messrs. Ennis & Co.'s piano factory at Hamilton, Ont., was damaged by fire August 17. Loss about \$20,000.

The Watson box factory at London, Ont., was destroyed by fire August 25. Loss about \$45,000.

Jonathan Ellis, of the Ellis Knitting Co., of Hamilton, Ont., is negotiating for the purchase of a big cloth mill in Hespeler, Ont., the property of the Canadian Woolen Co., which is valued at \$600,000.

J. P. MacDougall's grist mill at Maxville, 40 miles southeast of Ottawa, was destroyed by fire August 21. Loss about \$5,000.

The Canadian Pacific Railway Co.'s station at Temiscaming, Ont., was destroyed by fire August 22.

The steamer Gordon, owned by the Thunder Bay Improvement Co., was partially destroyed by fire August 20, at Port Arthur, Ont. Loss about \$5,000.

Richard Robinson's sawmill and factory at Waterford, Ont., was destroyed by fire August 24. Loss about \$5,000.

The Wm. Hamilton Mfg. Co., Peterborough, Ont., are exceptionally busy at present manufacturing complete saw-mill plants for several lumber companies in British Columbia. Over 300 men are now employed on the work and the various contracts are being rushed.

The Canada Machinery Co.'s plant at Point Edward, near Sarnia, Ont., was destroyed by fire August 24. Loss about \$125,000.

The Chesley Chair Co.'s factory at Chesley, Ont., was destroyed by fire August 24. Loss about \$37,000.

Bryson Coulthart's cheese box factory at Monkland, near Cornwall, Ont., was des-

troyed by fire August 22. Loss about \$3,000.

The Peterborough Shovel & Tool Co., Peterborough, Ont., who have just recently commenced operations are meeting with much success. The Wm. Hamilton Mfg. Co., of that city, are building a hundred ton mill for them which will have a capacity of fifty dozen shovels per day, and Messrs. Totten & Hogg, of Pittsburg, Pa., are constructing rolls for the mill which will roll out sheet steel, steel bars or plate, or anything that can be made into shovels. In all the output will be 150 dozen daily. At present they employ some twenty hands and are producing 600 shovels every ten hours. The company will soon have facilities to make every kind of shovel that the market may demand. They now manufacture about 150 different sizes and styles, including the solid one-piece, the welded, the sheet and the plate hollow back, etc. A new shovel that will soon be made by them is the Maynard. It has a steel blade and malleable socket. An electric motor of 150 h.p. supplies the necessary power for the works. Mr. Frank Forsyth is mechanical superintendent.

Messrs. Pugsley, Dingman & Co.'s new building at Toronto Junction, Ont., is about completed. It is a two story building, 125x85 feet and built entirely of concrete. It cost \$20,000.

The Earle Co., Limited, Creemore, Ont., have been incorporated with a capital of \$20,000, to manufacture goods, wares, and merchandise, etc. The provisional directors include Alexander Earle, J. Wilson Creemore, and W. J. Sykes, Toronto.

The Kerr Lake Mining Co., Toronto, have been incorporated with a capital of \$10,000, to carry on a mining, milling and reduction business. The provisional directors include Edward Steindler, W. J. White, New York City, and J. A. Jacobs, Montreal.

The Plumbing & Heating Supply Co., Toronto, have been incorporated with a capital of \$100,000, to manufacture plumbers supplies, steam fitters' supplies, etc. The provisional directors include Fred. Armstrong, William Mansell and David Fasken, Toronto.

The Merchants Premium Co., Toronto, have been incorporated with a capital of \$40,000, to manufacture furniture, crockery, silverware, etc. The provisional directors include E. D. Ross, Hamilton, Ont., L. G. Ross and H. D. Read, Toronto.

The New Ontario Ore Refining Co. Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include T. H. Barton, O. F. Taylor and A. W. Barton, Toronto.

Messrs. A. A. Osborne & Co., Midland Ont., have been incorporated with a capital of \$40,000, to carry on the business of a departmental store, etc. The provisional directors include C. E. Smith, A. A. Osborne and L. J. Ferrier, Midland.

The Atlantic Soap Co., Toronto, have been incorporated with a capital of \$10,000, to acquire the business of the Atlantic Soap & Oil Co., and to manufacture soaps, chemicals, etc. The provisional directors include F. N. Vanzant, Samuel Jardine and D. G. Buchanan, Toronto.

The Meaford Mfg. Co., Meaford, Ont., have increased their capital from \$50,000, to \$100,000.

The Gore Bay Brick & Tile Co., Gore Bay, Ont., have been incorporated with a capital of \$3,000, to manufacture brick and tile. The provisional directors include R. R. McKessock, J. W. Jackson, and R. J. Porter, Gore Bay.

The Buffalo Mining Co., Fort Erie, Ont., have been incorporated with a capital of \$50,000, to carry on a mining, milling and reduction business. The provisional directors include C. L. Denison, R. W. Pomery and G. C. Miller, Buffalo, N. Y.

The Copper Mining & Smelting Co. of Ontario, Limited, Bruce Mines, Ont., have been incorporated with a capital of \$1,000,000, to carry on a mining, milling, reduction and development business. The provisional directors include T. H. Sheen, H. J. C. Williams, London, England, and R. A. Lyon, Toronto.

The Detroit & Kent County Oil & Gas Co. of Ontario, Limited, a United States incorporation have been licensed to produce oil, gas, etc., and to manufacture drilling machinery, etc. in Ontario, with a capital of \$40,000. William Jackson, Osborne, P. O., Ont., is their attorney.

The Kerlin Brothers Co., a United States incorporation have been licensed to carry on a general contracting and construction business in Ontario with a capital of \$30,000. H. E. Rose, Toronto, is their attorney.

The Carbon Paper & Ribbon Mfg. Co., Limited, Toronto, have been incorporated with a capital of \$40,000, to manufacture typewriters, typewriter ribbons, carbon paper, etc., and to acquire the business of the Carbon Paper Mfg. Co. The provisional directors include J. M. Ferguson, J. W. McDonald, and H. V. Ferguson, Toronto.

The Port Arthur Iron Mines, Toronto, have been incorporated with a capital of \$500,000, to carry on a mining, milling and reduction business. The provisional directors include W. H. Moore, G. G. Ruel, and F. C. Annesley, Toronto.

The Hamilton Stamp & Stencil Works, Limited, Hamilton, Ont., have been incorporated with a capital of \$40,000, to acquire the business of the Hamilton Stamp & Stencil Works and the Broughton Stamp & Stencil Co., and to manufacture stamps, stencils, etc. The provisional directors include Harry Barnard, Ben Broughton, and William Broughton, Sr., Hamilton.

The W. J. Crothers Co., Kingston, Ont., have been incorporated with a capital of \$100,000, to acquire the business of W. J. Crothers and to manufacture biscuits, confectionery, etc. The provisional directors include W. J. Crothers, Robert Crawford, and Samuel Birch, Kingston.

Messrs. Read, Holliday & Sons, Limited, a Great Britain incorporation, have been licensed to manufacture aniline dyes, dyestuffs, chemicals, etc. in Ontario, with a capital of \$40,000. John Whetton, Toronto, is their attorney.

The Temiscamingue Mining Co., Haileybury, Ont., have been incorporated with a capital of \$100,000, to carry on a mining, milling and reduction business. The pro-

visional directors include C. A. Richardson, St. Catharines, Ont., J. L. Wheeler, Emporium, Pa., and R. A. Cartwright, Brockport, Pa.

The Dymond & Abitibi Mining & Development Co., New Liskeard, Ont., have been incorporated with a capital of \$25,000, to carry on a mining, milling and development business. The provisional directors include John Wilson, John McCracken and John Mason, New Liskeard.

The quantity of pulp wood cut for the mills of the Sault Ste. Marie Pulp & Paper Co., at Sault Ste. Marie, Ont., this year is stated by Superintendent Hooper to be 130,000 cords.

C. E. Sontum, Canadian Commercial Agent at Christiania, Norway, has reported to the Trade and Commerce Department, at Ottawa, that the trial shipment of Canadian pulp logs to Norway resulted in the production of pulp of excellent quality. The cost, delivered, was below the current market price of Scandinavian pulp wood.

The Ontario Cobalt & Silver Mining Co., Ottawa, have been incorporated with a capital of \$1,000,000, to carry on a mining, milling and reduction business. The provisional directors include Hon. Louis Bedell, Goshen, N. Y.; W. A. Allan and J. T. Lewis, Ottawa.

The Homewood Sanitarium, of Guelph, Ont., have increased their capital from \$50,000, to \$200,000.

The Durham Furniture Co., Durham, Ont., have increased their capital from \$20,000, to \$40,000.

The Sucker Creek Gas & Oil Co., of Anderson, Limited, Amherstburg, Ont., have been incorporated with a capital of \$250,000, to bore and drill for oil petroleum, natural gas, etc., and to carry on a mining, milling and reduction business. The provisional directors include John G. Mullen, W. H. McEvoy, and J. A. Auld, Amherstburg.

The Canadian contracting firm of MacKenzie, Mann & Co., Toronto, have undertaken the construction of the waterworks and drainage systems for the city of Monterey, Mexico, and will begin work without delay. The dam to be built at the head of a canon quite a distance from the city, will be one of the highest and most massive on the continent and will impound an ample supply of water to answer every legitimate requirement for many years to come.

A report from Cincinnati, Ohio, states that a deal is being completed in that city by which the Niles-Bement-Pond Co., builders of machine tools at Hamilton, Ohio, will acquire the control of the machine tool manufacturing business of the John Bertram & Sons Co., of Dundas, Ont. As an effect of this combination there will be a machine shop erected at Dundas to cost about \$100,000.

The Detroit River Tunnel Co., Windsor, Ont., have commenced work on the construction of the railroad tunnel under the Detroit River between Windsor and Detroit, Mich.

A deal has been consummated by which the control of the Niagara, Lockport & Ontario Power Co. has passed into the hands of a syndicate controlled by H. H. Westinghouse, of Pittsburg, Pa., and J. J. Albright, of Buffalo, N. Y. The company are building a power transmission line eastward from Niagara Falls. They will receive their electric

current for transmission from the Ontario Power Co., at Niagara Falls, Ont., which company will deliver it at the boundary line of the Niagara gorge. The Ontario Power Co. have a power house located at the water's edge in the Niagara gorge, and are planning an extensive transmission on the American side of the river. The line of the Niagara, Lockport & Ontario Co. is already partly built between Niagara Falls and Lockport. Steel towers are being erected instead of wooden poles to carry the transmission cables. The Iroquois Construction Co. have been the holding company, and at a meeting of the company Gen. Francis V. Greene was elected president; F. B. H. Paine, vice-president and chief engineer; Robert C. Broad, secretary; and Clifford Hubbell, treasurer. The offices have been removed from New York to Buffalo.

A large hotel will be erected at Weesbeach, Ont. For further particulars address E. S. Wigle, of Messrs. Felming & Wigle, of that place.

The town council of Arnprior, Ont., have petitioned the Dominion Government to build a wharf there.

A new public school will be erected at Cobourg, Ont., at a cost of \$10,000. For further particulars address T. Gilroy, that place.

G. W. Gouinlock, architect, Toronto, is preparing plans for an addition to the Canada house at Penetanguishene, Ont.

The Temiskaming Lumber & Mfg. Co., Haileybury, Ont., have been incorporated with a capital of \$500,000, to manufacture pulp, paper, lumber, etc. The provisional directors include P. T. Lawlor, Haileybury; W. D. Davidson, Rawdon, Que.; and E. D. McCallum, Vanleek Hill, Ont.

The Ottawa Sanitary Laundry Co., Ottawa, have been incorporated with a capital of \$95,000, to carry on a steam laundry business and to manufacture toilet and laundry supplies, etc. The provisional directors include M. M. Pyke, C. M. Farley and W. J. Campbell, Ottawa.

The screw steamer, Glenellah, for the Union Steamship Co., of Hamilton, Ont., has been launched by the Caledon Shipbuilding & Engineering Co., at Dundee, Scotland. Her dimensions are as follows.—Length over all, 257 feet; breadth, 43 feet 3 inches; depth to spar deck, 25 feet 6 inches; with a gross tonnage of 2,300. She is specially designed for grain carrying. The engines, which have been supplied by the Caledon Co.'s Lilybank Engine works, are of the triple expansion type, with cylinders 20 inches, 33 inches and 54 inches diameter, with a stroke of 35 inches, steam being supplied by a large steel boiler with a working pressure of 180 pounds per square inch.

A Roman Catholic church will be erected at Crystal Beach, Ont. Rev. A. M. Murphy, Fort Erie, Ont., is interested.

The St. Clarens Avenue Methodist church congregation, Toronto, have decided to erect a new church building at a cost of \$55,000.

The ratepayers of Dundas, Ont., will vote on a by-law to raise \$16,500 for a new high school building.

The Crown Bank will erect a new building at Burford, Ont.

The county council of Renfrew, Ont., will build a concrete bridge over the Waba Creek, at a cost of \$52,810.

The contract for the construction of the Toronto harbor breakwater has been awarded to Messrs. Haney & Miller, at a cost of \$49,000.

David Booth, Brockville, Ont., has been awarded the contract for the erection of the armoury at Guelph, Ont., at a cost of \$70,000.

A new public school building will be erected at North Bay, Ont., at a cost of about \$10,000. Address the school trustees for further particulars.

J. S. Fielding, C.E., Toronto, is preparing plans for the construction of a new concrete dam at Hespeler, Ont., for the R. Forbes Woolen Mfg. Co.

A twelve story addition will be built to the Russell House at Ottawa, and two modern elevators installed.

The Department of Marine & Fisheries, Ottawa, are preparing plans for extensive improvements to the lighthouse system on the Atlantic coast. A number of new light-houses will be built.

The ratepayers of Sturgeon Falls, Ont., will vote on a by-law to raise \$35,000, for the erection of new municipal buildings.

The Dominion Government will erect a large battery on the St. Lawrence River below Quebec. For further information address Sir Frederick Borden, Ottawa.

The Christian Scientists will erect a new church building in Toronto.

Messrs. Forster & Clark, architects, Owen Sound, Ont., have prepared plans for a new two story market building.

By-laws will be submitted to the ratepayers of Port Arthur, Ont., providing \$156,000 for extension of water and sewer systems, \$15,000 for extensions to municipal telephone system, \$20,000 for creation of reservoir on Current river, and \$7,000 for a fire hall.

E. D. Pitt, architect, Niagara Falls, Ont., has prepared plans for a three story hospital building to cost about \$18,000.

The ratepayers of Fort William, Ont., will vote on a by-law to raise \$30,000, for the erection of a new High school building.

The Gowans, Kent Co., Toronto, wholesale crockery, glassware, etc., will erect a large new warehouse in that city.

D. H. Porter, New York City, is considering the establishment of a plant for the manufacture of pulp containers, etc., at Thorold, Ont.

The Clinton Knitting Co., Clinton, Ont., will rebuild their factory at once.

A by-law will be submitted to the ratepayers of Harriston, Ont., to grant a loan of \$10,000 to the Canada Stove Works.

Messrs. McArthur & Sons, Brantford, Ont., will install a new laundry plant in their works.

Among the recent sales of Allis-Chalmers-Bullock, Limited, Montreal, are a mining outfit to the Canada Metal Co., Answorth, B.C., including one 15 h.p. vertical boiler, one 40 h.p. vertical boiler, two No. 5 Cameron Sinker pumps, one 6½ x 8 inch hoisting engine, one 7 x 10 hoisting engine, ore buckets, etc., and to the Souris Coal Mining Co., Beaufort, Assa., one 75 h.p. Lidgerwood hoisting engine of the combined friction drum and brake and reversible link motion type.

The St. Lawrence Supply Co. Montreal

have been incorporated with a capital of \$20,000, to carry on the business of machinists and engineers, and to manufacture electrical machinery, etc. The provisional directors include W. A. McKay, J. G. Veith, Montreal, and E. G. Place, Westmount, Que.

William Farrell, Limited, Montreal, have been incorporated with a capital of \$150,000, to manufacture wines, arated and mineral waters, cigars, etc., and to acquire the business of William Farrell. The provisional directors include Thomas Ralph, R. Y. Hunter and J. J. Robson, Montreal.

The Eclipse Umbrella Co., Montreal, have been incorporated with a capital of \$100,000, to manufacture umbrellas, parasols, etc. The provisional directors include J. R. Gordon, Frederick Worden and R. A. Dunton, Montreal.

The Randolph Macdonald Co., Three Rivers, Que., have been incorporated with a capital of \$100,000, to acquire the business of Randolph Macdonald at Toronto, and to carry on a general contracting and construction business. The provisional directors include Randolph Macdonald, Toronto, W. R. Macdonald, Three Rivers, and Arthur Stephen, Collingwood, Ont.

The N. J. Holden Co., Limited, Montreal, have been incorporated with a capital of \$200,000, to manufacture railway cars, trucks, car wheels, etc., and to acquire the business of N. J. Holden & Co. The provisional directors include Lewis Johnson, P. A. Masse and Charles Bethell, Montreal.

Messrs. James Stewart & Co., Pittsburg, Pa., have secured contracts for the construction of steel and concrete elevators at Buffalo, and Montreal, which will require between 5,000 and 6,000 tons of structural material. The Buffalo contract is with the American Milling Co., for a 2,000,000 bushel elevator on Buffalo river. The Western Canada Milling Co. will build a 1,000,000 bushel elevator at Montreal, at a cost of \$600,000.

Messrs. Cote, Ross & Borden's Parisian corset factory at Quebec City was damaged by fire, August 24.

The Quebec government will build a bridge across the Lievre river at Notre Dame du Laus.

R. MacKenzie's sawmill, the Roman Catholic church and convent, and several other buildings at Lambton, Que., were destroyed by fire, August 22. Loss about \$175,000.

A company composed of leading Canadian railway men and capitalists has been formed under the name of the National Construction Co., Montreal, and have entered into a contract with the Grand Trunk Pacific Railway Co. to construct the line from Winnipeg, Man., to the Pacific ocean, and also the branch line from Fort William to Lake Superior Junction, Ont. The new company will receive all tenders that are now being asked for, and will make out contracts for the most of the construction. Specifications for the first 100 miles of the Lake Superior branch of the Grand Trunk Pacific show prospects of very heavy work, for there are 2,000 acres of clearing, 300,000 yards of solid rock and 250,000 yards of loose rock. In addition there are six million yards of earthwork, or sixty thousand per mile.

The Canada Paper Box Co., Montreal, have been incorporated with a capital of \$20,000,

to manufacture paper and cardboard boxes, bags, barrels, etc. The provisional directors include G. A. Forbes, G. H. Bisset and J. F. Seriver, Montreal.

The Anti Mal de Mer Belt Co., Montreal have been incorporated with a capital of \$90,000, to manufacture medicines and a patented belt known as The Anti-Mal de Mer Belt. The provisional directors include C. C. Knight, E. J. Williams and B. C. Howard, Sherbrooke, Que.

The Ware Co., of Canada, Limited, Montreal, have been incorporated with a capital of \$40,000, to carry on the business of sign painters, lithographers, printers, etc., and to acquire the business of St. Lawrence Add Co. The Quebec & Levis Add Co., and the Three Rivers Bill Posting Co. The provisional directors include J. L. Williams, Three Rivers, Que.; J. W. Thomas, and A. B. Ware, Montreal.

The Tetrault Distributing Co., Montreal have been incorporated with a capital of \$50,000, to manufacture leather, boots, shoes, etc. The provisional directors include J. O. N. Tetrault, jr., F. H. Markey, and R. C. Grant, Montreal.

The Canadian Pacific Railway Co have purchased four large steam shovels from the Locomotive & Machine Co., Montreal.

The Canadian Pacific Railway Co., Montreal, will place an order for 10 locomotives at their Angus, Que., shops.

The Locomotive & Machine Co., Montreal are building a number of locomotives for the Michigan Central Railway Co. The engines are duplicates of those recently completed at the Schenectady, N.Y., shops of the American Locomotive Co.

The Waterloo Knitting Mills Co., Waterloo, Que., are asking the town to grant them a bonus of \$30,000, and exemption from taxation for twenty years, in consideration for which the company will erect a factory, 200 x 70 feet, three stories high, at a cost of \$90,000, and will employ 150 hands.

The ratepayers of Hull, Que., have voted favorably on a by-law granting \$45,000 for waterworks improvements.

The Northern Aluminum Co., will enlarge their works at Shawinigan Falls, Que., at a cost of about \$200,000.

The school trustees of Rideauville, Que., are having plans prepared for a new public school building.

The Brompton Pulp & Paper Co. will build several additions to their plant at Bromptonville, Que.

E. M. Boutilier's wharf and fish storehouse at Halifax, N.S., were destroyed by fire, August 18. Loss about \$6,000.

The Robb Engineering Co., Amherst, N.S., have received an order from Allis-Chalmers-Bullock, Limited, for a 75 h.p. engine for the Canadian Pacific Railway shops at Moose Jaw. The Electric Light Co. of Golden, B.C., have placed an order for a 20 h.p. engine and boiler. Messrs. Ahearn & Soper, Ottawa, have ordered a 50 h.p. engine for the Dunlop Tire Co., Toronto. Two 100 h.p. Robb-Mumford boilers have been ordered by the Western Canadian Collieries, Blairmore, Alta. The town of Dauphin, Man., has ordered two 100 h.p. boilers and a 100 h.p. engine for the electric lighting plant which the town is installing.

The Intercolonial Railway Co. have placed an order with the Dominion Iron & Steel Co., Sydney, N.S., for 25,000 tons of steel rails.

The following companies will probably be amalgamated at Cheticamp, N.S.: The Cheticamp Copper Co., the Inverness Mining Co., the Inverness Copper Co., and the Richfield Mining Co. The companies have all performed more or less development work, and are combining to concentrate attention on one mineral deposit at a time.

The Nova Scotia Steel & Coal Co., New Glasgow, N.S., have put in two of Barr's automatic spike machines, manufactured by the Smart-Turner Machine Co., Hamilton, Ont.

The Newville lumber mills and over a million feet of lumber at Newville, N.S., were destroyed by fire, August 26. Loss about \$50,000.

The Nova Scotia Eastern Railway Co., Halifax, N.S., will spend \$5,584,500 in railway construction.

The Dominion Government will acquire property from Halifax City, N.S., for the erection of a new detention hospital there.

The Westellar Terra Cotta Co. have acquired a twenty year lease, with the option to purchase within six years, of the brick works at Sylvester, N.S., which have been worked until now by the Stellarton Brick & Tile Co. It is the intention of the new company to make extensive alterations and improvements, and to turn out pressed or facing as well as ordinary brick. A kiln for the pressed brick will be constructed under the direction of Mr. R. P. Brown, who has had large experience in Britain and elsewhere in the making of all kinds of brick, and terra cotta work. Mr. Brown has no doubt what ever as to the suitability of the clay for the best quality of pressed brick, which at present have to be imported from Quebec. It is expected to have the first burning of pressed brick by November. The exhaust steam from the engine and the waste heat from the kilns will be utilized in the drying process. The first shed, 100x40 feet will be erected immediately under the supervision of Thomas Simpson. The alterations in the machinery will be effected by the Brown Machine Co., New Glasgow, N.S. The officers of the company are R. Drummond, president; Geo. E. Munro, secretary-treasurer; and Jas. McLeod, Westville, N.S., J. R. Porter, N. Doherty, W. A. Cameron and R. P. Brown are the provisional directors.

H. J. Crowe, Halifax, N.S., recently obtained an option upon three Newfoundland properties, viz., the Newfoundland Pulp & Lumber Co., the Newland Co., and the Lumber Estates Co., embracing an area of 1,600,000 acres. Mr. Crowe has formed a syndicate including representative financiers and publishers in London, England, with Boston, Mass., and Montreal capitalists, with a capital of \$1,000,000. This syndicate will take over the properties and proceed to develop them.

A company has been formed at Truro, N.S., with a capital of \$200,000, to construct lines of railway from Truro to Parrsboro, N.S., and from Parrsboro to Maccan, N.S. F. H. Magee, Truro, is interested.

It is reported that the Leslie Wrecking Co., which now have a plant on the great lakes,

will put in a tender for the establishment of a wrecking steamer and plant at North Sydney, N.S., for which the Department of Marine and Fisheries is now offering a subsidy of \$10,900 a year.

The Dominion Coal Co.'s wash plant at Port Morien, near Glace Bay, N.S., was destroyed by fire August 28. Loss about \$100,000.

J. F. Fraser, commissioner of lights, of the Department of Marine and Fisheries, Ottawa, after an inspection of the stations in the Bay of Fundy, stated that among other improvements a second or double flashing dioptric light is to be placed at Gannet Rock, in the Bay of Fundy, N.B.

A lumber mill fitted with Swedish machinery was erected last year at Douglstown, on the Miramichi, N.B., and it is announced that a planing mill to cost \$100,000 is to be erected there with Swedish capital, to produce the kind of lumber for which Sweden finds a profitable market in England. This is a most important step in the direction of exporting lumber in a more completely manufactured form than hitherto.

The Miller Tannin Extract Co., at Millerton, N.B., will rebuild their works which were destroyed by fire, recently.

The Power Co., Hampton, N.B., have been incorporated with a capital of \$24,000, to manufacture gas producers, engines, etc. The provisional directors include J. E. March, C. J. Coster, St. John, and F. V. Wedderburn Hampton.

Messrs. George Campbell & Sons, Limited, Middle Sackville, N.B., have been incorporated with a capital of \$24,000, to manufacture carriages, vehicles, agricultural implements, etc. The provisional directors include C. C. Campbell, W. E. Campbell, and G. R. Campbell, Middle Sackville.

Willis Chipman, C.E., Toronto, is preparing an estimate on the cost of installing waterworks, electric light and sewerage systems at Dalhousie, N.B.

The Department of Public Works, Fredericton, N.B., are inviting tenders for rebuilding the Coal Creek mouth bridge near Chipman, N.B., and for reconstructing Armstrong's Point high water wharf at Johnston, N.B.

The Department of Marine & Fisheries, Ottawa, will erect a light house near St. Andrews, N.B., at a cost of \$5,000.

The St. John Globe Publishing Co., St. John, N.B., will erect a five story building there.

The Moore Printing Co., Winnipeg, Man., have increased their capital from \$20,000, to \$55,000.

One important use for compressed air is in the operation of quarries. Messrs. Kelly Bros., Winnipeg, Man., have just purchased from Allis-Chalmers-Bullock, Limited, Montreal, six Haeseler pneumatic hammers for dressing stone. These will be operated by an Ingersoll-Sergeant Air Compressor, Class "E," driven by a 25 h.p. induction motor.

The Modern Stone Co., Winnipeg, Man., have been incorporated with a capital of \$250,000, to manufacture lime, cement, brick, stone, tiles, etc. The provisional directors include W. H. Rourke, G. A. Mitchell, and Thomas Kelly, Winnipeg.

Perfection Bakeries, Limited, Winnipeg, Man., have been incorporated with a capital of \$40,000, to manufacture confectionery, etc. The provisional directors include J. W. Campbell, Brockville, Ont., James Fisher and A. C. Ewart, Winnipeg.

The F. W. Law Co., manufacturers of stationery, etc., Winnipeg, Man., have increased their capital from \$25,000, to \$50,000.

Messrs. Hooper & Walker, architects, Winnipeg, Man., are preparing plans for a four story broom factory for Messrs. E. H. Briggs & Co.

The School Board of Calgary, N.W.T., will have a ten room brick school erected to cost \$50,000.

The Red River Valley Brick Co., Winnipeg, Man., have been incorporated with a capital of \$25,000, to manufacture brick, fire-clay, tiles, sewer pipes, etc. The provisional directors include William Styles, W. G. Hackett, and H. P. Carper, Winnipeg.

The Case, Chandler Co., lumber manufacturers, Winnipeg, Man., have changed their name to J. C. Graham, Limited.

The Masons of Winnipeg, Man., will sell \$7,000 debentures to purchase a site for a new temple. Address J. O. Smith, secretary-treasurer, for further particulars.

The McDonald MacMillan Co., Westbourne, Man., are the successful tenderers for the construction of the roadbed upon the section of the Grand Trunk Pacific Railway from Portage la Prairie, Man., to Touchwood Hills, N.W.T. The section in all amounts to 275 miles. It is said that the construction of this portion of the line will entail an expenditure of about \$4,000,000. The work of construction will be begun without delay.

The Nanton Lumber & Grain Co., Nanton, Alta., will shortly commence the erection of a large grain warehouse, having a capacity of 30,000 bushels.

Joseph Kidd's flour mill at Prince Albert, N.W.T., was destroyed by fire August 20. Loss about \$25,000.

A report from London, England, states that royal authority has been granted to the Western Canada Cement & Coal Co. to receive applications for £225,000 first-mortgage bonds at par, to be applied in acquiring cement, clay and anthracite coal lands at Kananaski, Alberta, in erecting a Portland cement factory and for working capital. They besides contemplate the building of 300 to 500 elevators throughout the North-West, with the latest appliances. Their capital will be \$10,000,000 to \$12,000,000.

Messrs. Kelly Bros. & Mitchell, Limited, Winnipeg, Man., recently incorporated with a capital of \$200,000, have been awarded the contract for the erection of a large post office building in Vancouver, B.C.

The Dominion Bridge Co., Montreal, will install a plant at Winnipeg, Man., to manufacture for their Western business. The building will be 300x100 feet, and will be equipped with shears for cutting the heavy steel punches and riveters for setting up the material.

Messrs. Kelly Bros. & Mitchell, Winnipeg, Man., have received the contract for the erection of the new Winnipeg bank building for the Bank of Toronto. It will be constructed of marble.

A syndicate has been formed to erect a hotel building 132x96 feet, three stories high at Portage la Prairie, Man. W. F. Armstrong, that place, is interested.

Messrs. J. & E. Brown will erect a two story brick block at Portage la Prairie, Man.

The Manitoba Portland Cement Co., Winnipeg, Man., recently incorporated, will have a daily output of 250,000 barrels of cement per day.

The Rathwell Farmers' Milling Co., Rathwell, Man., have been incorporated with a capital of \$20,000, to erect a flour mill there. T. C. Forbes, that place, is interested.

J. H. G. Russell, architect, Winnipeg, Man., has prepared plans for the erection of a new school building at Pilot Mound, Man., to cost about \$15,000.

W. Lyall has prepared plans for a ten story hotel to be erected in Winnipeg, Man., at a cost of about \$700,000.

The Alberta Pacific Grain Elevator Co. have awarded the contract for the erection of their elevators at Raley and Cardston, Alta., to W. O. Lee, of Cardston.

The Board of Trade at Vanda, Sask., are offering a bonus to any person building a flour mill there. For further particulars address the president of the Board of Trade, that place.

A new public school building will be erected at Killarney, Man., at a cost of \$40,000.

James Bannatyne, Montreal, will erect a large factory in Winnipeg, Man., for the manufacture of plumbers' supplies, etc.

The provincial government will build a tuberculosis sanitarium near Holland, Man., at a cost of about \$100,000. For further information apply to Dr. Pennefather, Holland.

The Jones & Moore Electric Co., Toronto, are making arrangements to establish a branch in Winnipeg, Man.

Messrs. Eade Bros., architects, Winnipeg, Man., are preparing plans for the erection of a new town hall at Hartney, Man.

The Stewart & Bird Mfg. Co., Winnipeg, Man., have been incorporated with a capital of \$20,000, to manufacture trunks, valises, etc. The provisional directors include T. A. Stewart and W. A. Stewart, Winnipeg.

A water and sewerage system will be established at Banff, Alta., by the Dominion Government, at a cost of \$95,000.

The Canadian Northern Railway Co. will build a branch line from Levois, N.W.T., to a point twelve miles east of Vegreville, Alta.

The Anglicans will erect a church at Pierson, Man.

St. Paul's church at Regina, Assa., will be enlarged at a cost of \$10,000.

Messrs. Hall, McNabb & Co., Winnipeg, Man., will erect an elevator at Red Deer, Assa., at a cost of about \$40,000.

The Alberta Building Co., Calgary, Alta., have been awarded the contract for the addition to the Calgary post office at a cost of \$75,000.

A hotel, 132x96 feet, three stories high, will be erected at Portage la Prairie, Man., at a cost of \$50,000. For further particulars address W. Richardson, that place.

The town council of Lumsden, N.W.T., are preparing plans for a new waterworks system.

The Frost & Wood Co., manufacturers of agricultural implements at Smith's Falls, Ont., will erect a large warehouse in Winnipeg, Man.

Messrs. E. H. Briggs & Co., broom manufacturers, Winnipeg, Man., will erect a factory, 120x50 feet, five stories high, in that city.

The Canadian Northern Railway Co. will build an 800 foot bridge across the Red River at Morris, Man.

James Mack, of Prince Albert, N.W.T., will erect a flour mill and elevator at Vonda.

The Canadian Pacific Railway Co. have awarded the contract for the erection of their new machine shops at Moose Jaw, N.W.T., to J. J. McDiarmid, Winnipeg, Man., at a cost of \$40,000.

The ratepayers of Qu'Appelle, N.W.T., have voted favorably on a by-law granting \$22,000, for school purposes.

The Medicine Hat Milling Co., Medicine Hat, N.W.T., will erect a 50,000 bushel grain elevator there.

Messrs. P. Burns & Co., Calgary, N.W.T., have made an offer to the city council of Victoria, B.C., to erect a \$300,000 abattoir there, upon receiving certain concessions from the city.

The cannery men of Stevenson, B.C., have asked the provincial government to aid them in erecting a crematory for fish offal. For further information address Premier McBride, Victoria, B.C.

The Queen's Hotel, the Baptist church and the soda water factory at Fernie, B.C. were destroyed by fire August 26. Loss about \$35,000.

J. Hanbury, lumberman and mill owner at Brandon, Man., has purchased the factory of the British Columbia Box & Lumber Co., at Vancouver, B.C., where he will also erect several flour mills and elevators.

J. S. Emerson, Vancouver, B.C., will erect a large cedar mill at Greenway Sound, B.C.

Extensive alterations are to be made at the sawmills of the Ladysmith Lumber Co. The mills, now situated at Fiddicks, will be moved and re-erected about four miles from Ladysmith, B.C. Orders have been placed for a large new boiler and a quantity of new machinery, which will be used at the mills, in addition to that now in use.

The Alaska Pumice Stone Hydraulic Cement Trading Co. have been incorporated at Victoria, B.C., with a capital of \$50,000, to quarry and refine auriferous quartz, ore, etc., and to manufacture stone, cement, etc.

The Chilliwack Water Power Co., Chilliwack, B.C., have been awarded the contract to install a waterworks system to supply that town.

Messrs. J. Leckie & Co. will erect a large boot and shoe factory in Vancouver, B.C.

Inspector-General Roy, of the Public Works Department, Ottawa, has gone to Vancouver, B.C., to examine False Creek, where it is proposed to construct a harbor.

The Vancouver, Westminster & Yukon Railway Co. will construct a bridge, 2,000 feet long across the second narrows to the north shore of Burrard Inlet, B.C.

P. A. Paulson, Cranbrook, B.C., will erect a saw mill in the East Kootenay district.

R. V. Winch, Vancouver, B.C., will erect a building 120x52 feet, three stories high, to cost about \$30,000.

The Canadian Pacific Lumber Co. will build another saw mill at Port Moody B.C.

Mr. W. A. Shaw has purchased the Strath hotel at Vancouver, B.C., and will greatly improve and enlarge same.

The Record Stove Works, Montreal, will erect a branch factory at Vancouver, B.C.

The Western Fuel Co. will erect a corrugated iron building, 100x50 feet, at Nanaimo, B.C. They will also erect a power house.

The Southern Okanagan Land Co., Penticton, B.C., will construct extensive irrigated works including a 32 inch pipe line a mile long and a concrete dam.

The West End Baptists of Vancouver, B.C. will erect a large new church.

PATENTS.

Messrs. Featherstonhaugh & Co. patent barristers, Toronto, Montreal, Ottawa and Washington, D.C., have recently obtained Canadian patents for the following: V. C. Best, Chatham, Ont.; rake cleaners; P. J. O'Brien, Ferryland, Nfld., non-refillable bottles; E. A. Sullivan, Toronto, and R. W. Ellison, Bryn Mawr, non-refillable bottle attachments; R. Bogue, Moose Jaw Assa. Indexes; T. Taillefer, Montreal, butter cutting and measuring instruments; C. S. Jenson, Montreal, air brake mechanisms; L. A. Beauchemin, Montreal, nailless horse shoes; C. D. McPhee, Arnprior, Ont., electro smelting and refining furnaces; T. Featherstonhaugh, Ottawa, window blinds; J. P. Ewing, Drayton, Ont., traction wheels; J. E. Hart, Moose Jaw, Assa., combined shoe braces, suspenders and bolt supports; B. E. Beechtel, Waterloo, Ont., apparatus for drying bricks and other articles; A. A. Aldyce, Toronto, awnings; E. B. Tree, Toronto, rotary engines; E. R. Clarke, Toronto, gears; F. Skelton, Hamilton, Ont., scoops; J. S. N. Guindon, Montreal, fire alarm apparatus; J. Gardner, Toronto, marking machines; W. D. Beath, Columbus, Ont., feed and ice carriers; J. A. Fox, Brantford, Ont. guide's hand saws; W. Payne, London, Ont. equalizing adjusting pliable trusses; G. H. Guelph, Ont., metallic fence posts; W. S. E. ler, Lake Magantic, Que., shelf attachment barrel sand; J. E. Baechler, Sarina, Ont. wire stretches; C. D. McPhee, Arnprior, Ont. signalling systems for railways; P. R. Esdon, London, Ont., cutter heads; I. G. G. Toronto, combination caps; J. H. Alexander, Ymir, B.C., hydraulic air compressors; G. F. Johnson, Kemptville, Ont., cream separators; A. McNabb, Toronto, ottoman; A. J. Ripelle, Montreal, artificial marble.

Messrs. Marion & Marion, patent attorneys, Montreal and Washington, D.C. have obtained the following Canadian patents granted to foreigners:—Hermann Blau, Augsburg, Germany, method of treating distillate gases to obtain an illuminating gas in a compressed form suitable for transport; L. E. Lachat, Lyon, France, trucks or trolleys with sliding steering wheels; Thomas Edwards, Bullarat, Vict., Australia, mechanically rabbled ore roasting furnaces; Alexander Jacob, Vilvorde, Belgium, disintegrator for steam generators; Eugen Fuller, St. Louis, Mo., U.S.A., method of treating distillate gases to obtain an illuminating gas in a compressed form suitable for transport.

Germany, drums for drum filters; Messrs. Elixman, Cunningham & Shevlin, Corinth, N.Y., cores for paper rolls; and T. P. Rudkins, Mitlamo, Vict., Australia, means for moving goods; Win. Eug. Globensky, Montreal, building blocks and apparatus for manufacturing the same; E. S. Manny, Montreal, steam heating system and apparatus; F. B. R. Skager, Lemberg, N.W.T., twine holder; Ludger Sevigny, Sherbrooke, Que., billiard cue rack; John Ternault, Montreal, process of manufacturing metals; Orrin Weidrich, Cheapside, Ont., hockey stick.

ELECTRICITY.

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

The British Columbia Electric Railway Co.'s new electric tramway to be erected at North Vancouver, B.C., will cost \$200,000. For further particulars write to R. H. Sperling, Vancouver.

The ratepayers of Dauphin, Man., will shortly vote on a by-law to install a municipal telephone service. For further information apply to the Mayor.

The Economic Power, Light & Heat Supply Co., Toronto, have been incorporated with a capital of \$50,000, to produce electricity for heating and power purposes, and to manufacture machines, motors, engines, etc. The provisional directors include J. J. Palmer, J. C. Palmer and H. N. Baird, jr., Toronto.

The Cataract Electric Co., Orangeville, Ont., have been incorporated with a capital of \$50,000, to supply electricity, natural gas, etc., for heating and power purposes. The provisional directors include J. M. Deagle, E. M. Deagle, Caledon, Ont., and Frederick Deagle, Artemesia, Ont.

The Bethesda & Stouffville Telephone Co., Stouffville, Ont., have been incorporated with a capital of \$40,000, to acquire the plant of the Bethesda & Stouffville Telephone Association and to carry on the business of a telephone company. The provisional directors include A. D. Bruce, George Forester, Markham, Ont., and G. A. Brodie, Whitchurch, Ont.

The Electrical Supply Co., Limited, Moncton, N.B., have been incorporated with a capital of \$10,000, to manufacture electrical devices, patented by Austin Berry, Ottawa. The provisional directors include G. R. Jones, J. S. Magee, and Daniel McCuaig, Moncton.

Mr. Louis Coste, of the International Waterways Commission returned to Toronto a few days ago from Sault Ste. Marie, where he went in company with Mr. Mabec, K.C., of Toronto, and Mr. Clinton, of Buffalo. The two latter gentlemen are looking into legal matters possessed by the Michigan Power Co., and Lake Superior Power Co., which have constructed works for the development of electricity, and caused the fear that the level of Lake Superior may be lowered. While Messrs. Mabec and Clinton deal with the legal questions involved, Mr. Coste and Mr. Wisner will submit their views on the engineering aspect of the power development works at Sault Ste. Marie to their colleagues. The works now in existence or under construction

on each side aim at a maximum development of 70,000 h.p., which would take all the water available at the Soo at low water. But the amount of power at present developed would probably not exceed 30,000 h.p. The Michigan Power Co. were allowed to develop on the United States side, with the understanding that they would build remedial works so that the lake level would not be interfered with. The remedial works were duly constructed, but they are on the Canadian side, where they could not be controlled by the United States authorities. The Lake Superior Power Co., according to Mr. Coste, were incorporated by Ontario statute, without any conditions as to the quantity of water which should be taken, or any restrictions obliging the company to see that the lake level was not lowered. Now it has become necessary to have international regulations, so that the operations of both companies may be regulated. In the opinion of Mr. Coste the level of Lake Superior will not be reduced if a dam with sluice gates is constructed at the head of the St. Mary's Rapids, and proper regulations are framed as to the disposition of the water.

Mr. R. S. Kelsch, consulting engineer, Montreal, will design and install the new municipal lighting plant for the town of Napance, Ont., at a cost of \$35,000.

The Canadian General Electric Co., Toronto, have installed two new generators in the Woodstock, Ont., electric lighting plant.

The Mexico Electric Tramways, Limited, Mexico city, have begun laying double track between the city and Churubusco. W. W. Wheatly is general manager.

The Toronto & York Radial Electric Railway Co. are extending their lines north from Newmarket to Jackson's Point on Lake Simcoe, a distance of 25 miles.

The Port Credit & Collingwood Electric Railway Co. have been organized to connect Port Credit and Collingwood, Ont., with an electric railroad. Joseph Barret, Collingwood, is interested.

A proposition to develop a water power on the White Mud river is now being considered by the municipality of Neepawa, Man. Engineer Archibald has submitted a plan of the proposed work, which he estimates would cost \$40,000 and produce 400 h.p.

The Montreal & Southern Counties Co. will commence the construction of an electric railway line between Longueuil, Que., and Montreal.

The Kootenay Telephone Co. will erect a new exchange building at Nelson, B.C.

The Canadian General Electric Co., Toronto, will supply the town of Revelstoke B.C., with a 2,000 light alternator, including switchboard and exciter.

John Forman, Montreal, has placed an order with the Hill Electric Switch Co., that city, to construct a switchboard for the Valleyfield Electric Light Co., of Valleyfield, Que.

The town of Westmount, Que., is offering for sale \$225,000 worth of bonds for the installation of an electric light and incinerator plant.

The Hill Electric Switch Co., Montreal, will construct a switchboard for the Canadian Pacific Railway Co., at Brandon, Man.

The New Brunswick Telephone Co. will shortly commence the erection of their new

exchange at Fredericton, N.B., which will cost about \$6,000.

Messrs. Hiram Walker & Sons, Walkerville, Ont., will install a telephone system connecting their business places.

The town of Chatham, N.B., have retained the services of Mr. R. S. Kelsch, consulting engineer, Montreal, in the erection of a municipal lighting plant, which will be built with duplicate machinery.

The Moose Jaw Telephone Co. have acquired the telephone business of Mr. C. A. Gass at Moose Jaw and will reconstruct the system at a cost of \$10,000.

Mr. K. L. Aitken, C.E., Toronto, has awarded the following contracts for an electric light plant for the town of Milton, Ont.; boilers, smoke stack and engine, Waterous Engine Works Co., Brantford, Ont.; and for generators to Allis-Chalmers-Bullock, Montreal.

The Berlin Electric Co., Berlin, Ont., have recently installed a complete power and lighting plant in Clare Bros. & Co.'s foundry at Preston, Ont. It consists of two 45 k.w. generators, of parallel operation, and four motors, one of 30 h.p., one of 12 and two of 5 h.p. The lighting is done by 300 incandescent and 16 series arc lamps. They have also installed a modern plant for the Berlin Felt Boot Co., Berlin, consisting of a 65 k.w. generator, five h.p. motors, three 10 h.p. motors and two 7½ h.p. motors, also 500 incandescent lights, 250-volt system. Westinghouse apparatus has been used throughout in the above plants.

The Canadian Metal Co. are considering the installation of an electric lighting plant at Frank, N.W.T.

The British Columbia Telephone Co. are building a new exchange at Vancouver, B.C., and are rebuilding their line between Phoenix, B.C., and Cascade, B.C.

The electric lighting plant at Owen Sound, Ont., will be enlarged.

The Maine & New Brunswick Electric Power Co. are having plans prepared for developing the power of Aroostock Falls, N.B. W. Whitney, C.E., of Gardiner, Maine, is the chief engineer. It is proposed to transmit power to Andover and Perth, N.B., and Houlton, Maine. G. G. Porter, of Perth, N.B., is interested.

SETTLERS LOW RATES WEST.

The Chicago and North Western Railway will sell one way second class settlers' tickets, daily from September 15 to October 31, 1905, to points in Utah, Montana, Nevada, Idaho, Oregon, Washington, California and British Columbia. Rate from Toronto to Vancouver, Victoria, New Westminster, B.C., Seattle, Wash., or Portland, Ore., \$42.25; to San Francisco or Los Angeles, Cal., \$44.00. Correspondingly low rates from all points in Canada, choice of routes. Best of service. For full particulars and folders write to B. G. Bennett, general agent, 2 East King Street, Toronto, Ont.

The Fortune Brothers Brewing Co., Chicago, Ill., will install, in connection with their malt drying system, a large steel plate electric fan built by the B. F. Sturtevant Co., Boston, Mass.

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.

Final steps have been taken in the \$7,000,000 deal whereby 20 Indiana coal companies have been merged in the Vandalia Coal Co., with headquarters in Indianapolis, Ind. The merger consists in exchanging the titles to the 30 mines of an aggregate value of \$1,000,000. It is expected that the annual output of the company will be about 3,000,000 tons.

The Wellington Coal & Wharfage Co., Vancouver, B.C., have been incorporated with a capital of \$100,000, to acquire the business of Macdonald, Marpole & Co., and to carry on a coal mining business, etc.

A rich coal strike was made recently near Lingan, N.S., which shows six feet of clean coal land, area of about 100 square miles, or 619,520,000 tons of lead.

Prof. S. F. Peckham, chemist and mineralogist, of New York, expresses the opinion that the Maritime Coal Co. have facts enough to justify a careful expenditure to test the extent and quality of the anthracite coal vein at Norton, N.B., to a greater depth. He thinks there is a prospect that they can develop a deposit of considerable extent of semi-anthracite coal, merchantable quality, and advises sinking a shaft 100 feet and driving a tunnel 200 feet on the vein.

The coke oven plant of the Nova Scotia Steel & Coal Co., at North Sydney, N.S., at No. 1 colliery is to be thoroughly overhauled. This plant is gradually being constructed from a German patent and is the only one of its kind in Canada. It is said to be proving far more successful than the various American coking plants found elsewhere.

The Crow's Nest Pass Coal Co., operating mines in the Crow's Nest Pass region of British Columbia are seeking wider markets for their steadily-increasing output. Arrangements have been concluded to ship 2,000 tons of selected coal to Seattle, where it will be placed in the bunkers of one of the steamships plying between that port and the Orient, and its steaming qualities thoroughly tested. If it gives satisfaction, further business in that direction will result.

The Nova Scotia Steel & Coal Co., New Glasgow, N.S., are opening another new colliery between Sydney No 3 and Little Bras d'Or gut. No. 3 colliery is panning out splendidly, and the unexpected demand has made it necessary to open up their new areas. It is stated that the company's shipments during the month of July reached 75,000 tons.

Vice-president F. L. Wanklyn, of the Dominion Coal Co., states that the company are now mining 14,000 tons per day. Half of this amount is coming up the St. Lawrence. For the week ending July 29, which are the last returns at hand the shipments to Montreal amounted to 52,000 tons which about approximates a full week's work, with everything running, at Sydney. Up to the present time, we have landed practically half of our summer's coal at Montreal. When the season is finished, we expect to have brought up the

river, say 1,250,000 tons. This is, perhaps 50,000 tons more than we brought to the port during the season of 1904. Aside from the St. Lawrence shipments, we are, of course, filling our orders with the Dominion Steel Co., as well as shipping to Boston, St. Johns, N.B., Halifax and St. John, Newfoundland.

The Nova Scotia Steel & Coal Co., New Glasgow, N.S., are shipping a heavier tonnage of coal to Montreal this season from their Cape Breton mines than they have done for a number of years past.

A mineral discovery has been made at Glace Bay, N.S., near the old Gardiner mines on the property of the Atlantic Coal Co. The coal was struck only 70 feet from the surface. The borings show five feet of drift, nineteen feet of strata and shale, one foot six inches of clear coal, forty-eight feet of sand, stone and shale, and five feet six inches of clean coal.

The Boston & Maine Railroad Co. are testing peat as a fuel for their engines. So far the tests have been very satisfactory. The source of supply is in the town of Lexington, Mass., and it is said that this single deposit would furnish enough fuel for the railroads entering Boston for a period of many years.

The Dominion Coal Co., Glace Bay, N.S., are testing a machine at their mines which is intended to take the place of explosives to some extent. It is a hydraulic cartridge, and is represented as in successful operation in Great Britain. At present coal is blown down with powder, after the undercutting is completed. In the use of the mining cartridge after the undercutting and shearing are finished a hole of 3½ inches in diameter is bored in the coal parallel with the roof. The cartridge is inserted, a piston operates at one end and a pump at the other. The latter is of small size and neatly designed. The pump forces the water in the cartridge along a tube, and it comes in contact with the first piston and pushes it out, the pressure becomes general on all the pistons, which commence to penetrate the coal in a downward direction. The pistons are set very close, there being scarcely a half inch between them. As the pressure increases the coal gradually leaves the roof and falls to the floor in the best salable condition. When powder is used in blowing down coal there is considerable waste through breakage into dust and slack. It is claimed that this element of waste is greatly eliminated by the use of the cartridge, and 40 per cent. more salable coal is produced than by the ordinary methods of mining. The weight of the entire apparatus is 44 pounds. One man can operate it. The amount of water required is from a pint to a quart according to the pressure needed to bring down the coal. The water for the pump is stored in a little reservoir attached to a pipe which runs to the bottom of the pump. The machine is supposed to be especially serviceable in long wall and pillar work.

J. W. Ellsworth & Co., Cleveland, Ohio, acting in conjunction with the Pennsylvania Railway and the Canadian Pacific Railway, have given a contract to the Great Lakes Engineering Works, of Detroit, Mich., for a twin-screw street car ferry to operate between Ashtabula and Port Burwell, Ont. This combination of two leading railway lines with one of the most extensive coal shippers is likely to have far-reaching effects in the coal trade.

It is the intention to operate the car ferry as many months in the year as possible, ten anyhow, and if it should be proved practicable, all the year round. The car ferry will have four tracks with a capacity for the transfer of thirty fifty-ton cars and will be equipped with engines capable of driving her two miles an hour. The car ferry will be 350 feet over all, 56 feet beam, and 20 feet deep from deck to keel, and will be of the enclosed type with accommodations for passengers and crew on the upper deck. She will be equipped with triple-expansion engines and Scotch boilers.

CEMENT SHINGLES.

The passing of the wood shingle has presented the most serious problem of providing a substitute, as a good roof covering is the most important item in building construction. As its position on the most exposed part of a building subjects it to the severest action of the elements, a cement or a burned clay product is the only available substitute, and, unless properly reinforced, these are useless.

Cement, when properly mixed and tempered, becomes indestructible to the extent of its exposure to the atmosphere and natural elements.

Moisture, the cause of universal decay, is the chemical agent in the process of hardening and crystallizing.

As a roof or outer wall covering, it is the only perfect and lasting material.

Shingles properly reinforced to resist the action of ice, etc., being constantly exposed to the weather, become crystallized and everlasting.

These facts are the result of practical experiments and tests during several years of use as roof shingles, with perfect success, and have, as a permanent and staple roof covering of the future, established the position of cement shingles.

Cement shingles are made of Portland cement over a metal vertebra or reinforcement that terminates in loops at either end for nailing securely, but not rigid to resist action of ice, expansion, contraction, etc. they cannot break and fall. They are 1½ inch thick at the butt, slightly tapered of 2½ inch width, shape or color. Weigh, handle and ship as slate. Can be laid on any roof new or old, to replace the worn out wooden shingle or slate, and with hip shingle and ridge of same material and make, constitute a perfect complete covering for roofs, gables and valleys, easily laid and cut for valleys, towers, dormer windows or any portion of a broken roof. Ornamental and everlasting, comparing favorably in price with slate and best wood shingles.

The process of making cement shingles is continuous. While passing on a moving belt the iron moulds receive the bottom reinforcement wires, etc., and pass into the machine coming out filled, under pressure, and travel to glazed surface. They are then placed on shelf racks for thirty minutes. Being thus set sufficiently, the moulds are removed by simple process and returned, to be used again. The shingles remaining on the bottom belt are placed in open racks for twenty-four hours, then taken to storage racks in pairs placed on edge and left to nature. No skilled labor required.

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*.

J. C. Gibson, Winnipeg, Man., will receive tenders for one turbine pump with motors for the city waterworks.

The Department of Public Works, Ottawa, will shortly call for tenders for the construction of the barracks in Toronto. In all there will be 20 brick buildings thoroughly fire-proof.

G. E. Graham, Winnipeg, Man., is inviting tenders for the purchase of the following buildings in the Canadian Pacific Railway Co.'s yards, that city, one round house, machine shop, blacksmith shop and car shop.

The town clerk of Qu'Appelle, N.W.T., will receive tenders for the erection of a town hall.

T. S. Menarey, Melita, Man., will receive tenders for the purchase of \$7,000 school debentures.

The Department of Marine & Fisheries Ottawa, will receive tenders for fog alarm machinery.

The Department of Public Works, Ottawa, are inviting tenders for the construction of a landing pier at Peel Head Bay, Que.

The Department of Marine & Fisheries, Ottawa, are inviting tenders for keeping a wrecking steamer and tender with all up-to-date wrecking plant, including pumps, diving suits, anchors, chains, boats and other plant.

Tenders addressed to Ald. J. C. Gibson, Chairman Fire, Water and Light Committee, for supply of one turbine pump, with electric motor, for the city water works, will be received by C. J. Brown, city clerk, Winnipeg, Man.

Chairman of the Board of Control, City Hall, Toronto, is inviting tenders for the installation of two 5,000,000 imperial gallon turbine pumps and steam turbines, and also for the supply of fire hydrants, valves and cast iron pipe.

The city of Winnipeg, Man., is asking for tenders for the construction of a city hall to cost about \$200,000. Further information may be obtained by addressing the architect, Mr. S. Hooper, McIntyre Block, Winnipeg.

The Cordoba & Huatusco Railways, M. McDonald, chief engineer, city of Mexico, will build a steel bridge 408 feet long, 213 feet above water, with 228 foot arch.

The city of Juarez, Chihuahua, Mexico, has accepted plans and specifications for the construction of its proposed waterworks system, for which about \$60,000 will be expended. Bids will be asked for on the contract to supply all materials and machinery, including water tower, steel tank, piping, fire hydrants, engines, boilers, pumps, etc. Address the mayor for further particulars.

T. W. Lawson, Boston, Mass., and F. W.

Page, Guadalajara, Jalisco, Mexico, have purchased and will develop copper mines near Ahuijullo, Jalisco.

Messrs. A. J. Peyton & Co., are reported to be at the head of a syndicate which will back the construction of the proposed Morelia & Tacambaro Railway, 225 miles long, and 55 miles are to be started immediately.

Among recent mining projects in Mexico the following present possibilities to manufacturers for the sale of mining equipment: The Peregrina Mining & Milling Co., of Guanajuato, will erect a cyanide plant, which will increase their capacity to 250 tons a day. The requisite electrical equipment and machinery will cost about \$165,000. Colonel W. C. Greene, it is stated, has definitely decided to erect a 200 ton smelter at Dedrick, Chihuahua, the new town he has established on the Rio Grande, Sierra Madre & Pacific Railroad. He expects to spend \$200,000 on the plant and have it in operation by the end of the year.

The concession recently granted to J. D. Stocker and associates has been transferred to Messrs. MacKenzie, Mann & Co., of Toronto. It has been estimated that several million dollars will be expended for these waterworks, and preparations are being made for beginning active construction in the near future. This plant is to be located at Monterey, Mexico.

T. S. Ulmer, of Houston, Texas, and associates contemplate building a large lumber mill at Tampico, Mexico.

The Department of Public Works, Ottawa, are inviting tenders for the construction of postal station B. at Montreal.

C. J. Brown, city clerk, Winnipeg, Man., will receive tenders for the supply of 500 enamel street name plates.

V. E. D. Casselman, Napinka, Man., is inviting tenders for the erection of the Merchant's bank building there to be 70x30 feet and two stories high.

Stephen Fournier, Sudbury, Ont., will receive tenders for the supply of the following piping sewers, 1,420 feet of 10 inch, 2,600 feet of 8 inch, 1,620 feet of 9 inch, 5,000 feet of 6 inch, waterworks extensions with hydrants, 2,000 feet of 6 inch, and 2,500 feet of 4 inch.

W. W. Northeote, Victoria, B.C., will receive tenders for the supply of 1,000 feet of 12 inch, and 12,000 feet of 4 inch cast iron water pipe.

The Canadian Northern Railway Co. are inviting tenders for the erection of a station building and a ten-stall engine house at Edmonton, N.W.T., also a station building at Fort Saskatchewan, N.W.T.

Tenders are being invited for a public school building, 80x60 feet, two stories high, to be erected at Hampton, N.B., G. E. Fairweather, St. John, N.B., is the architect.

Tenders are invited for the erection of a new gymnasium at the Baptist College, Woodstock, to cost about \$10,000.

Dixon's Handy Graphite Rope Dressing is an efficient and economical lubricant for hoisting cables. It prolongs the life of the cables, prevents chafing and wear, and saves expensive renewals. It can be applied to the cable while in motion, without waste, trouble or danger. Each cake contains about three pounds of graphite lubricant. Manufactured only by Joseph Dixon Crucible Co., Jersey City, N. J.

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.

Messrs. Sheldon & Sheldon, Galt, Ont., have sent us a copy of Bulletin No. 22, which contains illustrations of their steel plate fans, and valuable information regarding the application of these fans. We are also in receipt of a neat folder relating to the high grade steam specialties manufactured by this company.

The Canadian Westinghouse Co., Hamilton, Ont., have just issued circular No. 1115, describing and illustrating "Direct current self-contained generators," and circular No. 1118, on "Westinghouse type C.C.L. solid frame polyphase induction motors."

The American Steam Pump Co., Battle Creek, Mich., have issued a handsome catalogue, describing and illustrating belt-driven pumps and air compressors. Also catalogue describing Marsh steam pumps of various types.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., have sent us circular No. 1108, describing and illustrating "Westinghouse regulating and reversing controllers."

The Schutte & Koerting Co., Philadelphia, Pa., have issued circulars describing and illustrating noiseless and automatic stop-check valves, quick closing balanced trip valve and combined throttle and quick closing trip valve.

The Hendey Machine Co., Torrington, Conn., have issued a handsome catalogue containing fine engravings of their milling machines with various attachments and of various types.

The Burt Mfg. Co., Akron, Ohio, have sent us a very handsome catalogue which describes in detail the various oil filters and exhaust heads manufactured by them. It illustrates the Cross, American, and Warden oil filters, the American oil filtering system, and the Burt and Standard exhaust heads. The information which it contains in reference to the filtering of oils, makes it a valuable work of reference for any one operating a power plant.

The Ingersoll-Sergeant Drill Co., 26 Cortlandt Street, New York, have issued catalogue form No. 6, describing Haesler axial valve hammers.

Mason Regulator Co., Boston, Mass., have issued a catalogue describing the various styles of reducing valves made by them.

The Flint & Walling Mfg. Co., Kendallville, Ind., have sent us Catalogue No. 46, illustrative and descriptive of star windmills, towers, tanks and pumps manufactured by them.

The Canada Foundry Co., Toronto, have sent us Bulletin No. 31, describing and illustrating the "Canada Gyroty Crusher," manufactured by them.

The Pusey & Jones Co., Wilmington, Del., have issued a catalogue devoted exclusively to their improved fan pumps.

The Canadian Appraisal Co., Montreal, have sent us some literature having reference to the fact that manufacturers and others who carry fire insurance risks upon their factories,

warehouses, etc., can save money by carrying out in an intelligent manner, the specific requirements of the fire underwriters. The company suggest that insurers should not waste money for materials and equipments that are not approved by the underwriters, and that money may be saved and much lower rates affected when the equipment is so approved. It is the business of the Canadian Appraisal Co. to take charge of and attend to this sort of business, and any who may be interested should enquire for particulars of them at 4 Hospital Street, Montreal, or 23 Scott Street, Toronto.

The Nernst Lamp Co., Pittsburg, Pa., have sent us a copy of the Nernst Central Station Bulletin for August, which contains literature putting forth the excellence of the Nernst lamp for illuminating purposes.

The Orford Copper Co., of 42 Exchange Place, New York city, have issued a publication entitled, "Nickel Steel, Its Properties and Application." This is an authorized reprint of the paper by A. L. Colby, which was read before the American Society for testing materials. In addition to the paper the discussion which took place in connection with the meeting has been printed. All who are interested in nickel steel or its applications will find this publication exceedingly interesting.

Mr. R. M. Palmer, secretary Bureau of Provincial Information, Victoria, B.C., has sent us a copy of the official bulletin, No. 21, on timber and paper pulp in British Columbia. In this bulletin an effort has been made to cover the whole field of timber, wood pulp and paper making as fully as the present development of those industries in British Columbia would permit.

The Joseph Dixon Crucible Co., Jersey City, N.J., are sending out a beautiful publication of twenty-eight pages, entitled, "Suggestions for an Elementary Course in Free Hand Drawing," but which is not intended as a course in drawing, nor even as a system of elementary drawing. It is, as its name indicates, a series of "Suggestions" arranged in a systematic manner, and written in untechnical language. There are numerous illustrations, which are designed to be at least as suggestive as the text, and which, if intelligently used by the teacher or student, should result in a knowledge of the elementary principles of freehand drawing, and develop a love for the art itself on the part of the pupils. The illustrations include the most simple outline forms and finished sketches. The drawings are in black and white and also in colors, and altogether the pamphlet is not only attractive and one which every teacher and pupil will be glad to possess, but one that is of most positive value. The object in publishing this pamphlet is to more thoroughly introduce to teachers and pupils the merits of Dixon's American graphite pencils and Dixon's colored crayons, and under certain easy conditions the Dixon Co. will furnish, free of charge, any school district, any number of these "Suggestions," as the district can use to advantage. Dixon's graphite publications are sent free of charge to all who are interested in the subject of graphite.

Nearly 500,000 grouse are shot annually on the Scottish grouse moors.

PERSONALS.

The eighteenth annual convention of the Canadian Association of Stationery Engineers was held in Chatham, Ont., beginning August 22. The election and installation of officers for the ensuing year was as follows:—President, W. A. Sweet, Hamilton, Ont.; vice-president, W. Outhwaite, Toronto; secretary, Joseph Ironsides, Hamilton; treasurer, J. M. Dixon, Toronto; conductor, E. A. Grandbois, Chatham; doorkeeper, W. Kelly, Chatham. It was unanimously decided to hold the next convention in Galt, Ont. F. B. Utley, of the Goldie & McCulloch Co., of that town was sponsor for the location of next year's convention.

The annual meeting of the Niagara District Printers and Publishers will be held at St. Catharines, Ont., September 28 and 29. Mr. W. J. Keyes, St. Catharines, is secretary of the committee having the matter in charge.

Messrs. M. J. Haney and Roger Miller have been awarded the contract for the extension of the Toronto breakwater.

The Department of Trade and Commerce have a branch office established at the Toronto Exhibition. Sir Richard Cartwright has given instructions to Acting Deputy Minister F. C. T. O'Hara that Mr. J. S. Larke, commercial agent to Australia, who is now in Canada, be provided with an office in the grounds. Mr. Larke will be glad to see all Canadian exporters interested in trade with Australia and New Zealand.

Dr. Eugene Haanel, Dominion Superintendent of Mines, has organized a party who have gone to British Columbia to investigate and report upon the extent and character of the zinc deposits of that province. Prof. W. R. Ingalls, M.E., will have charge, and will be assisted by Philip Argall, M.E., who in turn will be assisted by A. C. Garde. These three gentlemen will carry out the field work, and Mr. Henry E. Wood, of Denver, Colo., will perform the concentration experiments. The party will be engaged in field work, it is estimated, about two months. Afterwards Professor Ingalls will prepare and present his report to Dr. Haanel. Mr. Ingalls is regarded as an expert authority on zinc. The investigation into the zinc deposits in British Columbia has been brought about by the discovery of ore in large quantities during the development of the silver lead mines there. Instructions to Professor Ingalls provide: (1). For the examination of the present development of the mines to determine approximately the tonnage of zinc ore immediately available, its occurrence and character and the future prospects, together with the cost of mining. (2). Examination of the present methods of milling. (3). Investigation of the adaptability of the ores to the new methods of concentration (magnetic, electrostatic, etc.). (4). Study of the conditions affecting marketing of the concentrate, including the question of smelting in the Province and elsewhere in Canada. (5). Investigation of the possibility of special utilization of the zinc ore of high silver content.

The United Electric Co., Toronto, have been compelled to move their factory on account of the property which they occupied on Niagara Street having been purchased. They are moving into the factory on King

Street West, formerly occupied by Cowan & Co., and will eventually move their offices also to this building.

Allis-Chalmers-Bullock, Limited, have made a change in their British Columbia branch. This end of their business has been in charge of the agency of the Canadian Fur-banks Co. Recently, however, Mr. G. C. Hinton, of the Hinton Electric Co., was appointed sales manager for British Columbia. They have opened up offices on Seymour Street, Vancouver, and here a complete stock of the Allis-Chalmers-Bullock products will be kept, including rock drills, and rock drill parts and electric and saw mill machinery. Mr. Hinton, though becoming local manager of Allis-Chalmers-Bullock, still retains an interest in the Hinton Electric Co.

Mr. R. S. Cooper, formerly the Pittsburg representative of the Rand Drill Co., has been appointed manager of the New York office of the Independent Pneumatic Tool Co. with offices at 170 Broadway.

DECLINE OF BRITISH TRADE IN AUSTRALIA.

Hon. R. W. West, a senator of Australia, and who a few years ago was minister of customs for Victoria, is visiting London, and recently addressed the Australian Chamber of Commerce of that city on inter-imperial trade. Senator West explained that the feeling in Australia was favorable to preferential trade with the mother country, but declared that any commercial arrangement made must be mutually advantageous. He spoke of the decline of imports into Australia from Great Britain, and cited some of the reasons for the decline. In the period 1891-1895, the percentage of imports to Australia from the United Kingdom was 71.27, which diminished in the period 1901-1903 to 57.2. On the other hand, the percentage imported from foreign countries in 1891-1895 was 17.09, and in 1901-1903 this increased to 30.48. The business methods of the British merchant was in part responsible for the decline, and Senator West directed attention to some of the causes, ascertained by an investigation made while he was minister of customs, for that result. He explained that American goods, and sometimes German goods were more closely packed than British goods, without in any way increasing the risk of breakage or damage. British goods could commonly be picked out in the stock of a hardware store by the greater number of broken boxes. Victorian merchants said, "the Germans bring their goods to the buyers, whilst the British wait for the buyers to come to them," and undoubtedly this was the experience in Victoria. Large numbers of German manufacturers were represented by travelling agents, who displayed the greatest energy in transacting business, an energy which amounted to pertinacity. The British lost the trade of Victoria in tacks by failing to pack them in cardboard boxes instead of paper packages. They were, to a large extent, cut out in the market for cartridges by declining to pack them in packages of 25 instead of 100. Both these defects have now been remedied, but the trade had to be regained. In very many cases the shape of British articles was unsuitable to Victoria: the hammer for instance, was not, in the

opinion of Victorian carpenters, nearly so well shaped as the American hammer, but the British pattern seemed unalterable; the same might be said of many tools and articles in common use.

EXPORT COMMISSION HOUSES.

There are a great many Canadian manufacturers who do an export business, a portion of it being done in an intelligent and satisfactory manner, and a great deal of it done with ungratifying results; and there are others who would like to engage in such trade, and who understand that certain trade formalities should be complied with, but who are in ignorance of them, and therefore decline to venture for fear of having their fingers burnt. The New York Commercial, which gives a great deal of attention to the commercial affairs of that country, particularly to export trade when engaged in by manufacturers, offers some suggestions in that direction which are of equal interest to Canadian exporters. It says:

There are in New York city upward of 300 export commission merchants. Most of these firms have their headquarters here with branches and agencies in various parts of the world, but many are foreign houses with local buying agencies in New York. These concerns do an immense volume of export and import trade in all kinds of merchandise. Their relation to the import trade, however, has no bearing upon the subject matter of this article. As regards the export trade, however, the commission merchants virtually act as purchasing agents of the foreign importers, buying only upon instructions from the foreigners.

If a merchant in New Zealand, for instance wishes to buy American baby carriages, he advises his New York commission merchant to that effect. The latter thereupon obtains prices and catalogues from all American manufacturers whose names he can obtain, forwards the information by quickest mail to his New Zealand client and awaits instructions. In due course of time the New Zealand importer instructs the New York commission house to order a certain quantity of specified styles from one of the manufacturers whose catalogues he has received. The commission merchant then forwards the order on his own blank forms to the manufacturer with full instructions for shipping, packing and invoicing. The goods are invoiced to the commission merchant and the invariable custom among commission merchants is to take advantage of all cash discounts, which means that the manufacturer has his money in hand in ten days, or in most cases, before the merchandise actually leaves New York.

The part of the commission merchant, therefore, will be seen to be mainly clerical. Very rarely does he have any voice in the selection of goods, and never does he have authority to place orders without instructions from his clients, and he cannot be expected to buy goods until he has had instructions to do so, or to place quantities of merchandise in stock, and he certainly is too prudent to tamper with instructions from his foreign clients. He received his compensation in the form of a buying commission paid by the foreigner, and is under contract to give his client full advantage of all discounts offered by the manufacturers.

In some cases where commission houses act as manufacturers' agents, they obtain an extra commission for their services as selling agents, but as a rule they cannot be counted upon for active work in the introduction of American goods abroad. Many of the more conservative houses regard it as beyond their privileges or duties to recommend or advise their clients as between competing lines. Their attitude has to be that of disinterested observance of all the demands and requests that come from their foreign clients.

It will thus be seen that time spent by ambitious manufacturers in an effort to persuade business from the commission houses might be used to better advantage. Instances are common of manufacturers starting out to conquer the world's markets by calling upon the New York export commission trade in the expectation that the commission merchants would at once purchase large stocks of their goods and send them broadcast to their branches all over the world. The commission houses never do that, and the manufacturer who tries to make them do it, only makes himself a laughing stock among them. Their trade is worth cultivating in every sense of the word, and every manufacturer who expects to enjoy any export trade whatsoever, should by all means look for their business and insure their constant attention to his line in anticipation of the time when they will have orders for his goods. But the manufacturer need not expect that he can send one of his salesmen to New York for a journey around the export district and see him returning to headquarters in a week or ten days with a book full of orders.

A large number of manufacturers seem to have only a faint conception of the functions of the commission house in the export trade. Many manufacturers enjoy a large volume of trade with these houses, and fully appreciate their part in the business and their methods of dealing with the foreign importers and the domestic exporters. On the other hand, the impression seems to prevail in some factories and offices that the commission merchants are big jobbers and general dealers for their own account. Nothing could be further from the truth.

GOOD ROADS.

Each year the subject of road improvement is receiving more attention from the rural communities of Ontario. As the season for road-making is rapidly approaching, the municipal councils cannot decide too quickly upon a policy of permanent and successive improvement of their public highways, which are the arteries of trade and intercommunication in the country. The system of statute labor, which was established more than a century ago, has long outlived its usefulness. Statute labor has been aptly defined as "gentle exercise in the open air." It certainly amounts to very little more. Considered from the standpoint of public interest it is costly and unsatisfactory. It lacks continuity, system, and thoroughness.

As the Globe remarks, good roads are a public necessity. They shorten the distance between the farm and the market. They increase the carrying power of the farmer's wagon, thereby saving his time and increasing his profits. They facilitate the marketing of produce and equalize prices, an advan-

tage to country and city people alike. They encourage travel and social intercourse, both of which are of great advantage to rural residents. Good roads are directly responsible for the improvement in the appearance of country homes and the rise in value of farm property.

Statute labor should be commuted, and the resulting revenue might be placed in the hands of a committee of the municipal council, for the purpose of engaging experienced township road commissioners to carry out a definite plan of road improvement. The farmers on each section of the highway will still have an opportunity to do the work, but the money and labor will not be wasted. Proper drains might be provided, ample grading and gravelling done, and the work made continuous and successive from year to year. With permanent road commissioners employed it would pay to purchase the necessary machinery, which does more and better work for the outlay in money and labor.

Every township has for years had the power to do away with statute labor and to establish such a plan for road improvement as it may consider best adapted to the local circumstances. So far over one hundred townships have taken advantage of this privilege, and it is hoped that the movement will continue to spread until the whole Province has a system of permanent and satisfactory highways equal to the best roads in other parts of the world.

ONTARIO'S MINERAL WEALTH.

Returns made to Ontario Bureau of Mines show that the output of the metalliferous mines and works of the province for the six months of 1905 was as follows:

	Quantity.	Value.
Gold, oz.	2,930	\$25,093
Silver, oz....	1,128,212	595,974
Nickel, tons	4,671	1,638,040
Copper, tons	2,256	335,637
Cobalt, tons.	65	80,560
Iron ore, tons	113,583	274,224
Pig iron, tons	116,794	1,510,197
Steel, tons.	64,527	2,070,003
Total.....		\$6,529,728

Of this practically all the silver, all the cobalt, and 32 tons of the nickel were produced from the newly opened mines of Coleman township, in the Temiskaming district. Nearly all the iron ore was raised from the Helen Mine at Michipicoten, and the larger portion of the steel was made at the Algoma Steel Works, Sault Ste. Marie. There were five iron blast furnaces in operation during the half year, one each at Hamilton, Midland and Deseronto, and two at Sault Ste. Marie.

It may be interesting to give the yield of the silver-cobalt mines of Coleman separately:

	Quantity.	Value.
Silver, oz.....	1,121,762	\$592,749
Cobalt, tons.....	65	80,560
Nickel, tons.....	32	3,987
Arsenic, tons.....	281	2,583
Total.		\$684,879

The quantity of ore shipped from these deposits during the half year was 891 tons, so that the average value realized for the ore as shipped was \$768.66 per ton. The average contents of the shipments were 31 per cent.

arsenic, 3.6 per cent. nickel, 7.3 per cent. cobalt, and 1,257 ounces of silver per ton.

The price offered by the ore buyers for cobalt has fallen from 65 cents to 35 cents per pound, and whereas the nickel and arsenic contents of the ore were at first paid for at 12 cents and one-half cent per pound, respectively, nothing at all is now allowed for these constituents. The price paid for the silver is 90 per cent. of the current value of fine silver.

The output for the half year shows an increase in nearly every branch of metalliferous mining, and is decidedly in advance of that for any previous six months.

QUALITY ADVERTISING.

Study the current iron and steel advertisements and you will find a hundred firms content with the mere announcement that they make or sell a certain product to one who offers some reason why his product deserves the buyer's attention. One unacquainted with the facts might easily conclude that the ethics of the iron and steel trade forbade more than the most formal announcement, just as do the ethics of the medical profession, says the Iron Age. Even in correspondence, and in the verbal efforts of the salesman, price is usually the first and often it is the only argument offered, and if quality is mentioned it is too often done in an apologetic way as if there was no expectation of its being believed. And yet there is such a thing as quality in iron and steel, and the mill that will produce goods of quality and will everlastingly and all the time, through every legitimate channel, talk quality will find a response from

the buying world that will bring large returns.

There is a difference, for instance, between a good sheet of steel and a poor one, and the mill that will make a good sheet and will make the world know that it makes it will be able for most of the time to fix its average selling price a dollar or two a ton higher than is secured by other mills. There may be other mills making a product fully as good, but it was observed even in early scriptural times that a light hidden under a bushel were as well not lighted. The example of sheet steel is cited because it is so generally known that the fame of one Pennsylvania mill for the quality of its product endures to this day, after the lapse of many years and important changes in ownership. The name which was made a standard of value, not only brought its creators a fortune, but it is to-day a valuable asset of the corporation that bought it. Any other sheet mill that will to-day produce goods of merit, and insist on their quality on all occasions, can similarly win name, fame and an enduring trade. What is true of sheets is true of almost every other product. It is perhaps particularly true of pig iron, and some day a genius will arise who will make a signal demonstration of the heretofore generally neglected possibilities of quality advertising in that product.

Almost every line of manufacture has in it some one mill whose product is cited by buyers as a standard of value that must be equalled by other sellers. In most cases this reputation for quality lies quite as much in skillful, persistent, convincing insistence on superior quality as in the actual quality of the goods themselves. Such a campaign not only in-

fluences the purchasing departments of a business, but is so far reaching that a black-mob will actually have better success with a bar of iron in which he has faith than in one of exactly the same grade and quality which he does not know. In other words, it is better because he believes it to be better.

Every manufacturer of a machine or tool or mechanical appliance of any kind has it in his power to create a demand for his particular creation by skillfully telling the world of its peculiar advantages. Each has its points of difference from competing makes, and it is these differences that can be made to count even though it be to make a virtue of a necessity.

The ability of an economizer to increase the capacity of an existing boiler plant is well shown by the conditions under which the B. W. Sturtevant Co., Boston, Mass. have installed for the Olympia Cotton Mill, Columbia, S.C., two exceptionally large economizers to be used in connection with 12 vertical Cahall boilers. Not only will the output of the plant be materially increased, but it is contemplated that a fuel saving of at least 20 per cent. will be secured.

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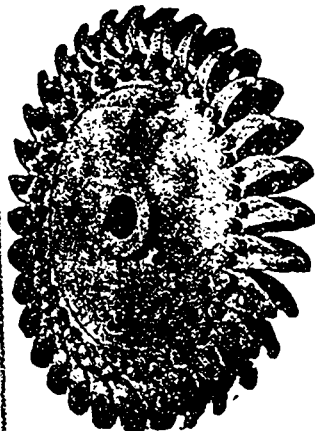
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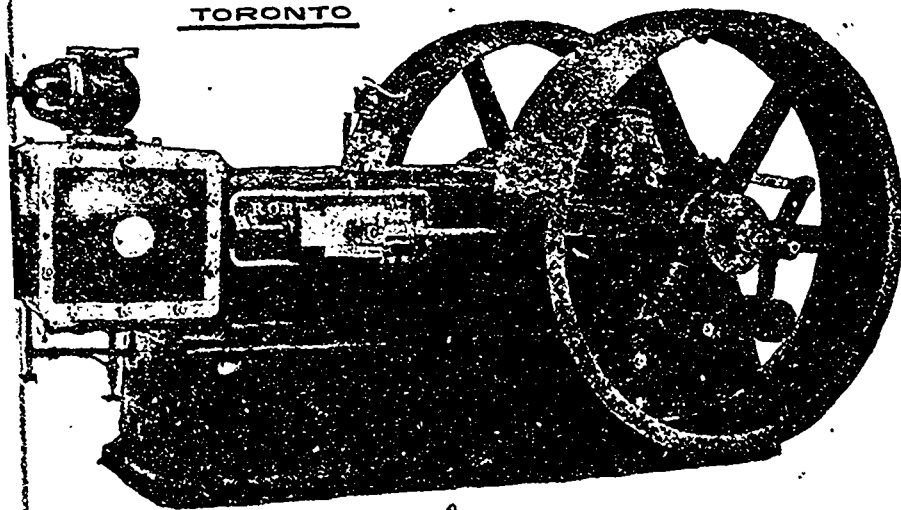
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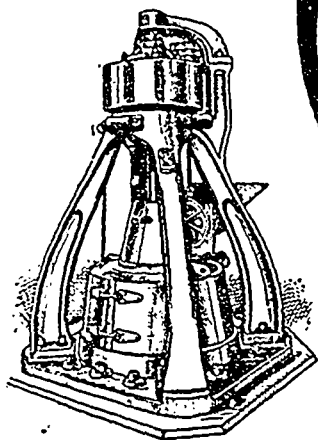
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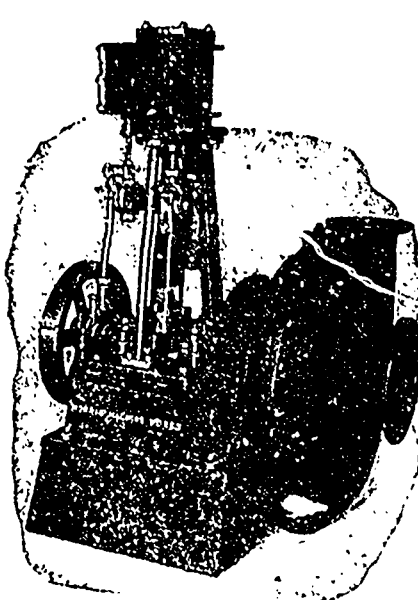
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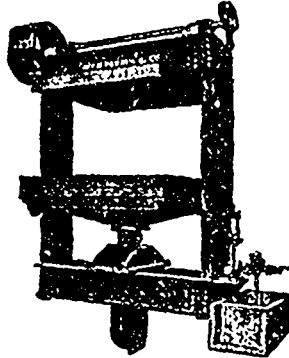
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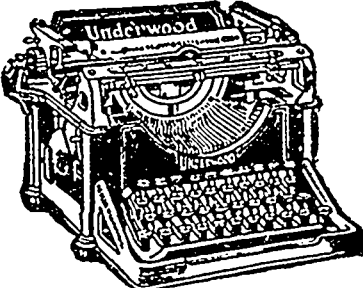
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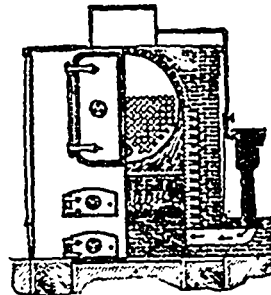
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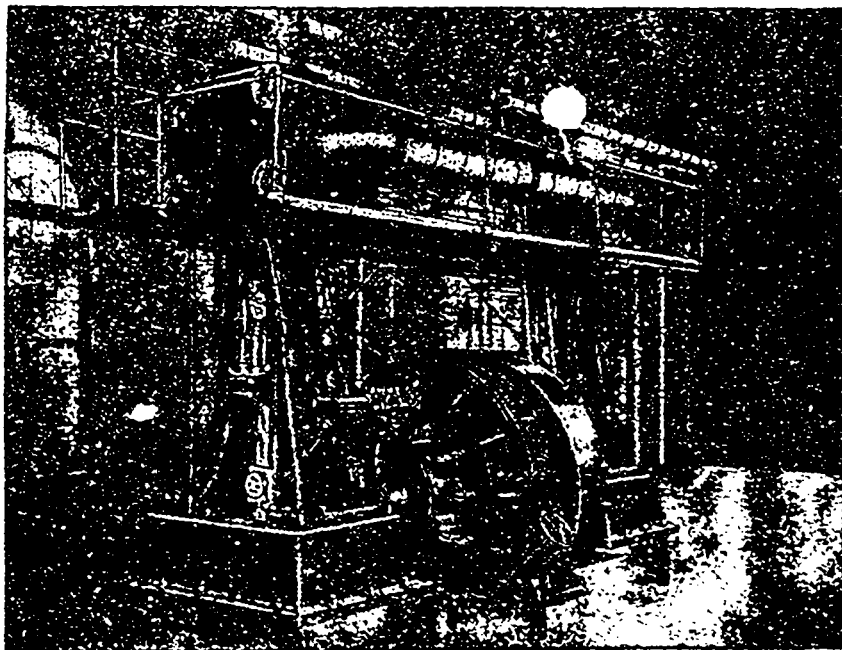
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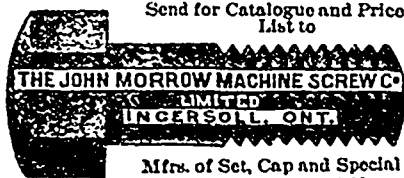
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TORONTO.

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CLASSIFIED INDEX.

(CONTINUED)

Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mig. Co., Peterborough, Ont.
Hopkins, F. H. & Co., Montreal.
Jenckes Machine Co., Sherbrooke, Que.
Morris Machine Works, Baldwinsville, N. Y.
McDougall, John Caledonian Iron Works Co., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.
National Supply Co., Leamington, Ont.
Oil Well Supply Co., Pittsburgh, Pa.
Petrie, H. W., Toronto.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Boston, Mass.
Williams, A. R. Machinery Co., Toronto.

Engravers

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

Exhaust Fans

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

Exhaust Heads

Darling Bros., Montreal.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Hyde Park, Mass.

Exhausters

Schutte & Koerting Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Hyde Park, Mass.

Explorers and Geologists

Evans, Horace F., Ashcroft, B.C.

Factory Sites

(See Factory Locations, page 38).
Board of Trade, Orillia, Ont.
Central Ontario Power Co., Peterboro, Ont.
Hutcheson, S. M., Paisley, Ont.

Feed Water Heaters

Babcock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.
Schutte & Koerting Co., Philadelphia, Pa.

Files

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

Fillet (Pattern)

McLaren, J. C. Belting Co., Montreal.
Sadler & Haworth, Montreal and Toronto.

Filters (Oil)

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

Filters and Filtering Systems (Water)

Babcock & Wilcox, Limited, Montreal.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Financial

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

Fire Brick and Clay

Dunbar Fire Brick Co., Pittsburgh, Pa.
Hamilton Facing Mill Co., Hamilton, Ont.
Pennsylvania Fire Brick Co., Lock Haven, Pa.
Queen's Run Fire Brick Co., Lock Haven, Pa.
Reese-Hammond Fire Brick Co., Boliver, Pa.
Stowe-Fuller Co., Cleveland, Ohio.

Fire Escapes

Darling Bros., Montreal.

Fire Insurance

Inter Insur. Co. of America, New York City.

Flour Mill Machinery

Goldie & McCulloch Co., Galt, Ont.

Forges and Blowers

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

Founders

Canada Foundry Co., Toronto.
Goldie & McCulloch Co., Galt, Ont.
Hamilton, Wm. Mig. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.

Foundry Facings and Supplies

Hamilton Facing Mill Co., Hamilton, Ont.

Fuel Economizers

Babcock & Wilcox, Limited, Montreal.
Schutte & Koerting Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Hyde Park, Mass.

Furniture (Lodge, Opera and School)

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

Galvanizing

Ontario Wind Engine & Pump Co., Toronto

Galvanizing and Tinning Machinery and Furnaces (Wire)

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

Gas and Gasoline Engines

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

Gauges (Recording Pressure)

Bristol Co., Waterbury, Conn.

Gauges (Steam)

Penberthy Injector Co., Windsor, Ont.
Petrie, H. W., Toronto.
Williams, A. R. Machinery Co., Toronto

Gauges (Water)

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

Generating Sets

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

Generators

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

Gloves, Mittens and Moccasins

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

Glue Heaters

Advance Machinery Co., Toledo, Ohio.

Glue Room Equipment

Advance Machinery Co., Toledo, Ohio.

Government Notices

Factory Inspectors,
Minister of Agriculture.

Graphite

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

Grease Cups

Penberthy Injector Co., Windsor, Ont.

Hardware

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

Heating and Ventilating Apparatus

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

Hoisting Engines

Jenckes Machine Co., Sherbrooke, Que.

Hoists (Chain and Pneumatic)

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

Hose (Fire and Pneumatic)

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

Hotel

Gallatin Hotel, New York City.

Hydrants

Kerr Engine Co., Walkerville, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Hydraulic Accumulators

Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Hydraulic Leather

McLaren, J. C. Belting Co., Montreal.
Sadler & Haworth, Montreal and Toronto.

Hydraulic Machinery

Canada Foundry Co., Toronto.
Darling Bros., Montreal.
Hamilton, Wm. Mig. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.

Industrial Plants

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

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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(CONTINUED).

Insulated Wires and Cables

Phillips, Eugene F., Electrical Works, Montreal.

Insurance.

Representatives of America, New York City

Iron and Steel Specialties

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

Injectors

Canada Foundry Co., Toronto.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Penberthy Injector Co., Windsor, Ont.
 Schutte & Koerting Co., Philadelphia, Pa.
 Williams, A. R. Machinery Co., Toronto.

Iron and Steel Inspection

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

Lamps—Electric

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

Lathes

James B F Co., Rockford, Ill.
 Peire, H. W., Toronto.
 Williams, A. R. Machinery Co., Toronto.

Lathes (Wood-working)

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

Loom Reeds.

McLaren, J. C., Belting Co., Montreal.

Lubricators

Penberthy Injector Co., Windsor, Ont.]

Machinists

Goldie & McCulloch Co., Galt, Ont.
 Robb Engineering Co., Amherst, N.S.
 Smith & Martin, Toronto.

Machinists' Supplies

Armstrong Mfg. Co., Bridgeport, Conn.
 Bursfield & Co., Rock Island, Que.
 Goldie & McCulloch Co., Galt, Ont.
 Gutta Percha & Rubber Mfg. Co., Toronto.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Morrow, John, Machine Screw Co., Ingersoll, Ont.
 Peire, H. W., Toronto.
 Smith & Martin, Toronto.

Machine Tools

James B F Co., Rockford, Ill.
 Becker-Brainard Milling Machine Co., Hyde Park, Mass.
 Darling Bros., Montreal.
 Peire, H. W., Toronto.

Malleable Castings

National Harvester Co., Hamilton, Ont.
 Smith's Falls Malleable Castings Co., Smith's Falls, Ont.

Marine and Stationary Engines and Boilers

Allis-Chalmers-Bullock, Limited, Montreal.
 Canada Machine Co., Sherbrooke, Que.

Mechanical Draft

Rock & Wilson, Limited, Montreal.
 Schreier Heating & Ventilating Co., Galt, Ont.
 Scott & Shelton, Galt, Ont.
 Grant, B. F. Co., Boston, Mass.

Metal Stamping

Canada Machine & Stamping Co., Cleveland, Ohio.
 Peire, H. W., Toronto.

Metallurgists

Mills, S. D., Toronto.

Mill Machinery and Supplies

Allis-Chalmers-Bullock, Limited, Montreal.
 Armstrong Mfg. Co., Bridgeport, Conn.
 Becker-Brainard Milling Machine Co., Hyde Park, Mass.
 Darling Bros., Montreal.
 Gartshore, John J., Toronto
 Goldie & McCulloch Co., Galt, Ont.
 Gutta Percha & Rubber Mfg. Co., Toronto.
 Hamilton Brass Mfg. Co., Hamilton, Ont.
 Hamilton, Wm., Mfg. Co., Peterborough, Ont.
 Hawksworth, Alfred, Montreal.
 Hay, Peter Knife Co., Galt, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jonckes Machine Co., Sherbrooke, Que.
 Morrow, John, Machine Screw Co., Ingersoll, Ont.
 McDougall, John, Caledonian Iron Works Co., Montreal.
 McLaren, D. K., Montreal and Toronto.
 McLaren, J. C., Belting Co., Montreal.
 Penberthy Injector Co., Windsor, Ont.
 Peire, H. W., Toronto.
 Reddaway, F. & Co., Manchester, England.
 Robb Engineering Co., Amherst, N.S.
 Spence, R. & Co., Hamilton, Ont.
 Wilson, J. C. & Co., Glenora, Ont.

Milling Cutters and Machines

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

Miners' Lamps

Allis-Chalmers-Bullock, Limited, Montreal.

Mining Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
 Canadian Rand Drill Co., Sherbrooke, Que.
 Corbett, R. B., Brooklyn, N.Y.
 Gartshore, John J., Toronto.
 Hamilton, Wm. Mfg. Co., Peterborough, Ont.
 Hopkins, F. H. & Co., Montreal.
 Jeffrey Mfg. Co., Columbus, Ohio.
 Jonckes Machine Co., Sherbrooke, Que.
 Link-Belt Engineering Co., Philadelphia, Pa.
 McDougall, John, Caledonian Iron Works Co., Montreal.
 Perrin, William R. & Co., Limited, Toronto.
 Peire, H. W., Toronto.
 Schutte & Koerting Co., Philadelphia, Pa.
 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.
 Keystone Engineering Co., Toronto.
 Peire, H. W., Toronto.
 Sturtevant, B. F. Co., Hyde Park, Mass.
 Toronto & Hamilton Electric Co., Hamilton, Ont.
 United Electric Co., Toronto.

Moulding Sand

Hamilton Facing Muds Co., Hamilton, Ont.

Nickel.

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

Novelty Manufacturers

Worth & Martin, Toronto.

Nozzles

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

Office and Bank Fittings

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

Oils and Lubricants

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

Oil Cloth

Dominion Oil Cloth Co., Montreal.

Oil Cups

Penberthy Injector Co., Windsor, Ont.

Oil Well Supplies

National Supply Co., Leamington, Ont.
 Oil Well Supply Co., Pittsburg, Pa.

Paints and Colors

Berry Bros., Walkerville, Ont.
 Goisy, Aniline & Extract Co., New York City.
 McArthur, Cornelle & Co., Montreal.

PATENTS

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J. J. CASSIDY, Manager.

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THE TRADES PUBLISHING COMPANY

102 South 12th Street,
New York Office: PHILADELPHIA
Hartford Building.

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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-Daizell 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.
Syracuse Smelting Works, Montreal.

Pipe Line Supplies

National Supply Co., Leamington, Ont.
Oil Well Supply Co., Pittsburgh, Pa.

Pipe (Riveted, Iron and Steel)

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

Pipe Threading Machines

Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co., Rock Island, Que.
Petric, H. W., Toronto.

Pipes and Tubes

Bourne-Fuller Co., Cleveland, Ohio.
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Montreal Pipe Foundry Co., Montreal.
National Supply Co., Leamington, Ont.
Oil Well Supply Co., Pittsburgh, Pa.

Plaster

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

Plates

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

Plumbago

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

Pneumatic Tools

Allis-Chalmers-Bullock, Limited, Montreal.
Canadian Rand Drill Co., Sherbrooke, Que.

Pointer Rolls (For Rods and Wire)

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

Power Plants—Equipments

Allis-Chalmers-Bullock, Limited, Montreal.
Armstrong, Herbert J., Toronto.
Babeock & Wilcox, Limited, Montreal.
Canadian General Electric Co., Toronto.
Canadian Westinghouse Co., Ltd., Hamilton, Ont.
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.
Keystone Engineering Co., Toronto, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.

Packard Electric Co., St. Catharines, Ont.
Perrin, William R. & Co., Limited, Toronto.
Petric, H. W., Toronto.
Phillips, Eugene F., Electrical Works, Montreal.
Robb Engineering Co., Amherst, N.S.
Sturtevant, B. F. Co., Boston, Mass.
Toronto & Hamilton Electric Co., Hamilton, Ont.
United Electric Co., Toronto.
Wilson, J. C. & Co., Glenora, Ont.

Presses (Tile, Sewer Pipe, Nozzles and Sleeves)

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

Pulleys

Darling Bros., Montreal.
Goldie & McCulloch Co., Galt, Ont.
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.
Petric, H. W., Toronto.
Wilson, J. C. & Co., Glenora, Ont.

Pumps and Pumping Machinery

Allis-Chalmers-Bullock, Limited, Montreal.
American Steam Pump Co., Battle Creek, M.
Canada Foundry Co., Toronto.
Corbett, R. B., Brooklyn, N.Y.
Darling Bros., Montreal.
Downs Pump Co., Downsville, Pa.
Goldie & McCulloch Co., Galt, Ont.
Jonckes Machine Co., Sherbrooke, Que.
Kerr Engine Co., Walkerville, Ont.
Morris Machine Works, Baldwinville, N.Y.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.
Petric, H. W., Toronto.
Schutte & Koerting Co., Philadelphia, Pa.

Punches and Shears

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

Purifiers

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

Purifying and Softening Systems (Water)

Babeock & 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.

Reamers

Butterfield & Co., Rock Island, Que.

Rivets

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

Rock and Ore Crushers

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

Rolling Mill Engineers

Bourne-Fuller Co., Cleveland, Ohio.

Roofing

Bourne-Fuller Co., Cleveland, Ohio.
Pedlar People, Oshawa, Ont.

Rubber Goods

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Packing

Gutta Percha & Rubber Mfg. Co., Toronto.

Rubber Washing Tubs

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

Rural Mail Boxes

Globe Machine & Stamping Co., Cleveland, Ohio.

Safes and Vaults

Goldie & McCulloch Co., Galt, Ont.

Screws

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

Screw Plates

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

Shafting

Allis-Chalmers-Bullock, Limited, Montreal.
Bourne-Fuller Co., Cleveland, Ohio.
Goldie & McCulloch Co., Galt, Ont.
Jeffrey Mfg. Co., Columbus, Ohio.
McDougall, John, Caledonian Iron Works Co., Montreal.
Nova Scotia Steel & Coal Co., New Glasgow, N.S.
Petric, H. W., Toronto.

Shapers and Carvers

Advance Machinery Co., Toledo, Ohio.

Shear Knives

Hay, Peter Knife Co., Galt, Ont.

Sheets (Iron and Steel)

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

Sheet Metal Goods

Globe Machine & Stamping Co., Cleveland, Ohio.
Pedlar People, Oshawa, Ont.

When writing to Advertisers kindly mention THE CANADIAN MANUFACTURER.

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Sheet Metal Stamping

Globe Machine & Stamping Co., Cleveland, Ohio.
Pellar People, Oshawa, Ont.

Smoke Stacks

Hamilton, Wm. Mfg. Co., Peterborough, Ont.
McDougall, John, Caledonian Iron Works Co., Montreal.
Robb Engineering Co., Amherst, N.S.

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.

Sprinkler Insurance

Canadian Casualty & Boiler Insurance Co., Toronto.

Stamps and Stencils

Globe Machine & Stamping Co., Cleveland, Ohio.

Steam Pumps

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

Steam Separators

Babeock & Wilcox, Limited, Montreal.
Darling Bros., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.
Robb Engineering Co., Amherst, N.S.
Sheldon & Sheldon, Galt, Ont.

Steam Specialties

Darling Bros., Montreal.
McEachren Heating & Ventilating Co., Galt, Ont.
Peabody Injector Co., Windsor, Ont.
Schutte & Koerting Co., Philadelphia, Pa.
Sheldon & Sheldon, Galt, Ont.
Sturtevant, B. F. Co., Hyde Park, Mass

Steam Valves

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

Steel Rails

Algona 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.
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.
Wilson, J. C. & Co., Glenora, Ont.

Stocks and Dies

Armstrong Mfg. Co., Bridgeport, Conn.
Butterfield & Co., Rock Island, Quo.
Petrie, H. W., Toronto.
Worth & Martin, Toronto.

Stoppers

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

Structural Steel

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

Sulphate of Alumina

Nichols Chemical Co. of Canada, 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.
Jenckes Machine Co., Sherbrooke, Que.
McDougall, John, Caledonian Iron Works Co., Montreal.
Ontario Wind Engine & Pump Co., Toronto.

Taps and Dies

Butterfield & Co., Rock Island, Quo.
Globe Machine & Stamping Co., Cleveland, Ohio.

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

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, B. F. Co., Rockford, Ill.

Tool Steel

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

Trucks

Corbett, R. B., Brooklyn, N. Y.
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

Tumbling Barrels

Globe Machine & Stamping Co., Cleveland, Ohio.

Turbines

Canada Foundry Co., Toronto.
Hamilton, Wm. Mfg. Co., Peterborough, Ont.
Jenckes Machine Co., Sherbrooke, Quo.
Wilson, J. C. & Co., Glenora, Ont.

Typewriters and Supplies

United Typewriter Co., Toronto.

Valves

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

Valves (Rubber)

Gutta Percha & Rubber Mfg. Co., Toronto.

Varnishes

Berry Bros., Walkerville, Ont.

Ventilators

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

Wagon and Carriage Wood Work

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

Washers or Hollinders (Cleaning Rubber)

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

Watchman's Clocks

Eco Magneto Clock Co., Boston, Mass.

Water Power Development

Vogel, C. H., Ottawa.

Water Purifying Chemicals

Canada Chemical Mfg. Co., London, Ont.

Windmills

Ontario Wind Engine & Pump Co., Toronto.

Wire Mill Supplies

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

Wire and Wire Rope

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

Wood-Working Machinery

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

Zinc

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