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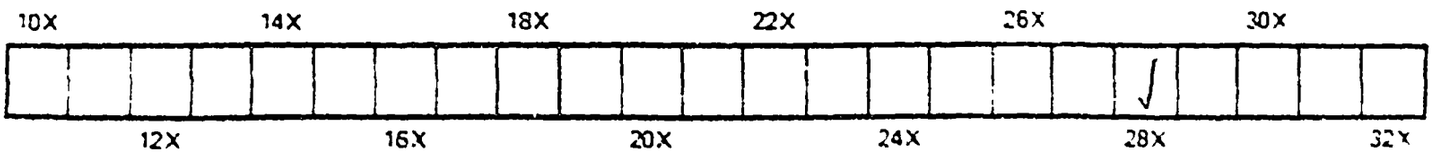

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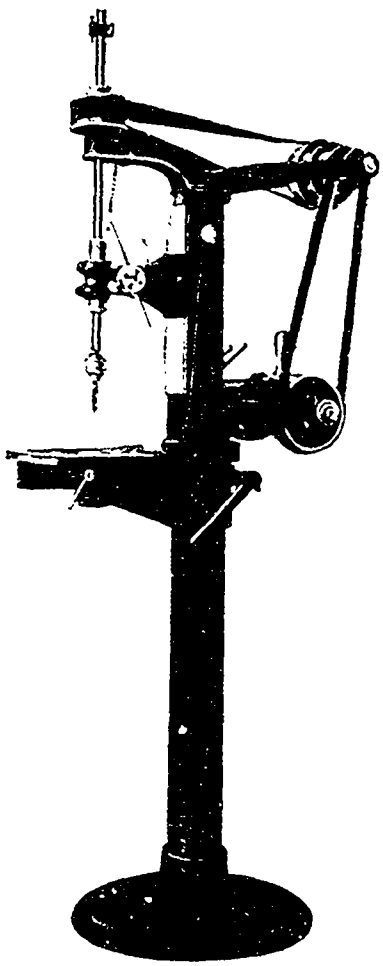

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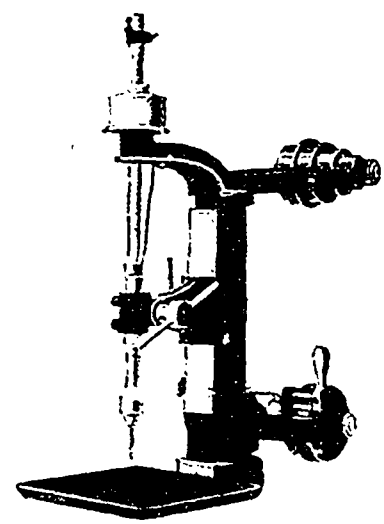

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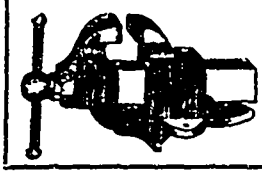

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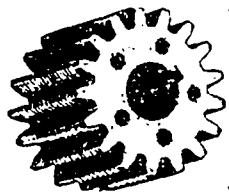

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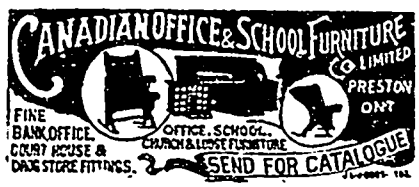

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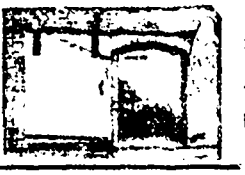

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Before the invention of the electric furnace, artificial abrasives suitable for grinding wheels were unknown. Wheel manufacturers necessarily depended upon natural products,—chiefly corundum and emery. As emery occurs in considerable quantities in various parts of the world, it came to be recognized and used as the chief raw material for grinding wheels and other products employed in grinding metals. On this account the modern grinding wheel made of any abrasive is popularly known as the "emery-wheel."

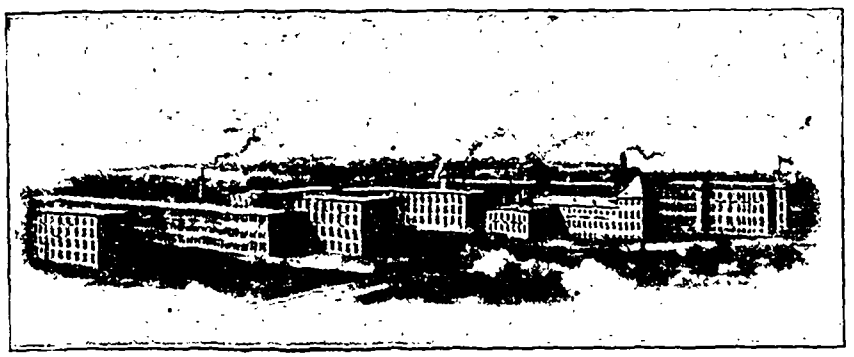

Fig. 1.—The Manufacture of Abrasives—View of the Plant.

The Norton Co., in the constant aim to develop more efficient grinding-wheels and materials, has during the past few years been operating an electric furnace plant at Niagara Falls, in which has been developed and brought out an abrasive known as alundum, which possesses the characteristics of sharpness, uniformity and right temper, a combination not to be found in any other abrasive.

The introduction of alundum in the field of grinding has been remarkably successful and rapid. The requisites sought for and attained in this abrasive are extreme hardness and sharpness, combined with uniformity and proper temper. These qualities in alundum have had much to do with its successful development.

The process of making alundum consists in taking the purest amorphous oxide of aluminum found in nature and known as the mineral Bauxite, purifying and melting it in immense electric furnaces, the power for which is furnished by the falls of Niagara. Upon cooling this molten mass solidifies in solid ignots of alundum. Beautiful crystals are found in the centre of these masses, showing nearly all the variety of colors found in the ruby and sapphire, of which alundum is one variety. The rarer tints of light pink, blue, and purple are found in oriental gems are sometimes noticed in small crystals.

Bauxite the raw material from which alundum is made, is the purest naturally-occurring amorphous oxide of aluminum known. This mineral was originally found at Baux, France, from which it derives its name, but purer forms are now obtainable on this continent. The best quality only is used in the manufacture of alundum, and in its preparation practically all impurities are removed. The high grades of Bauxite used are of rare occurrence. The Norton Co., however, owns its own mines from which the purest grade is obtained.

The Bauxite is heated in calciners to drive off the combined water, and is then melted directly in electric furnaces of special design. It was not practical to fuse Bauxite commercially until the invention of this process. The temperature in these furnaces probably ranges from 5,000 degrees to 6,000 degrees Fahrenheit.

The operation of these furnaces and the composition of the molten bath is under the control of the furnace operative. Exact quality and uniformity which is so important in steel manufacture, is fully as important in the manufacture of alundum. The highest grades of steel are now being made in electric furnaces because impurities can be removed at the high temperatures obtained by the electric arc, and the quality of the molten bath uniformly maintained. In the alundum furnace both the purity and uniformity of the alundum is assured. Each step in the process is under the close supervision of expert chemists who are constantly directing and following the work by careful analysis in Norton Co.'s chemical laboratory.

After the ingots of alundum have cooled they are broken up and the pieces are then reduced to smaller pieces by means of powerful crushers. After this reduction, the material is still further reduced by being passed through smaller crushers and several sets of grains which are required in the manufacture of grinding wheels. After passing through rolls, it is subjected to the usual washing and drying processes to prepare it for manufacture into grinding wheels, rubbing and sharpening stones, and other articles.

The solid massive alundum, while resembling the purest natural corundum in chemical composition, has the remarkable quality of being considerably harder than the natural product. This is due to the perfectly fluid condition in which the mass is brought, the control of its composition, the rate and method of its cooling and solidifying by which it receives its temper, the absence of water of combination (which almost invariably exists in natural corundum).

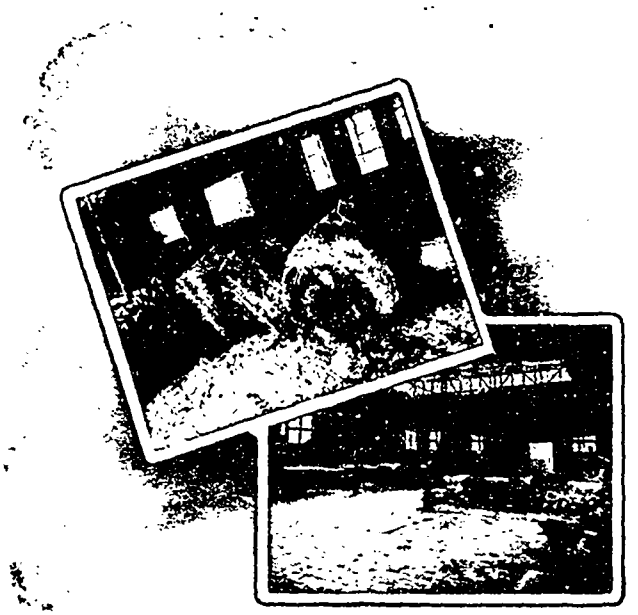

Fig. 2.—The Manufacture of Abrasive.

The necessary requisites for the most efficient abrasive for grinding wheels are:

1st—Sharpness.
2nd—Hardness.
3rd—Right Temper.
4th—Uniformity.

FIG. 3.—THE MANUFACTURE OF ABRASIVES.

In order to insure rapid and continued cutting so far as sharpness is concerned, a peculiar quality is necessary. There must be a fracture which will give a number of sharp-cutting points. This is obtained in alundum to better advantage than in any other abrasive material.

In the matter of hardness, the recognized standard is the diamond, which is the No. 10 in the scale of hardness; nothing that man has yet discovered or made equals the diamond in hardness. The term "hardness" is, therefore, a comparative term, the hardness of a mineral being ascertained by its ability to scratch another mineral of a known degree of hardness, or to be scratched by such a mineral.

Pure crystalline corundum, represented by the best sapphire or ruby, has always been the standard for No. 9 in the scale of hardness. This is readily scratched by alundum; in fact, alundum powder is used for cutting and drilling rubies and sapphires for watch jewels, etc.

By "temper" is meant its strength of grain and the character of its fracture under grinding pressure. An alundum grain is remarkably tough and will stand more crushing pressure before breaking than any other abrasive grain but when it does break it breaks with a sharp, crisp fracture, giving a fresh, keen-cutting edge. This is most important quality in an abrasive.

Purity, besides resulting in greater hardness and better temper, is necessary in the bonding of the grain into wheels in order to secure accurate and uniform results. Uniformity is necessary to secure constant efficiency of grade and temper in a wheel, so that wheels can be accurately duplicated at any time and maintain their standard of work.

Uniformity is one of the most important requisites in an abrasive. The ability to duplicate grinding wheels is essential to obtain the best results. In grinding-wheels the abrasive grain of a given size is bonded together to produce a certain grade or temper for a certain kind of work. The term grade, as applied to wheels to designate the degree of hardness, is the resistance of the particles to the pressure employed in the act of grinding. A wheel from which the particles are easily broken is called soft while one which retains its particles longer is called hard. Wheels are *graded from soft to hard* depending upon the class of work on which they are used. Different grades of wheels are obtained, according to the amount of bond employed, the wheel becoming harder as the amount of bond used increases.

Different grades are required for differ-

FIG. 5.- THE MANUFACTURE OF ABRASIVES.

materials to be ground; cast iron, steel, brass glass, bone, leather, wood and other substances demand wheels of special grade which must be duplicated to make the grinding operation continuously efficient.

It is for this most important reason that great stress is placed on evenness in quality of the abrasive itself. Grades cannot be duplicated accurately without having a known and dependable factor in the uniformity of the material composing the wheel and this requisite is to the highest degree found in alundum.

The last step in the process of manufacturing the Norton wheel, is testing for safety, shown in cut.

Then a record of each wheel is entered on a prepared form with description on wheel, number of revolutions, order number, and for whom the wheel is intended. This record is signed and sworn to by the tester of the wheels each day before a Justice of the Peace, and carefully filed by the Norton Co. A record is preserved of each order so that it can be duplicated exactly as to composition, cutting quality, shape and size.

Very few people realize the many uses for which grinding wheels are employed. They are used in the machine shop for sharpening all kinds of tools, cutters, reamers, taps, dies, etc In the foundry for grinding castings. The sawyer gums and files his saws with an alundum wheel with no danger of drawing the temper of the tool. The leather manufacturer finishes the leather for Suede gloves on a grinding wheel. The manufacturing optician grinds the edges of lenses for eye glasses. In the great glass works beading fluting, edge grinding of tumblers, checkering fine stars, and fine work of all character calls for grinding wheels and abrasive stones.

Canadian manufacturers or other users of grinding wheels desiring more detailed information regarding alundum should apply for same to the Canadian Fairbanks Co., Limited, the Canadian selling agents for the Norton Co. As large stocks are carried in their warehouses at Montreal, Toronto, St. John, Winnipeg, Calgary and Vancouver, and as catalogues and booklets fully describing the product will be sent for the asking, full information can readily be secured by any buyer.

Steel Belting in Germany.

U S. Consul F. S. Hannah, at Magdeburg, Germany, writes that in a recent issue of a German technical paper, the use of steel bands to take the place of leather belting for the transmission of power, is stated to have proved practicable after repeated tests by a firm in Charlottenburg, its advantages being given as follows:

The points of superiority claimed for this new method for the transmission of power are the following: On account of its solidity, a much narrower band can be used, one-sixth of the width of the usual leather band being sufficient; as a result of this the steel band is not so heavy as the usual leather band, and, as it can be very tightly adjusted, the distance between the engine and the machine is not a matter of importance, as is the case with the leather belting, where the transmission of power is dependent upon the weight of the hanging belt; by a unique contact the slipping is much reduced, experiments having shown that this does not exceed one-tenth of 1 per cent Careful and repeated experiments have shown that the entire loss of power is very small, and as far as can be ascertained, will not exceed 1 per cent. Further, owing to the lightness of weight of the steel belting, it is claimed, the influence of the centrifugal force is not so great and allows of much increased velocity.

FIG. 4.—THE MANUFACTURE OF ABRASIVES.

LOCKERBY & McCOMB.

The various methods of using tarpaper and tarred felt in roofing were well illustrated in the exhibit of Lockerby & McComb, of Montreal, at the Canadian Builders' Show. Models of four common types of roof were shown.

The various stages in the construction of the hopper tar felt roof were shown. The hopper roof is growing in favor because, draining to the centre it dispenses with the need of gutters, and all danger from icicles.

A hip or slanting roof covered with 3 ply ready roofing was shown. This roofing is recommended for work of a temporary nature and is good ordinarily from five to ten years.

The dead air space roof shown in another model, is one that is growing in favor. This is really a double roof, the air space serving to make it cooler in summer and warmer in winter, and the double layer is an additional insurance against leaks.

During the ten years that they have been in business in Montreal, Lockerby & McComb have built up a large connection. Previous to the formation of the present partnership, they were for many years connected with one of the largest roofing firms in Canada. A serious fire completely destroyed their plant last January, but with characteristic energy they proceeded to rebuild, and it is now fully equipped again with the most up-to-date machinery.

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THE CANADIAN NATIONAL EXHIBITION.

We have just received an announcement from Dr. J. O. Orr, manager of the Canadian National Exhibition, Toronto, to the effect that applications for space at this year's exhibition, August 25 to September 4, should be made at once. Allotment is now being made and the applications to date are largely in excess of previous years.

The manufacturers of Canada are to be congratulated as well as complimented on the continued popularity and steady expansion of the Canadian National Exhibition for the exhibition is, on the one hand a yearly demonstration of the enterprise and mechanical skill of Canadian manufacturers, while the increasing attendance by the best class of the country's population opens to the manufacturer an opportunity, of steadily increasing value, to show buyers the improvement in his product from year to year and thus to advertise in most effective manner his wares.

The management of the Canadian National Exhibition have spared neither effort or expense to provide suitable buildings for the display of manufactured goods. The Manufacturers' Building and the Process Building are ideal for their purpose. A new Machinery Hall is promised in the near future.

With an able, far-sighted management, with a favorable attitude on the part of all classes of manufacturers and with an assured attendance of increasingly enormous proportions it is but natural that applications for space should for year to year be in excess of former records.

THE FORESTRY QUARTERLY.

We have received for editorial review a copy of the Forestry Quarterly. This publication was formerly published in the United States, but as Prof. B. E. Fernow, its editor-in-chief, formerly chief of the Forestry Bureau at Washington, is now Dean of the Faculty of Forestry at the University of Toronto, the journal is published by that University.

It is a creditable publication, one which should find a permanent place in a country where forestry preservation means as much as it does to Canada. Its usefulness will be understood from the following list of articles in the table of its contents: "Logging by Steam", "Notes on the Girard Estate Forest Plantations", "Management of Spruce and Hemlock Lands in West Virginia"; "Extending a Log Rule"; "Periodical Literature."

We would suggest, however, that inasmuch as the University of Toronto are sponsors for this publication, and as that University is supported by the public funds of Ontario, that care be exercised to prevent discrimination against Canadian manufactures. In the number to hand is a glaring case of such discrimination. In connection with the articles on "Logging by Steam" a list of wire rope and logging engine manufacturers is given. The list, however, is limited to United States manufacturers, Canadian as well as British producers of these lines being excluded.

This criticism is offered in the most cordial spirit, for we believe "The Forestry Quarterly" has before it a wide field for usefulness in Canada and we have every confidence that Prof. Fernow will quickly give to it that touch with Canadian conditions and sentiments which will make it most useful and instructive in the constituency which its publishers serve.

CANADIAN ELECTRICAL ASSOCIATION CONVENTION POSTPONED.

Owing to the convention of the American Foundrymen's Association at Toronto from June 8 to 12, and the consequent fact that practically all the rooms in the leading hotels in Toronto had been reserved for visitors to that convention, the Canadian Electrical Association have decided to postpone their convention to Wednesday, Thursday and Friday, June 17 to 19.

THE WOOLEN INDUSTRY IN CANADA.

The woolen industry of Canada is being sacrificed on the altar of British preference. Nine years ago there were 270 cloth and tweed mills in Canada, with 2,645 looms; now there are 197 mills in operation, with 1,706 looms.

When the preferential tariff was brought down THE CANADIAN MANUFACTURER drew attention to the fact that the reduction of duties on English and Scotch tweeds and cloths would surely work disaster on Canadian mills. From year to year this paper has published statistics to show the increasing import of this product of British mills, while Canadian mills were at a standstill.

Now, when lack of sufficient protection on the one hand, the contraction of demand on the other, has worked

havoc through the textile mills of Canada, there is a general tendency to heed the warning which this paper has repeatedly given. On the following page we print three extracts from papers in Toronto, Montreal and Halifax, which show the increasing recognition of the danger threatening one of the most important industries in Canada.

WANTED A CERAMIC SCHOOL.

Canada is determined to rise above the station of hewers of wood and drawers of water for the world at large.

It is to-day recognized that this country has not only a wonderful heritage in its natural resources, but a still more valuable asset in the industry and mechanical skill of its workmen. We have learned, too, that our industrial development depends largely on our bringing, within our own boundaries, our raw material to the most highly finished state of manufactured product.

A few years ago the Dominion and the Ontario Governments both saw fit to offer ample bonus on the production of pig iron, to encourage the establishment of an iron industry. In this action they have been supported by a practically unanimous public opinion.

The value of brick, tile, terra cotta, sewer pipe, pottery, glass and other clay products manufactured in Canada will approximate, if it does not exceed, the total production and importation of pig iron. On the production of these goods at minimum costs depends in large measure the building operations throughout the Dominion.

The Canadian Clay Products Manufacturers Association is the recognized organization of clayworkers in Canada, though its membership is largely from Ontario. They have asked for but one act of consideration, from the Ontario Government, and that a concession which in the outlay entailed is a mere bagatelle to what was cheerfully given to the iron industry.

A ceramic school, or, to put it in simpler language, a course in Ceramics, at either the School of Practical Science, Toronto, or the School of Mines, Kingston, is urgently wanted.

In another column will be found an address by Mr. R. H. Straight, a graduate of the Illinois Ceramic School on "The Ceramic School, Its Value to the State and the Clayworking Trade." We commend this paper to the clayworkers of Ontario, to the Minister of Education, and to the president and the faculty of the University of Toronto.

MEETING OF THE SHAREHOLDERS OF THE CANADIAN MANUFACTURER PUBLISHING CO., Limited

The Shareholders of the Canadian Manufacturer Publishing Co., Limited are hereby notified that a General Meeting of the Company will be held on Monday, the 1st day of June, 1908, at the hour of 11 o'clock in the forenoon, at the Head Office of the Company, Room 408 McKinnon Building, corner Jordan and Melinda Streets, Toronto, for the purpose of receiving and considering a report from the Directors upon the affairs of the Company, to elect a Board of Directors for the ensuing year, and to consider, generally, such business of the Company as may be presented.

ETHEL CASSIDEY,
Secretary.

Dated at Toronto this 15th day of May, A.D., 1908

The Woolen Industry of Canada Threatened With Ruin.

EXTRACTS FROM ARTICLES ON THE SUBJECT IN CANADIAN PAPERS.

THE WOOLEN INDUSTRY.

(From the Montreal Gazette.)

The statements made by Mr. Fisher on behalf of the Government on Thursday indicate how seriously the woolen industry of Canada has suffered while the Laurier-Fielding tariff has been in force. In 1900, after the tariff had assumed its present shape, there were in operation in Canada 157 mills making woolen goods and six making woolen yarns. The capital employed was $10,563,000 and wages were paid to 6,863 workers of various grades. In 1905, when the tariff was fully effective, there were in operation 103 mills making woolen goods and three making woolen yarns. The capital employed was $971,000, and wages were paid to 4,667 workers. The increase in five years was 57 in the number of mills, $3,514,000 in the capital employed, and 2,196 in the number of workers to whom wages were paid. All this took place in a time of trade expansion, the latest figures being for a year that closed eighteen months before the general collapse occurred. It is noted in the same connection that while the importation of wool has fallen off, the imports of woolen fabrics, etc., have greatly increased. Here is the record of importations of woolen manufacturers since 1897, the year the Laurier tariff became law:

1898	$8,115,209
1899	9,674,775
1900	9,973,307
1901	9,830,402
1902	10,962,608
1903	13,612,942
1904	15,219,721
1905	15,607,010
1906	17,482,570
1907	14,873,114
1908	21,213,234

The meaning of all this is so clear that any who read

may understand. The tariff has encouraged the importation rather than the manufacture within the country of woolen goods. It has not made the people rich.

WOOLEN MANUFACTURERS AND THE TARIFF.

(From Industrial Canada.)

The preferential tariff was a hard blow to the woolen manufacturers of this country. Some mills were forced to close down as a result of it, and others have struggled along under the most unfavorable and unfair conditions. In addition to the hardships, which our manufacturers have to bear by reason of the preferential tariff, they have also to face the unfair competition of the British exporters, who have been "dumping" woolen goods into Canada at much lower prices than are obtained in the British market. The average customs appraiser is not competent to pass judgment on the qualities or value of woolen goods, and the "dumping" goes on unchecked. This state of affairs has been borne by the woolen manufacturers with as much patience as possible; but the time has now arrived when the Government must give them some relief, or see one of our most important industries wiped out. A deputation, representing the woolen manufacturers of Canada, waited upon the Government last month, and laid the whole case before the Ministers. They asked for a reasonable increase in the present duties, which would ensure a fair amount of protection. They also asked that the Government add to the staff of the customs department men familiar with both woolens and cottons, and competent to detect under-valuation in these lines, and stop the "dumping" that is now going on. The request is a reasonable one, and if the Government realizes what a vital matter it is for this branch of industry, they will surely see the justice of the demand and accede to it.

RUIN OF THE WOOLEN INDUSTRY IN CANADA.

By Textiles in Halifax Herald.

During the past two years the farmers of this province have been treated to an educative campaign in the value of sheep raising, and a good deal of provincial government money has been expended to awaken public interest, and improve the quantity and quality of the wool product. This is a laudable effort as far as it goes, but unless immediate attention is given to the commercial side of the proposition, nothing but loss and disaster can result to all concerned.

To make a success of wool raising all will admit the necessity of a wool market; also, the nearer the market the better the price and the less loss through middlemen, freights, etc.

As a matter of fact, the wool producers of this province must depend almost entirely on the local markets, as they can never hope to compete with the wool growers of Africa, Australia or our own West, who glut the markets of the world.

It is therefore evident that to insure farmers good prices for their wool, the manufacturers who use the wool must be able to sell their goods at a profit, and the greater the prosperity of the latter class the better the market for the local farmer.

Now, in what condition do we find the cloth manufacturers of Canada to-day? While the liberal press have been shouting of the boundless prosperity of the past few years, we find here an old established industry, with a vast amount of invested capital—that was in a prosperous and growing condition when the Liberals came into power—wantonly wrecked by tariff bungling and to-day ruin and disaster confront the entire woolen cloth industry of Canada. If anyone questions the correctness of this statement, let him look for a moment at the trade figures. The Canadian Textile directory furnish the following:

	1885.	1899.	1908.
Number of cloth and tweed mills.	240	270	197
Number of looms.....	1,885	2,645	1,706
Number of spindles.....	107,870	194,086	175,378

A comparison of these figures show that while under the Conservative tariff the business made satisfactory growth, under the Fielding tariff loss and failure have been the continued result, until to-day sees, despite the increase in population, 73 idle mills, (comprising 27 per cent. of the cloth mills of Canada), 1,000 looms, and 20,000 spindles rusted and worthless—mute testimony to the deadly skill of Nova Scotia's incomparable tariff-framer. And all this in "Canada's Century," and the national growing time. On the other hand, how about the woolen imports? Let us look again at the figures:

In 1902 the woolen importations were $12,623,107.

In 1907, the woolen importations were $21,415,044.

An increase in five years of 69 per cent., 27 per cent less mills, 69 per cent. more woolens imported in five years.

How many more years until the last Canadian dollar invested in the wool industry will be confiscated, and the last spark of Canadian enterprise extinguished by the flood of shoddy woolens dumped on our market, composed chiefly of filthy rags, gathered in the city slums of the old world's cities.

In former days, when a man bought a suit of cloth he got at a reasonable cost something that stood with him against wear and weather, and lasted until he was ready to buy another. Made of Canadian wool by Canadian workers. When he invests to-day he gets clothes composed of a modicum of wool, and the balance rotten rag, shoddy, worked up by the wonderful art of the old world's pauper-paid help to deceive the eyes of the very elect. But when the test of wear is applied it swiftly resolves itself again into its former state of rags.

The United States of America, with all its strength, wealth, and mechanical genius, finds it compulsory to maintain a prohibitive tariff against European shoddies. How can it appear possible to anyone that here in Canada the business could live, with practically the open door to this unfair competition.

As might be supposed, the manufacturers have looked supinely still while their property was being thrown on the scrap pile.

Delegation has followed delegation, year after year, to impress on the government the urgent necessity of relief, only to see their efforts barren of results, and to be met with the flippant suggestion from the finance minister that they "work harder," and so alleviate their losses. In consequence, the farmer when marketing his wool this season will get from 40 per cent. to 60 per cent. less than he did last season. And he is wise who, before increasing his flocks or investing in high priced stock, will see to it that the power of further wrecking the Canadian woolen industry is removed from its manifest foes, viz., the present Finance Minister and the Liberal Government.

The Canadian Builders' Exhibition at Montreal.

MANY EXHIBITS OF INTEREST TO MANUFACTURERS AND OTHER PROSPECTIVE BUILDERS AS WELL AS TO BUILDERS, CONTRACTORS, ETC.

In spite of all talk of scarce money and reduction of building operations, the Second Annual Builders', Contractors and Hardware Exhibition, held in the Coliseum, Montreal, from April 20 to 30, was a better exhibition and was more largely attended than a year ago. So great, indeed, was the interest shown by the public during the first week that the show, which was originally arranged to last from April 20 to 25 had to be extended to April 30.

The appearance of the great building, on the evening of the 20th, when the show was formally opened, was attractive, indeed. A uniform color scheme of pink and green was carried out in all the decorations and the artistic skill shown in the arrangement of the different displays reflected credit on the enterprise and energy of the exhibitors.

The list of exhibitors included:

Armstrong Cork Co., Montreal.
F. Hyde & Co., Montreal.
Swan, Church & Co., (Clinton Fireproofing Co.), Montreal.
Pedlar People, Oshawa.
Warden, King & Co., Montreal.
Dominion Radiator Co., Toronto.
Geo. W. Reed & Co., Montreal.
Brantford Roofing Co., Brantford.
Hill Electric Switch Co., Montreal.
Alex. McArthur & Co., Montreal.
Special Machinery Mfg. Co., Montreal.
Martel Stewart & Co., Montreal.
E. F. Dartnell, Montreal.
Laprairie Brick Co., Montreal.
Lockerby & McComb, Montreal.
Montreal Terra Cotta Lumber Co., Montreal.
Sovereign Lime Works, Montreal.
Gurney, Massey & Co., Montreal.
Montreal Wood Mosaic Flooring Co., Montreal.
Geo. A. Goodfellow, Montreal.
Robt. Mitchell & Co., Montreal.
Seaman Kent & Co., Toronto.
Hyde & Webster, Montreal.
Frank Ramsay & Co., Montreal.
Window Strip Co., Montreal.
The Lakefield Portland Cement Co., Montreal.

"Contractors' Reports," "Construction," and THE CANADIAN MANUFACTURER also had booths in the exhibition.

THE ARMSTRONG CORK CO.

That it is cheaper to keep heat out of a building, than to allow it to enter and then remove it, is the doctrine taught by the Armstrong Cork Co.

Being the bar' of a tree growing under conditions of extreme heat and dryness, cork may be said to be the last word of nature on insulation. It is composed of a multitude of minute air cells. It is, therefore an excellent insulation of heat and it also has no capillary attraction, and is non-absorbent.

The earliest form of cork insulation was merely to fill in the spaces between joists with granulated cork. The nonpareil cork boards applied by the Armstrong Cork Co., consist of small granules of natural cork compressed in moulds and baked at a high temperature. This process liquifies the natural gum of the cork, and forms the interstices between the granules into small closed air spaces. These added to the myriads of minute air cells in the natural structure give nonpareil cork great nonconducting value. As the moulds cool, the natural gum hardens and the granules form the solid moulded cork boards. A cement finish adheres readily to the surface.

For lining cold storage rooms where there is an excessive amount of dampness or splashing of water, such as stock houses and racking rooms in breweries, ice storage rooms and cooling and chilling rooms in packing houses an impregnated cork board is made. This board consists of granulated cork and a waterproof substance thoroughly mixed and moulded into board form.

Cement finish adheres as readily to impregnated cork board as to nonpareil.

In the booth of the Armstrong Cork Co. were shown solid cork partitions in one and two thicknesses. Attention was called to the fact that when the double thickness is used, care is taken to break all joints both horizontally and vertically.

Samples of cork board were also shown covered with cement and plaster finish. For the curious there were jars of granulated cork, and samples of the asphalt used.

The booth was attractively arranged and in a large framed picture of the works of the company at Pittsburg, Pa., gave some idea of the importance of the industry.

The Armstrong Cork Co. have insulated the plants of A. A. Ayer & Co., Limited, Gould Cold Storage Co., D. B. Martin Co., and many other concerns in Montreal, and throughout Canada.

Mr. W. G. Kent, the manager of the Canadian Branch, Coristine Bldg., Montreal, was formerly with the Linde British Refrigeration Co., and is well known in this field.

ARMSTRONG CORK CO MONTREAL, AT THE MONTREAL BUILDERS' SHOW

ROBERT MITCHELL & CO.

The Robert Mitchell Co., Limited, had several new lines of interest on view. One of these that aroused great interest was Metile, a substitute for, perhaps an improvement on tiling for lavatories, bathrooms, etc. It is made by enamelling a flexible non-rustable sheet of metal with a special Metile enamel. These sheets are embossed by special machinery and were shown in a variety of patterns, which could not be distinguished from the best grade of tiles. Crystopal wall facing is another product of great merit, which has found great favor when used in kitchens, meat safes, refrigerators, lavatories, and cisterns. This is an opal surface which can be applied to any surface, and is unique in that an elastic adhesive medium is inter-

posed between it and the surface to which it is applied, protecting it from the results of changes of temperature. Seamless steel porcelain bathtubs and Nethery flush valves, for closets, aroused interest among householders.

FRANCIS HYDE & CO.

Brick, stone, cement, drain pipes, and wheelbarrows could hardly be shown in a manner that would appeal better to the practical eye of the builder and contractor, than they were in the exhibit of Francis Hyde & Co., at the Canadian Builders' Show.

The interior of the booth was comfortably furnished with tables and chairs for the convenience of visitors, and was arranged with attractive displays of brick and cement. Many favorable comments were passed on the flooring of the booth, which was constructed of imported Welsh quarries of a deep red color, laid in black mortar. A novel idea was carried out in the display of drain pipes, which were arranged in such a way as to form a railing which, combined with a number of palms and potted flowers placed in conspicuous places formed an attractive fence around the booth.

A prominent place in the exhibit was given to the products of the Harbison-Walker Refractories Co., one of the largest fire brick manufacturers in the world, for whom Hyde & Co., are Canadian agents. A feature was made of the building brick manufactured by this concern, and is now being introduced in Canada. It can be supplied in 35 different shades, and although but a short time on the Canadian market, it has already made a name for itself, and will be used on several buildings of note this summer.

The samples of art stone, made by the Canadian Art Stone Co., Limited, of Toronto, showed a distinct improvement over a year ago, this being the result of a new process of manufacture.

The brands of cement carried by Hyde & Co. are in line with the high standard of their other goods, being the "Iron Clad," one of the best known American brands, the "International," one of the leading Canadian brands, and "Lafarge," the only non-staining cement on the market, which is so successfully used in the manufacture of art stone.

Wheelbarrows and scrapers will always interest the contractor and builder. Attention was directed to a line of barrows and concrete carts, built by the Lansing Wheelbarrow Co., for whom Hyde & Co. are Canadian agents, and which are designed to meet the special needs of contractors, and to do the most work possible with the least labor.

It is only fair to say that much of the credit for the success of the Builders' Show is due to such firms as Francis Hyde & Co., who spared neither time, labor nor expense to present a display symbolic of the progress which has been made in the builders' and contractors' supply line in recent years, and they are to be congratulated on having made their exhibit one of the chief features of the exhibition.

THE RADIATOR DISPLAYS.

Radiators seem to lend themselves exceptionally well to the production of artistic effects in exhibits.

The Gurney Massey Co., Limited were calling special attention to the push nipple joint used in their radiators. This push nipple is made of heavy steel tubing tapered one degree each way, and forms a perfect ground joint, fitting like a glass stopper in a bottle, dispensing with the use of paper or other fibrous material for packing.

The central feature in their booth was a Bright Idea safety sectional hot water boiler. With this boiler it is possible to shut off one or more sections in case of accident without interfering with the rest of the boiler at important point where an accident would otherwise cause the complete breakdown of the heating system.

Warden, King & Co. also had an attractive display. The 1908 Daisy boiler received a fair share of attention, and the well known "Viking" was in evidence. A pleasing assortment of King radiators from the large new King Radiator plant at Toronto was also shown. A part of the booth was fitted up as a stable to show the Warden King & Co's well known line of stable fittings.

The Dominion Radiator Co. Limited made a feature of a mammoth "Triumph"

FRANCIS HYDE & CO., MONTREAL, AT THE MONTREAL BUILDERS' SHOW

steam boiler, with a capacity of 10,800 feet. A new Safford hot water heater was shown for which it was claimed that it would run eight hours with one firing.

GEO. W. REED & CO., LIMITED.

A building of fireproof construction throughout every section of which had some feature of interest to the builder, was the most striking feature of the exhibit of Geo. W. Reed & Co., Limited, of Montreal.

The windows and doors of this building were built of sheet metal, and THE CANADIAN MANUFACTURER was informed that any style commonly made of wood can be made of sheet metal, and when painted cannot be distinguished from wood. The windows and skylights were glazed with wired glass, which

GEO. W. REED & CO., LIMITED, MONTREAL, AT THE MONTREAL BUILDERS SHOW

...along used in many of the most up-to-date ...dings, on account of both its tenacity and ...s fine resisting qualities.

In the roof of the building was a Globe ventilator. The Geo. W. Reed & Co. have ...ently secured the Canadian agency for the ...t ventilator, a new patent, and will manu...acture it for Canada. The features of this ventilation are Burt's patent sliding sleeve ...pers, which can be adjusted to any ...ree of opening, and a glass top, which in a ...ge ventilator acts as a skylight.

Between two sections was a standard auto...atic fire door. These fire doors are built by this company and meet the fire underwriters ...pecifications in every respect.

Perhaps it is as roofers that this company are best known. They are the oldest slate ...ofers in the city, Geo. W. Reed, the founder of the firm having started in this line in Montreal a half century ago. In other kinds of roofing they are equally prominent. A large sample of their patent plaster asphalt roofing, which can be used on roofs too steep for gravel, was shown, and also a piece of the same taken from the Royal Victoria Hospital during recent operations, which had been in use for fifteen years, and was still in perfect condition.

In flooring lines this firm are also well known. Samples were shown of damp proof mill construction floorings similar to those used in the Montreal Steel Works, Montreal Rolling Mills, the factories of the Dominion Textile Co., and other large buildings. Samples were also shown of different types of asphalt flooring, especially adapted to the peculiar conditions in cold storage plants, abattoirs, breweries fire stations, roads, etc. These are made on cement base, with an asphalt finish suited to the particular use. A sample was also shown of an asphalt and cork combination and insulated damp proof, odorless floor for cold storage.

This firm also make pickling tanks, used by foundrymen, platers and others, a model of which was shown. These are lined with bitumen and are proof against acids.

Besides the lines of work shown in the exhibit this company design and equip complete dust exhaust systems for all classes of wood working machinery, buffing wheels, and in fact any machine where dust is made.

They are also manufacturers for Canada for the Thompson improved spark extinguisher, which they claim is the only one guaranteed to stop sparks and not interfere with draft. It is particularly adapted to the requirements of steam wood workers, and all manufacturers burning wood or by products of wood. It is said that insurance companies make liberal reductions when these machines are used.

The firm of Geo. W. Reed & Co. was organized in 1852. On Mr. Reed's death in 1897, Mr. C. T. Williams, who had been superintendent for some time, continued the business. In 1905 Mr. Barwick was taken into partnership, having previously been general superintendent.

T. A. MORRISON & CO.

One of the handsomest and most substantial, as well as most effective exhibits was that of T. A. Morrison & Co. who sell brick, stone and municipal machinery at 204 St. James Street, Montreal.

The booth was a solid building, built of Milton brick in three shades, red, flashed, and buff, with Roman stone trimming and surrounded with a garden walk of "Tamco" crushed stone.

Milton pressed bricks were also shown in a handsome fireplace and mantel in the entrance to the Coliseum. This brick is made at Milton, Ont., and is well known for its uniformly high quality, and its freedom from white matter.

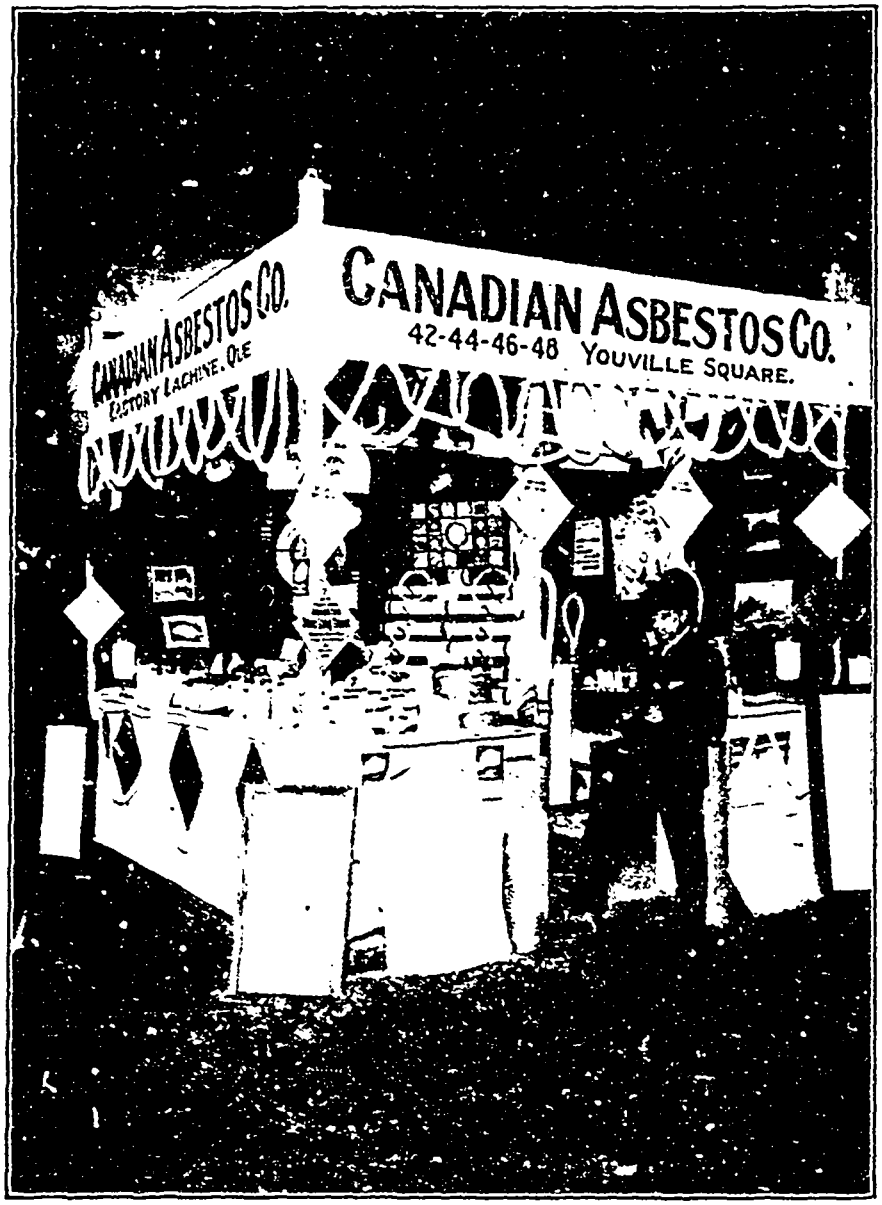
Roman stone is claimed to be the only artificial stone that can be tooled after hardening. It is composed of ground marble and German Portland cement, which are mixed and poured in liquid form, into sand moulds. The sand absorbs the surplus mois-

ture, leaving the stone perfectly solid and homogeneous. When reinforced with steel, this stone will support the heaviest loads.

Because of its strength, its homogeniety, and its beautiful finish, this stone has been used in many of the finest buildings, recently erected, of which we may mention four Montreal Banks, three Royal Banks, one Nova Scotia Bank, and one Merchants Bank.

More than a hundred men are employed in the manufacture of Roman stone, in the works of the Roman Stone Co., 90 Marlborough Avenue, Toronto. The works have a capacity of about 450 feet a day, and the product is being extensively used in the better class of buildings from the North West to New Brunswick.

"Tameo" crushed stone is quarried near Montreal, and is especially valuable for reinforced concrete construction on account of its high fire resisting qualities. It contains only 3 per cent. of lime and withstands a heat test of 2,250 degrees F.



CANADIAN ASBESTOS CO., MONTREAL, AT THE MONTREAL BUILDERS' SHOW

THE CANADIAN ASBESTOS COMPANY.

A well filled and instructive exhibit was that of the Canadian Asbestos Co., of Montreal, who have long held the leading place among the miners and manufacturers of asbestos in Canada.

"Called by mineralogists 'Asbestus,' the name in its Greek form 'Asbestos' signifies unquenchable, inextinguishable, incombustible." This quality of being absolutely incombustible together with the fact that it may be spun and woven almost like wood, early caused asbestos to be highly valued especially for building purposes.

The Canadian Asbestos Co.'s booth was floored with Asbestos lumber, which is rapidly growing in favor for building purposes. It is made commonly in four foot squares from one-sixteenth to one-half inch in thickness. Asbestos tiles were shown in various shapes and colors, and photos of roofs covered with these tiles were on exhibition.

Asbestos cloth has long been adopted for theatre curtains. A newer use has been found for this material in protective curtains for libraries containing valuable papers.

A varied line of pipe coverings for all purposes was on exhibition. Hairfelt covering for cold water pipes to prevent freezing and sweating; tar paper and hair felt two-ply pitched covering for refrigeration piping, "Candasbestos," a moulded asbestos composition pipe covering used in small steam plants; woolfelt in one, two, and three thicknesses for hot water or exhaust steam piping; "Corrusbestos" an 85 per cent. magnesia covering for high pressure of superheated steam.

"Asbestine" is another asbestos product with a wide range of usefulness. It is a durable, fireproof cold water paint, made in eighteen colors besides black and white and should make whitewash a thing of the past.

A by product of considerable value is asbestos roofing gravel. This is the crushed rock in which the asbestos occurs. It is a serpentine formation, and is much favored by roofers on account of its softness and freedom from sharp edges.

Other useful applications of asbestos shown were gaskets, stove pipe rings for joints, asbestos rope and twine, packings plain and graphited. Asbetsos thread, asbestos wall plaster, building paper, and asbestos plastic cement, used for covering steam and hot water boilers.

In addition to their asbestos goods the company does a large business in general mill supplies. One of their latest and best products is "Gripoly," an improved solid woven belting, especially recommended by them for main drives in places exposed to the action of oil and grease, heat and cold moisture, etc., that so quickly destroy most belts ings. A new feature in "Gripoly" is its non-fraying edge. The edges of this belt are composed of indestructible strands of leather twisted and interwoven with the solid body making fraying impossible, and causing the belt to run under the same conditions as solid leather.

The office of the Canadian Asbestos Co. is at Nos. 42-44-46 and 48 Youville Square, Montreal, and their factory at Lachine, P.Q.

THE LAKEFIELD PORTLAND CEMENT CO LIMITED.

The exhibit of the Lakefield Portland Cement Co. took the form of a fully equipped physical laboratory for testing Portland Cement. The equipment consists of a standard Fairbanks cement testing scale; No. 100 and No. 200 mesh sieves, 100 mesh having 10,000 meshes to the square inch, and 200 mesh, 40,000; Vicat needles for testing setting time, fineness scales and a full and complete equipment for mixing the neat and sand briquettes.

Samples of materials from which the cement is made and samples taken from various grinding mills as it goes through the process of manufacture were shown.

Every afternoon and evening practical demonstrations and tests of their celebrated Monarch brand of cement were given, breaking 24 hour, 48 hour, 7 days and 28 day neat and sand briquettes. The tests showed exceptional uniformity and strength throughout. Practical demonstration of the making of the briquettes was also given every day.

The Lakefield Portland Cement Co. con-

menced manufacturing at their Montreal plant about the middle of January and "Monarch" brand has already attained the reputation of being one of the best cements in Canada. This plant is the largest in Canada, having a capacity of 2,500 barrels daily, and is the fifth of a chain of cement works controlled by the same group of capitalists. These are: The Owen Sound Portland Cement Co., Limited, the Lakefield Portland Cement Co., Limited, Lakefield, Ont.; the Alberta Portland Cement Co., Limited, Calgary; the Vancouver Portland Cement Co., Limited, Victoria, B.C., and the Lakefield Portland Cement Co., Montreal. The combined capacity of these mills is at present 8,000 barrels daily, which is to be increased to 10,000 barrels before the end of the present year.

The sales and general offices of the Company are, 26 Ottawa Bank Building, Montreal, and are in charge of Mr. F. A. Kilbourn, secretary-treasurer of the company, while Mr. W. A. Cook has charge of the sales department. The exhibit was in charge of Messrs. Cook & White.

THE EMPIRE LIGHT COMPANY.

Much interest was taken by manufacturers, architects, merchants—in fact by all classes of visitors in the lighting of three of the booths, those of Francis Hyde & Co.; Geo. W. Reed & Co., and THE CANADIAN MANUFACTURER. Underneath each light was a card which read: "The Empire Light Burns Coal Oil." It seemed incredible to those not familiar with the light that petroleum could produce so brilliant an illumination.

The booth of Francis Hyde & Co. showed the serviceability of this light to splendid advantage, the following illuminations being provided:

One contractor's lamp,	1,000 c.p.
One street lamp,	1,000 c.p.
One store lamp,	500 c.p.
Two Nickel Plated store lamps each,	250 c.p.

THE HILL ELECTRIC SWITCH CO.

Much of the brilliance of the Coliseum at night was due to the large number of electric lights used, both in the general lighting of the building, and in the artistic lighting of a majority of the different booths. The electrical work was done by the Hill Electric Switch Co., who also had a booth of their own in which was shown a splendid display of the switches for which this company has gained a wide reputation.

General interest was shown in their patent time switch, which can be set to shut off or turn on a current at any time desired.

The Hill Electric Switch Co., though a comparatively young concern, have perhaps the most complete and best equipped electric switch plant in Canada.

THE SPECIAL MACHINERY COMPANY.

This concern displayed in their booth the Royal Standard typewriter, which they are placing on the market. This is a machine of compact construction, and singularly light striking touch. Much interest was taken in their "Junior" which is probably the most compact practical keyboard typewriter placed on the market, and will be a boon to travelling men.

THE BRANTFORD ROOFING CO.

Among the best pleased with the result of the exhibition were the Brantford Roofing Co, whose exhibit showed the application of their ready roofing to various forms of roof.

Mr. Sullivan, who was in charge, was particularly enthusiastic over the fact that Brantford Roofing has recently been passed by the fire chief and city architect in Toronto, and allowed to be used in any part of the city. It is classed by the fire underwriter with slate, tile and metal as a fire resister.

The foundation of Brantford Roofing is solid wool felt saturated with pure gum asphalt liquified at over 270 degrees heat. The saturated sponge felt is then coated with asphalt and a sharp pointed sand to produce the best possible ready roofing.

This roofing is sold in Montreal by Caverhill, Learmont, and Jas. Walker & Co. The former firm are at present covering their warehouses, containing one of the most extensive stocks in the city, with Brantford Roofing, replacing tar and gravel. The Dominion Park Co. are using over a carload on their new buildings.

During the exhibition, Mr. W. D. Schultz, the president of this company, and Mr. A. B. G. Tisdale, of Brantford, were in Montreal, and expressed great satisfaction on the way their roofing was being laid at Dominion Park.

In the booth were shown model roofs of different types laid with Brantford Roofing, in both smooth and mineral surfaces.

THE BRANTFORD ROOFING CO., BRANTFORD ONT., AT THE MONTREAL BUILDERS' SHOW

ALEX. McARTHUR & CO.

Alex. McArthur & Co. had a model showing the application of their two and three ply ready roofing, and also their tar and gravel roof laid with their well known Black Diamond tarred felt. A sample of gravel roof laid by this firm and in use for twenty-five years was exhibited.

Rolls of the special building papers manufactured by this company were on exhibition, and samples were given to all interested. Some of these specialties are cyclone tarred sheathing, Monarch brand heavy weight

untarred fibre, Crown Brand tarred felt, and Joliette Brand tarred sheathing.

This firm are among the oldest manufacturers of building papers in Canada and have been in business for more than twenty-five years.

They also had on view samples of Genasco model ready roofing in various finishes, for which they are agents. The booth was in charge of Mr. M. G. Lockerby.

SWAN, CHURCH & CO.

The exhibit of Swan, Church & Co., Montreal, proved instructive as well as interesting to many builders. This display included three floor slabs of concrete 4½ inches thick on 8 feet centres carrying a concentrated load of 2,000 pounds to the square foot. The reinforcements employed to carry this enormous weight were 3 inch mesh expanded metal and 12x4 inch eight and ten gauge Clinton electrically welded wire, respectively. Architects and engineers will recognize that this is a load that the construction will never be called upon to carry, but it exemplified clearly the load carrying capacity of reinforced concrete.

In conversation with THE CANADIAN MANUFACTURER, Mr. Church stated that the commercial interests of Montreal had recognized the superiority of reinforced concrete construction over the old method of mill construction, the cost of the former being well within favorable comparison to the latter.

Among the factory buildings recently erected by this firm may be mentioned those of the Ames Holden Co., the Sherwin Williams Co., D. B. Martin & Co., and Munderloh's. Many of the imposing commercial structures erected in Montreal during recent years, including the new Canadian Bank of Commerce Building, the Power Building, the Canadian Express Building, have also been built by this firm.

THE MONTREAL TERRA-COTTA LUMBER CO.

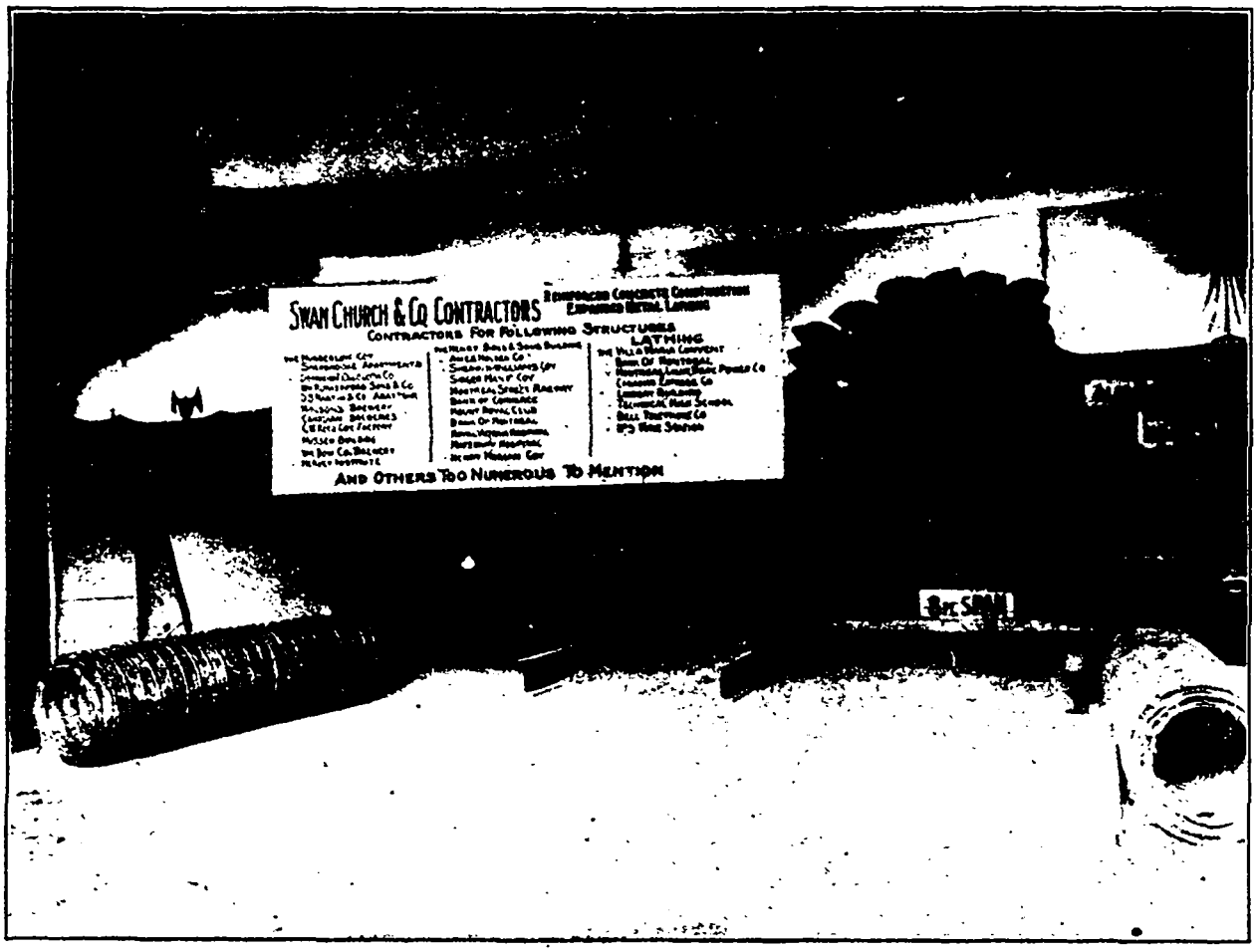
A strong argument for fireproof construction was made by the exhibit of the Montreal Terra-Cotta Lumber Co., in conjunction with the information given in circulars supplied to those interested.

Terra cotta as commercially produced for building purposes (we quote from one of their folders) is baked clay in the shape of hollow blocks, which are moulded when for exterior use. It is, therefore, a light material, and, in heavy construction only enters as a veneer or protection covering for the load bearing members, except in the case of floor arches, where it carries and transfers the live loads of the building. As fireproofing *for metal, it is especially designed, this fact* being chiefly accountable for its present development.

There are two varieties of material, the dense or hard tile, and the porous tile. The former may be called the original terra cotta, the latter having been developed to meet particular needs of the present. The hard material is stronger, but more brittle. In the matter of fire resistance the porous block is superior. Saw dust or cut straw are mixed with the clay and these being consumed in the kiln, leave small air spaces. Being lighter, it is given heavier webs, and bulk is naturally an advantage where heat absorption is concerned. Porous tile will endure unequal heating and sudden cooling without cracking. Hard tile, however, when suddenly cooled after being subjected to intense heat on one side only (as would usually be the case in actual fires) is liable to crack and even the lower webs to fall off from the uneven expansion and contraction. It must be remarked though, that it takes intense heat, and usually the added shock of cold water, to cause such cracking. In porous tile this never occurs, and it has, therefore, largely supplanted the dense material; though dense material of proper thickness—say ¾-inch webs will stand any fire and water test, nearly as well as the porous tile.

The central feature of the exhibit was an 8 foot floor span built of 8 inch terra cotta between steel girders. On each side were walls built of terra cotta illustrating its construction *for fireproofing purposes*

The Montreal Terra Cotta Lumber Co have made a speciality of porous terra cotta, otherwise known as terra cotta lumbers, for eighteen years, and have done much to popularize its use from Halifax to Ottawa.



SWAN, CHURCH & CO., MONTREAL, AT THE MONTREAL BUILDERS' SHOW

The Ceramic School, Its Value to the State and Clayworking Trade.

ADDRESS BY H. R. STRAIGHT BEFORE THE IOWA BRICK AND TILE ASSOCIATION.

The function of a State institution is primarily the higher education of those living within its borders who may seek to specialize. The reason for specialization being the development of a greater usefulness to the State's industries and their uplifting and to personal income.

The students of the school of Ceramics must be able to logically attack and dissolve difficult problems along their special lines in order that they may become of greater usefulness to the State. They must be able to carry out weighty projects and experiments within a few months after graduation. In fact things in which the experience of a lifetime of self-education would generally be necessary must be laid upon the shoulders of the young Ceramics graduate. The record of graduate classes of Ceramic school of this country prove conclusively that such work is being carried out successfully.

Students of Ceramic schools find positions as Superintendents of factories making pottery, stonewares, building and paving brick, drain tile, building blocks, sewer pipes, terra cotta, decorating, and floor tile, insulators, mineral paints, cements, etc. Positions of the greatest importance to manufacturers of many high class clay wares such as experimental chemists are held by many.

There is an abundance of clays in Iowa for all the factories mentioned above, but because of the lack of men fitly educated such cannot be developed in a scientific manner. The development in the past has been more or less by a cut-and-try method instead of knowing beforehand the exact result. Must we depend upon such states as Ohio, Illinois, New York, and New Jersey for such men? Their departments for this work are always busy educating men for their own use within the State. How can we expect to receive help from them?

Because of the great amount of tilled land we have little timber left suitable for lumber, and we must look largely in the future to other sources for building materials. At the present price of lumber shipped in and with a view to lasting qualities a wooden building is now almost out of the question. The solution of the problem is either burnt clay or a cement product. The manufacture of these goods must be carried on within the State because of the high freight rates. Should we not have an abundance of men who have the ability to push them?

Iowa's chief source of income must always be from her agricultural products. Her soils are rich and fertile because of the gentle slopes they lie in. These gentle slopes require tile to bring them to their greatest fertility. It is for this reason that Iowa's fields at present are receiving twice as much tile each year as any other state in the Union. It is estimated that Iowa's average of tilled ground was increased six per cent during the year of 1906 by the addition of over $2,100,000 worth of tile. Should not the manufacture of these tile be carried on by men educated for the purpose? If a large saving in fuel might be effected by them, is it not worth while? If such wares can be made of a more lasting quality without additional cost, can we afford to be without them?

The manufacture of pottery, stoneware and mineral paints, has been carried on with rather indifferent success within our border. The principal reason for their limited manufacture being a lack of men who can solve and understand the complex problems which arise. The writer can find no record of the manufacture of insulators, terra cotta, or decorating and floor tile ever being thoroughly tried. Why should we not add such to the list of our industries and materially increase the State's income. We have the capital but only a few capable men.

The clayworkers need a Ceramic School for numerous reasons. The action of heat cannot be determined with any degree of certainty with our limited knowledge from the physical characteristics or chemical constituents. The actual burning tests must be made. Since actual tests are required, should not the clayworkers be allowed the same privileges as our engineers, i. e., the opinion of an unprejudiced expert who has at his disposal a well equipped laboratory. It is not the purpose of the writer to belittle the observations passed by the test men of the various clay working machinery companies. However, a firm selling machinery for a plant cannot help but be inclined to smooth over matters of difficult moulding, slow drying, small heat range in burning, etc. Had a few of these things been determined definitely for some of our clayworkers, many thousands of dollars now invested in worthless plants and apparatus would have been saved. Again should not the clayworkers be given the same laboratory facility as engineers, farmers, mine operators, and others?

MR. ADOLPHUS WEHLANN.
Mr. Wehlann, who operates a brick and tile works at Rodney, Ont., was elected President of the Western Ontario Brick Makers' Association at the recent Convention.

At present two distinct courses are given at our state institution at Ames. A two year course for practical clayworkers and ceramists who have had a fair amount of experience along their chosen lines, and who are not acquainted with the technical side of their problems. A three years course is given beginners of both the practical and theoretical work. Both courses give a large amount of general engineering as they should, for the problems of the ceramic engineer generally partake a great deal of engineering of a mechanical, electrical and civil nature. A practical working knowledge of all tests made on clay wares is taught. Remedies of fault in clays in moulding, drying and burning are determined. Construction of machines, dryers, and kilns are reviewed and studied. In short the student is taught to study out for himself problems which a clayworker making fine or coarse wares must meet so that he will be able to attack similar problems in a logical manner.

In conclusion, let me ask if anyone here can mention an industry producing one-quarter the value of Iowa's clay products which is not represented in one of our state institutions, and supported by state appropriations.

The Canadian Fairbanks Co., *Limited* have installed a pumping station at Simcoe, Ont. The outfit included two gas engines 50 h.p. and 80 h.p. and two 500,000 gal. triplex pumps.

Correspondence.

CLOTHES WASHER RIGHTS.

Editor CANADIAN MANUFACTURER:

Can you give me name of manufacturer who would be interested in Canadian rights of a clothes washer? This would probably be of especial interest to manufacturers of washboards.

EMMA M. WHITTEMORE.

Troy, New Hampshire, U.S.A., May 1, 1908.

HOSE SUPPORTER RIGHTS.

Editor CANADIAN MANUFACTURER.

I would like to get the address of Canadian manufacturers who manufacture hose supporters. I have taken out a patent in Canada for a supporter which has proven a great success in the United States and should sell well in Canada.

BERTHA ORTELL.

168 East 116 St., New York City, April 28, 1908.

OPENINGS IN ORANGEVILLE.

Editor CANADIAN MANUFACTURER:

In the article "Lists of Industries Wanted" in Ontario," no mention was made of Orangeville. There is a good opening here for a knitting factory (hosiery especially), plenty of cheap help, good water power; 30 ft. head; good stone buildings.

E. MOODY.

Orangeville, Ont., May 1, 1908.

A PRODUCER GAS ADVOCATE'S CRITICISM.

EDITOR CANADIAN MANUFACTURER:

Dear Sir,—In reference to the discussion bearing on the report of the Hydro-Electric Commission on producer gas power. Having been in the business of manufacturing gas plants for over twenty years, we feel that we have acquired much information in that line that is of interest to your readers, and invaluable to those desiring cheap but reliable power.

In your article on the report of the Hydro-Electric Commission, we observe there is no credit whatever given to the honest merits of a producer gas power outfit. We think this a very weak point in what appears to be an attempt to floor the advisability of installing a gas power plant. In the complete report as given by the Commission they do say, "Although the producer gas plant has not been long in commercial existence in this country as compared with other prime movers, there is no reason to anticipate that satisfactory results cannot be obtained with it where it is used within its proper limits."

That the successful operation of producer gas plants is already an established fact, so far as we are concerned, is a matter that we can easily prove to the satisfaction of all, if they give us a chance. Those who are biased in the matter cannot remain so very long, if they are open to conviction, as there is an abundance of unquestionable evidence coming before the public every day showing their efficiency. We do not say that there are never any difficulties to be met with in the use of producer gas power, but what prime mover in existence to-day is being operated without more or less difficulty to be contended with? And producer gas power will compare very favorably with steam or electricity as to efficiency and reliability under like conditions, i.e.: If it is a reliable type adapted to the local conditions to be met, has been properly installed, and has a properly educated attendant to look after it.

You will find that invariably where there has not been successful operation, it has been due to one or the other of these reasons, and, which, if properly followed up and dealt with is always made right.

With regard to not being able to handle a fluctuating load we beg to differ with the report there, as that is one of the very strong points in favor of a good gas engine. Allow me to quote here some expert evidence bearing on this and other points. "A short time ago a gas engine was tested by Dr. Nicholson, professor of engineering at the Municipal School of Technology, Manchester, England. An extract of his report being as follows.—The engine speed varied only from 119.4 to 121.4 revolutions per minute when the horse power was instantaneously dropped from about 600 to about 50, the total variations was therefore 1¾ per cent. of the mean speed. The full load was then thrown on again as quickly as possible, and so on in succession. The speed of the engine under such circumstances never varied more than the above percentage."

The above is taken from The Engineer, London, April 11, 1908.

"Recent developments point very positively to two factors of great importance in the economical production of power for manufacturing and transportation purposes.

"These two factors are the replacing to a marked extent of the steam boiler and steam engine by producer gas plants with their accompanying internal combustion engines; and the centralization of power development and distribution.

"It was during the latter part of the nineteenth century that the gas engine found its way on to the market, and, although many types have been produced in the past twenty or thirty years, it is only within the past five or six years that the development of large engines has been noted. This development started in Germany, Belgium and England some eight or ten years ago, but marked progress has been limited to the past half-dozen years.

"For many years the natural fuel of these internal combustion engines was city gas, but even this was too expensive except for engines of small capacity. It was seldom found feasible to operate engines of more than 75 h.p. on this fuel.

"Cheap gas was essential for the development of the gas engine, but the early attempts in this direction were somewhat discouraging, and for a time the probabilities of encroaching to any extent upon the field occupied by the steam engine was very remote.

"The theoretical possibilities of the internal combustion engine operated upon cheap fuel promised so much that the practical difficulties were rapidly overcome with the result that steam boilers and engines in many plants were replaced by gas engines, and at the present time the internal combustion engine is rapidly becoming a serious rival of the steam engine in many of its applications.

"The rapid advance of the large gas engine has been made possible by the great strides that have been made in the production of cheap gas directly from fuel through the aid of the gas producer. The early form of producer *first introduced in Europe, and* one that is in very general use to-day both abroad and in the United States, is known as the suction producer, named from the fact that the engine develops its charge of gas in the producer by means of its own suction stroke."—Extract from a recent address by *Prof. R. H. Feruald, engineer in charge* of producer gas tests, United States Geological Survey Fuel Testing Plant.

We have not yet touched on the relative cost of operating power plants and will only do so now by making a few quotations from letters in our possession of those using our goods.

McClary Mfg Co., London, Ont., using a 250 h.p. plant, say, "In reply to yours of the 7th the Weber gas producer engine is operating to our satisfaction. We find that their guarantee of 1½ pounds of coal per h.p. per hour is a safe estimate, as it works under that amount."

The Board of Public Works, South Haven Mich., operating a 125 h.p. "Weber" say,—"It has given entire satisfaction so far, and we are using about 1¼ pounds of coal per h.p per hour. We use the Pea Anthracite coal which is costing us $5 per net ton."

The Nancy-Helen Mines, Limited, Cobalt, using 100 h.p., say, "The cost of the engine room per day, including coal, waste, oil and engineer, does not exceed $8, *which is* remarkably low for a plant of this capacity." (This plant is running 24 hours per day).

That the producer gas engine has a large and brilliant future ahead there can be no doubt to those sufficiently acquainted with its merits. This can be seen from the fact that the *majority of the leading manufacturers* of steam plants are negotiating for the right of manufacturing some one or another of the patents already existing on producer gas engines, or are trying to develop a patent of their own.

One thing sure even at the present stage of manufacture, the power user, considering making a change or installing a power plant, would be very foolish to pass by the question of considering the merits of producer gas power for his installation, and at the same time it would be wise for him to carefully investigate the veracity of the agent being dealt with and see that his goods are what he claims for them, before purchasing, and if he does this he will have only himself to blame if he does not get reliable and cheap power from a producer gas equipment.

Yours very truly,

WEBER GAS ENGINE CO.,
Per G. H. Wallace

TORONTO, April 29, 1908.

Robert W. Hunt & Co. have established an analytical chemical laboratory in connection with their St. Louis office, 1115 Syndicate Trust Building. In addition to general analytical work, particular attention will be given to analysis of and advice on iron foundry mixtures. This work and the laboratory will be under the direction of Mr. J. B. Emerson, who for several years past had charge of the metallurgical part of the wheel foundry of the Mt. Vernon Car Co. Previous to that engagement, he was in the employ of the Illinois Steel Co.

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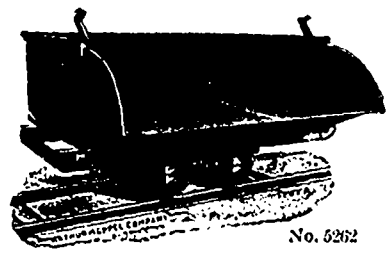
STEEL  CARS

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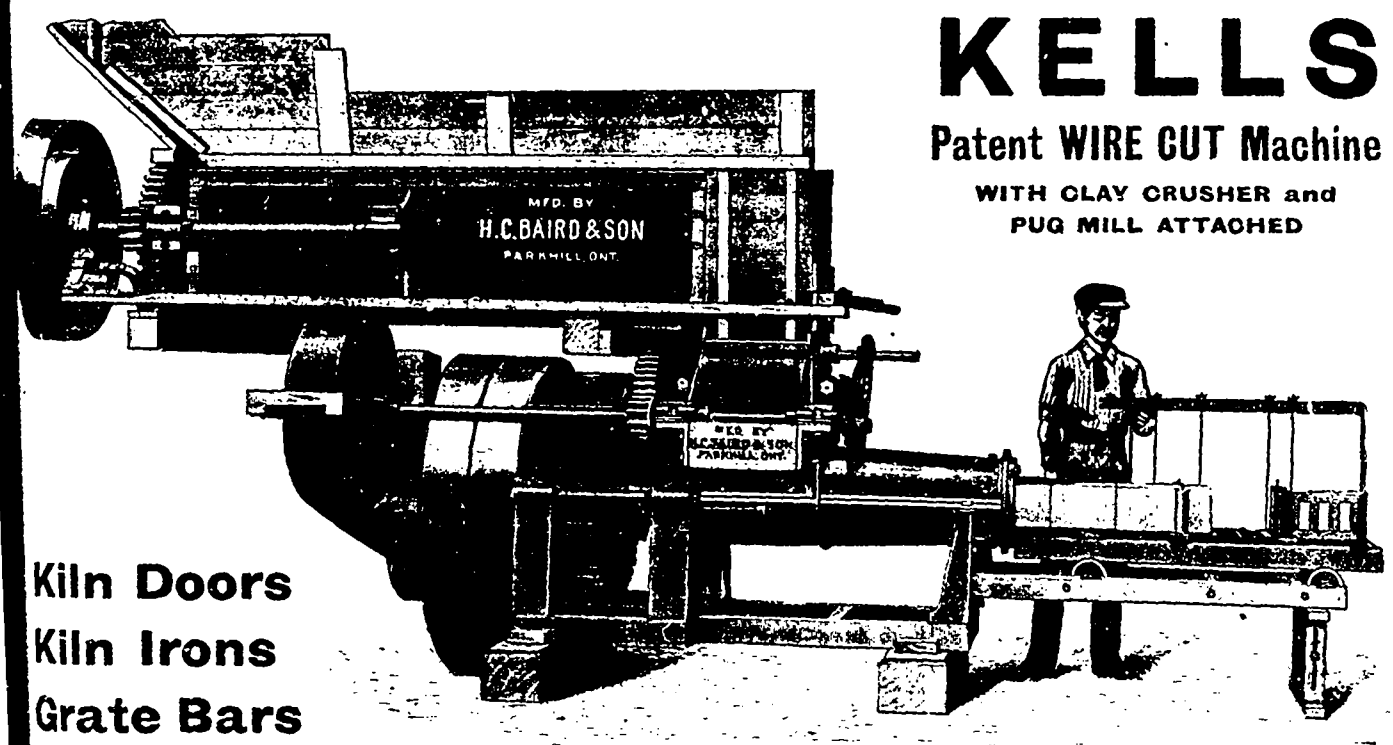

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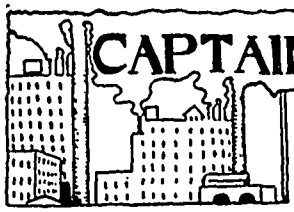

CAPTAINS OF INDUSTRY

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

Department of Public Works, Ottawa, invite tenders up to May 15 for dredging required at various places in the Province of Ontario.

Port Arthur, Ont., will build an additional eight feet to the top of the Union Lake dam, at a cost of about $10,000.

P. Nicholson, Moncton, Ont., has been awarded the contract for the construction of the two sedimentation tanks at Goderich, Ont.

J. Montgomery, Peterboro, Ont., has been awarded the contract for the erection of the new curling rink in that town.

Brantford, Ont., invite tenders up to May 21 for furnishing and laying 5,450 feet sewer pipe.

Guelph, Ont., invite tenders up to May 18, for high duty pumping engine, water-tower and foundation and 3,000 feet of cast-iron pipe.

A waterworks system will be installed in Palmerston, Ont.

The ratepayers of London, Ont., will vote on a by-law to raise $560,000 for a filtration plant and the taking in of Kilworth springs.

Niagara Falls, Ont., invite tenders up to May 18 for furnishing and erecting one three million gallon electrically-driven turbine pump.

Department of Marine and Fisheries, Ottawa, invite tenders up to June 1 for the British Columbia fishery cruiser.

O. Hinds, Manitowaning, Ont., will erect a new block at once.

The Presbyterians of Hespeler, Ont., will erect a new church this summer at a cost of about $20,000.

A new Canadian Pacific Railway station will be erected at Arthur, Ont., at a cost of about $6,000.

The Gurney Scale Co., Hamilton, Ont., are manufacturing eight new scales for the Canadian Pacific Railway elevator at Fort William, Ont. The scales will have a capacity of 2,000 bushels each.

The Canadian Pacific Railway Co. are arranging to have a line of boats run between Goderich, Ont., and Gladstone, Mich.

Contractors expect to complete the extension of the Temiskaming and Northern Ontario Railway to the Transcontinental junction before the close of the present season.

A municipal abattoir may be erected in Guelph, Ont.

A Catholic boarding school will be erected at Fort William, Ont., at a cost of about $25,000.

The Magnet Mines Co., Pembroke, Ont., have been incorporated with a capital of $1,500,000, to carry on a mining, milling and reduction business. The provisional directors include J. Coxford, S. Bromley and A. Watters, Pembroke, Ont.

Messrs. Mills & Nagle, Ingersoll, Ont., have been awarded the contract for the erection of the addition to the Armouries, Guelph, Ont.

The Independent Brewery Co., Hamilton, Ont., will erect a new brewery at a cost of about $200,000.

Beatty Bros., manufacturers of hay tools, Fergus, Ont., will extend their plant.

The Beal Engraving & Electrotyping Co., London, Ont., have been incorporated with a capital of $40,000, to manufacture lithographing plates, dies, stamps, etc. The provisional directors include G. C. Beal, H. B. Beal and F. G. Scott, London, Ont.

J. E. Barnet and others, Renfrew, Ont., have formed a company to manufacture cream separators and other articles. They have purchased the factory of the Cummings Mfg. Co., Renfrew.

The ratepayers of Preston, Ont., will vote on a by-law to raise $16,800 to construct sewerage and waterworks systems.

Messrs. Tamblin & Jones, London, Ont., have secured the contract for the erection of a new building on Dundas Street, London, Ont.

The Peerless Brick & Tile Co., Ottawa, have been incorporated with a capital of $150,000, to manufacture brick, tiles, cement, stone, terra cotta, marl, lime, etc. The provisional directors include W. S. Odell, J. A. Ballantyne and H. H. Williams, Ottawa, Ont.

Proctor, Moore & Stone secured the old drill shed in Stratford, Ont., and will manufacture corrugated iron sewer tile.

The Imperial Wire & Steel Co., Collingwood, Ont., purpose extending their plant shortly.

The Lippert Furniture Co., Berlin, Ont., have been incorporated with a capital of $100,000, to manufacture furniture of all kinds. The provisional directors include J. G. Lippert, E. Lippert and H. A. Lippert, Berlin, Ont.

The premises of Jones & Moore, the J. Zock Co., and the Canadian Silk Co., Adelaide Street West, Toronto, were destroyed by fire May 2. Loss about $200,000.

The premises of the Huffman House, Leamington, Ont., were damaged by fire April 25.

The Rock Glen Power Co., Arkona, Ont., have been incorporated with a capital of $40,000, to carry on the business of an electric light company. The provisional directors include T. W. Mitchell, J. L. Fuller and J. G. Brown, Arkona, Ont.

It is reported on the authority of F. T. Raney, president of the Detroit Real Estate exchange, who is interested in the project, that if the duty on pulpwood entering the United States is removed by Congress, a pulpwood mill will at once be erected at Sandwich, Ont., at a cost of about $450,000.

The Stanley cheese factory, Lyn, near Brockville, Ont., was destroyed by fire May 5. Loss about $3,000.

The Hurdman Lumber Co., Ottawa, have been incorporated with a capital of $20,000, to manufacture lumber, timber, furniture, doors, sashes, etc. The provisional directors include G. C. Hurdman, E. A. Hurdman and T. F. Elmitt, Ottawa.

A new technical school 140x70 feet, will be erected in Hamilton, Ont., at a cost of about $40,000.

The premises of the Royal Canadian Academy of Art, King Street West, Toronto, were damaged by fire April 29. Loss about $6,000.

The Tecumseh Boat House, Walkerville, Ont., was destroyed by lightning April 27. Loss about $8,000.

$100,000 will be spent on the completion of the revetment wall along the bay front, Hamilton, Ont.

The Galt, Preston & Hespeler Railway Co., will erect new freight sheds at Hespeler, Ont.

The Dominion Bank are rebuilding their branch at Windsor, Ont.

The name of the Toronto & Mimico Railway Co., Toronto, has been changed to the Toronto Power Co.

A new filtration plant will be erected in connection with the waterworks system, Stratford, Ont.

The Minister of Militia announces that the Government will erect a number of armouries in the smaller towns of Canada.

A new Baptist Church will be erected at Balmy Beach, Toronto, at a cost of about $15,000.

Sewers will be constructed in Cornwall, Ont., at a cost of about $4,600.

The Imperial Bank will erect a new building at Welland, Ont.

The congregation of Zion Lutheran Church, Stratford, Ont., will erect a new edifice this summer.

A new observatory building will be erected in connection with Queen's University, Kingston, Ont.

The Toronto Y.W.C.G. will erect a new gymnasium building at a cost of about $15,000

The Metropolitan Bank will erect a building in the east end, Toronto, at a cost of about $10,000.

The Plow Works Co. will erect a plant at Port Stanley, Ont.

Oil Springs, Ont., have granted a $2,000 bonus for the establishment of a flax mill there.

The Canadian Pacific Railway will erect a 10,000,000 bushel elevator at Victoria Harbor, on Georgian Bay, Ont.

A public school will be erected at Sparta, Ont., at a cost of about $5,000.

Six new postoffices will be erected in Peterboro Township, Ont.

The rural telephone system at Stratton, Ont., will be enlarged.

The International & Rainy River Telephone Co., Rainy River, Ont., contemplate the building of several extensions this summer, and the installation of a local system at Emo, Ont.

The Hamilton Carhartt Co., Detroit, Mich.,

are considering the establishment of a plant at Windsor, Ont.

Hanna Bros, Ridgeway, Ont., will erect a planing mill at Fort Erie, Ont.

The ore docks, Point Edward, are being lengthened by 150 feet.

Preston, Ont., have applied to the Hydro-Electric Power Commission for 800 h.p.

A second electric plant will be installed at Eugenia, Ont., near the plant of the Georgian Bay Power Co., and a transmission line will be erected.

The Canadian McVicker Engine Co., Limited, Galt, Ont., is to be wound up and the Trusts and Guarantee Co., Limited, have been appointed interim liquidators.

At the meeting of The Engineers' Club, Toronto, on May 21, a paper on "Electric Heating Devices" will be given by Mr. A. B. Lambe. On the 14th inst Mr. S. D. Chadsey gave a paper on "The Manufacture of Malleable Iron."

The Raymond Co., Montreal, have been incorporated with a capital of $20,000, to manufacture goods, wares and merchandise. The charter members include H. Raymond, J. P. Gadbois and H. B. Rainville, Montreal.

The premises of the John T. Lyons Co., druggists, and Eaves Bros., jewelery manufacturers, Bleury Street, Montreal, were damaged by fire May 2. Loss about $15,000.

The premises of the Campbell Shoe Co., Quebec, Que., were damaged by fire April 26.

Tenders have been invited by the Department of Marine and Fisheries, Ottawa, for the furnishing of one machine for bending steel boiler plates to be delivered at the Government shipyard at Sorel, Que.

The City Hall, Montreal, will be enlarged by the addition of two stories.

A town hall, fire and police station will be erected in Verdun, Que., at a cost of about $40,000.

The Montreal Technical School Commission have purchased a site for the erection of a $350,000 school building.

The Montreal incinerator will be rebuilt by the city at a cost af about $102,000.

The Continuous Rail Joint Co., of Canada, Limited, Montreal, have changed their style to The Rail Joint Co., of Canada, Limited.

J. C. Rose has registered under the style of Rose & Laflamme, Limited, manufacturers' agents, Montreal.

Robert C. Cowan has been appointed liquidator of the Canadian United Milling Co., Limited, Montreal.

H. L. Dinning has registered as president of the Universal Nut Machine Co., Limited, Montreal.

The special committee appointed by the Quebec Provincial Government to take charge of the proposed technical school in Montreal, have bought a site at the corner of Sherbrooke and Mance Street, Montreal. This site comprises about 150,000 square feet of land and the school is expected to be a first-class institution of its kind.

The Cassella Color Co. have removed their Canadian offices and warehouse from Youville Square to 59 William St., Montreal

William H. Adams has registered as manager of the Rhodes Metallic Packing Co., Limited, Montreal.

The plans for the new pumping station at Verdun, Que., a suburb of Montreal, are about completed. The new plant is to be situated on the river side of Lower Lachine road, opposite Riel avenue, and will have a capacity of 2,000,000 gallons. As the town's consumption of water is at present only about 270,000 gallons per day, ample provision for the future growth of the town in size and population is being made. This will be the first installation of a filtering plant on the Island of Montreal. Every drop of water will be thoroughly filtered before it enters the pipes.

The Great West Townsite Co. purpose erecting cement works in St. John, N.B.

The Maritime Contracting & Commercial Co., North Head, N.B., have been incorporated with a capital of $20,000, to carry on a general contracting and constructing business, The provisional directors include E. R. Reid, J. D. Gaskill and L. J. LeBlanc, North Head. N.B.

Cushings, Limited, St. John, N.B., have been incorporated with a capital of $350,000, to manufacture lumber, timber, etc. The provisional directors include T. Cushing, R. K. Jones and G. S. Cushing, St. John, N.B.

The mills of the M. McLaughlin Co., Buctouche, N.B., were destroyed by fire April 25. Loss about $45,000.

A building owned by J. N. W. Winslow, Woodstock, N.B., was destroyed by fire April 26. Loss about $20,000.

The sawmill of J. B. Campbell & Son, Clarksville, N.S., was destroyed by fire May 1. Loss about $2,000.

D. T. Stewart & Co., have been awarded the contract for the supply of cast iron water pipe for Dartmouth, N.S.

The Parks Committee, of Portage La Prairie, Man., are installing the new water wheel invented and patented some months ago by Rev. W. P. Spooner, Carievale, Sask., for the purpose of filling up Crescent Lake. It is anticipated that another water wheel of this make (patent No. 107660) will be installed to drive an electric generator at Portage La Prairie.

The Ontario & Western Land Co., Winnipeg, Man., will erect a block at a cost of about $25,000.

The Sisters of our Lady of the Missions, Brandon, Man., will erect a new convent there.

Peter Lyall & Sons, building contractors, Montreal, have organized a western company, with offices at Winnipeg, Man., which will have complete control of the firm's work and business interests west of the Great Lakes. The company has a capital of $250,000. The president is Peter Lyall, vice-president and manager, Geo. A. Mitchell, and Peter Lyall, jr., secretary-treasurer.

The Y.W.C.A. purpose erecting a new building in Winnipeg, Man., at a cost of about $75,000.

A "Men's Own" club building will be erected in Winnipeg, Man., at a cost of about $45,000.

The ratepayers of Winnipeg, Man., will vote on a by-law to raise $100,000 for an isolation hospital, $15,000 for a morgue and $125,000 for additional hospital purposes.

A new fire hall is being considered for Brandon, Man.

Henry Bros., Winnipeg, Man., will erect a three story block, 120x66 feet, at St Boniface, Man., at a cost of about $15,000

The premises of St. Joseph's German Catholic Church, Winnipeg, Man., were destroyed by fire April 27. Loss about $75,000

Merrick, Anderson & Co., Winnipeg Man will erect a tar paper factory at a cost of about $28,000.

A building will be erected in connection with the asylum, Brandon, Man., at a cost of about $20,000.

The Secretary of the Calgary Board of Trade has received a letter from the C N R to the effect that the construction of that company's line to Calgary had been started.

John Bellamy has bought the Moose Jaw Machine Works, Limited, Moose Jaw, Sask.

An electric fire alarm system is being installed in Regina, Sask.

The congregation of St. John's Anglican Church, Moose Jaw, Sask., will erect a new church at a cost of about $10,000.

The waterworks system, Hirsch Sask., will be extended at a cost of about $75,000

The waterworks and sewerage systems Saskatoon, Sask., will be extended at a cost of about $130,000.

The Canadian Pacific Railway have decided to erect a machine shop in connection with their other buildings in Saskatoon, Sask., at a cost of about $20,000.

Wm. Moffat & Sons have established a lumber business in Claresholm, Alta

The Alberta Horse Collar Co., manufacturers, have commenced business in Calgary, Alta.

The capital of the Caron Elevator Co., Caron, Sask., has been increased to $25,000

The Grand Trunk Pacific have contracted for 600,000 ties from settlers and subcontractors west of Edmonton, Alta., at an average price of 40 cents per tie. They have secured sufficient to build the line west as far as the Macleod river, and are now arranging for the balance to build the line west to the Yellow Head Pass.

A deposit of graphite worth several million dollars, has been discovered by A. Debuc, Edmonton, Alta., in the Yellow Head Pass, near the line of the Grand Trunk Pacific, on the Miette River.

The Canadian Pacific Railway will replace the wooden spans and trestles on the line between Calgary, Alta., and the coast with steel structures this summer.

Medicine Hat, Sask., invite tenders up to May 18 for the drilling of an eight inch gas well to a depth of 110 feet more or less.

A. R. Fleming, Regina, Sask., is considering the establishment of a $10,000 brick plant in Tantallon, Sask.

The ratepayers of Moose Jaw, Sask., will be asked to vote on a by-law to raise $35,000 for the erection of a new fire hall,

The new Canadian Pacific Railway bridge being erected over the Battle River at Hardisty, Alta., is nearing completion.

R. P. Barnes, Edmonton, Alta., invite tenders up to May 23 for the various work in connection with the erection of the new building for the Imperial Bank of Canada, at Cranbrook, Alta.

Four new bridges will be erected in Sheho District, Saskatchewan, this spring by the Provincial Government.

A telephone company is being formed at Lang, Sask., to build about forty-eight miles of pole line.

The Alberta Government will construct a telephone line between Red Deer, Edwell and Pipe Hills, Alta.

The power and light committee of Calgary, Alta., are considering the question of installing an additional engine, which will practically double the output of the civic power plant.

Messrs. Skinner & Colison, of Estevan, Sask., will install an electric light plant in Killarney, Man.

Cannel & Spencer, Edmonton, Alta., have been awarded the contract for the construction of the power house to be built in connection with the Edmonton General Hospital at $40,000.

The West Kootenay Power & Light Co., Limited, Nelson, B.C., have suffered loss by fire.

The Victoria Brick Co., Limited, Victoria, B.C., have suffered loss by fire.

A sewerage system will be installed in Kitsalano, B.C.

The sewerage system, Chilliwack, B.C., will be extended at a cost of about $17,000.

The sash and door factory of Messrs. Robertson & Hackett, Vancouver, B.C., was destroyed by fire April 27. Loss about $75,000.

The Scanlon Brooks Lumber Co., of Minneapolis, Minn., are considering the erection of two large mills in British Columbia, one at Vancouver and the other at Harrisen River.

The brick works of the Victoria Co., Victoria, B.C., were destroyed by fire April 26. Loss about $10,000.

The brewery of Towgood & Bruder, Sandon, B.C., was destroyed by fire April 30. Loss about $15,000.

The premises of the Gold House, Discovery, near Atlin, B.C., were destroyed by fire April 27. Loss about $10,000.

The car barns of the municipal tramway, Nelson, B.C., were destroyed by fire April 27. Loss about $15,000.

C. J. Moore will erect a sawmill at Prince Rupert, B.C.

Cuthbertson & Joseph, New Westminster, B.C., will erect a shingle mill at a cost of about $20,000.

Wood Bros., Victoria, B.C., will erect a garage at a cost of about $8,000.

W. J. Mable, Victoria, B.C., will erect a carriage factory at a cost of about $12,000.

The B. F. Graham Lumber Co. will erect a mill at Esquimalt, B.C., at a cost of about $150,000.

A new post office will be erected at Duncan, B.C.

The Mahon Block, Victoria, B.C., recently destroyed by fire, will be rebuilt immediately.

Victoria, B.C., invite tenders up to May 18 for the supply of seventy tons of pig lead to the Victoria waterworks.

J. D. McDonald & Son, Victoria, B.C., have been awarded the contract for the erection of the new main building at the Exhibition Grounds there, the contract price being $11,875.

The British Columbia Telephone Co. will build a line from Duncan to Victoria, B.C., a distance of forty-two miles.

Victoria, B.C., invite tenders up to May 26 for the supply of certain gate valves for the waterworks.

W. W. Forrester, New Westminster, B.C., has been awarded the contract for the proposed extension to the car shop of the B.C. Electric Railway Co.

F. Page, New Westminster, B.C., is considering the erection of a pulp mill, and E. Martin the establishment of a brick and tile works at New Westminster, B.C.

The Lillooet Lumber Co., Port Haney, B.C., have recently changed hands, and will hereafter be known as the Holden & Proctor Co., with head office in Vancouver, B.C.

The Patrick mill near Nelson, B.C., is being considerably improved, and will increase the capacity of the plant.

The North American Land & Lumber Co., of Dubuque, Iowa, who have been operating the Cedar Valley mill at Fernie, B.C., will greatly enlarge their plant.

Sheffield Tool Steel in Canada.

An Interview with a Canadian Agent.

"If British manufacturers in other lines studied the Canadian market as carefully as the Sheffield tool steel manufacturers have done, they would be getting a bigger share of Canadian business than they are now obtaining," said John L. Richardson, Bay Street, Toronto, to THE CANADIAN MANUFACTURER a few days ago.

"It is less than two years since I started to represent Wm. Atkins & Co., Sheffield, Eng., manufacturers of the famous 'Waco' high speed bars and twist drills, etc. When I started, this firm were not well known in Canada, though they had won a world-wide reputation and had selling depots in nearly every country in the world.

"Being unknown here, their lines did not sell readily at first, but soon tests of our steel were made and gradually a strong demand has been built up, especially with the largest buyers.

"This has not been due merely to aggressive selling. The steel business is peculiar in that nearly every buyer needs a different quality and temper of steel. The needs of each individual buyer must be studied till they are thoroughly understood, then constant care must be exercised to see that these needs are met in every order filled.

"In all this we have had the utmost support from our principals. As they are manufacturers of practically all kinds of steel such as the Canadian market needs, they have enabled us to carry in our Toronto warehouse one of the largest stocks in Canada of every kind of steel without having to pay any middleman's profits.

"The growth of our business in Canada," concluded Mr. Richardson, "has been remarkably fast. But it must be remembered that the demand for all lines in Canada is rapidly growing. If there was the same constant care of buyers' needs on the part of agents and the same readiness to meet every diversity of demand on the part of manufacturers, as has been true in our case, other British concerns could probably make an almost equally good showing."

Publications Worth Reading.

Any Manufacturer or Dealer in Supplies for this Column is invited to send Books on Business Topics for Review or Booklets, Pamphlets, etc., for Reference.

SIDE DUMP CARS—A 20-page booklet, issued by the Atlas Car & Mfg. Co., Cleveland O., giving illustrations of the various types of dump cars made by this company.

APRIL CROCKER-WHEELER BULLETIN—Devoted to Form D machines, belt type direct current motors, 50 to 275 h.p., generators 45 to 225 k.w. Form D generators are used where a plant having spare engine capacity requires additional generating capacity, and where quick installation and low cost are desirable. Form D motors are used for belt gear, or direct drive for machine tools, elevators, pumps, or any heavy machinery requiring constant or variable speed drive. The Canadian Crocker-Wheeler Co., Limited, 41 Street Railway Chambers, Montreal.

Thermit in Toronto.

The Goldschmidt Thermit Co., announces the establishment of an office and works at 103 Richmond Street West, Toronto, Canada. The new branch was opened for business May 1, and is under the management of Mr. E. C. Rutherford, of Toronto. Mr. Rutherford is a Canadian by birth, and has a wide acquaintance among the business men of the Dominion, having been for several years the manager of the Magann Air Brake Co. and of the Canadian Brake and Supply Co. A complete stock of Thermit and appliances will at all times be carried at Toronto, and the branch organization will be in a position to execute promptly the welding of heavy steel sections, such as stern posts of steamships, crank shafts, etc., and other broken steel sections. A fully equipped repair shop will be in operation for the repair of steel castings up to one thousand pounds in weight.

The Standard Gauge Mfg. Co., of Syracuse, N.Y., makers of indicating gauges, have removed their New York branch from 115 Broadway to Room 1770 Hudson Terminal Buildings. The Western branch of the company is located in the Monadnock Building, Chicago, Ill.

Practical Hints for the Factory or Mill Superintendent.

There are so many excellent technical publications issued throughout the world that even the most ambitious superintendent could not afford to read them all to get the cream of their articles. We propose in these pages to give some of the most practical hints and suggestions which appear in the technical press in all countries.

Yarn Sizing.

From The Textile Recorder.

The operation of sizing for the purposes of weaving cotton and linen yarns in the form of hanks and in the form of warps reaches a degree of importance that is not always recognized. Large manufacturers are generally forced by reason of the quantity of material passing through their hands and by sad experiences to thoroughly realize this point. In these instances and indeed in any works that can reasonably claim to be regarded as turning out creditable material, special provisions are at hand for facilitating the work. Colored goods manufacturers, too, are thoroughly alive to the general and particular advantages that attend the working of well and properly sized yarns.

For the quality of the sizing of warps is a very important factor in the way of controlling the quality and saleable value of the cloth ultimately produced, and, more still, in controlling the daily production from the looms. These are points which have for a long time harassed many manufacturers.

The sizing of colored yarns for weaving is by no means the simplest form of sizing, as there exist so many pitfalls leading to defects. Many of these may be anticipated. Colored yarns passing through a hot, or more often a boiling, solution of size are liable to lose some of their color, certainly to suffer some alteration in shade, and, generally speaking, to become dulled. If threads from warps of different colors are being simultaneously passed through the sizing liquor, as in slasher sizing for beaming, the possibility often exists that the one color in the act of bleeding may stain or alter the tone of the other. Naturally, alterations in shade by this means becomes more pronounced in the case of light shades than in dark colors. These circumstances may often result in deteriorating the value of the cloth produced to a serious extent. There exists then a question deserving, demanding the serious consideration of all manufacturers, most particularly when small warps are required. These are often needed; some might add, too often needed. Demands from the markets for woven colored cloths do not always, unfortunately, come in the shape of a large bulk orders for one pattern and one design. If a large order does make its appearance, it heralds its approach, for the most part, not on a neat little compact contract-note carrying figures up to thousands in one good-looking line, but on a large number of order-sheets, each elaborated with units. These calls for such small lots as 6, 4, 2, 1, and even half pieces of one and different designs point to the difficulty, loss of time, and expense encountered in dealing with them. Many of these difficulties, however, are overcome by many manufacturers by resorting to the practice of sizing the colored yarns in the hank form.

Given suitable machines and the necessary conveniences, the advantages realised are shown in the saving of size-liquors and the retention of the brightness of the colored yarn. Each lot, no matter how small, may be finished by itself. Each lot, if well sized, work eventually in weaving most satisfactorily. The mechanical contrivances available for carrying out the sizing of hank yarns comprise the old-fashioned "stick-and-peg" —which, indeed, in the hands of some old experienced workmen may still be relied upon to give good results; the starch-box with rotary hooks attached over it; and recently many more or less complicated machines.

Passing in review these styles of working, it must be granted that the first-named and oldest method is, in the hands of most workpeople, the least satisfactory. Bare places and uneven sizing, due to uneven squeezing or wringing out, are very difficult to avoid. The same complaint, but in a somewhat lesser degree, may be laid against the starch box, carrying on one side a stationary hook and on the other a rotary hook. Warps made from yarns sized by either of these methods do not conduct themselves in the best possible manner during weaving, and the faulty sizing becomes painfully apparent in the finished cloth. These remarks point to the features that should be present in any yarn sizing machine which shall be efficient. Regular expression of the surplus size carried by the yarn must be provided for.

A machine which has for a long time proved most effectual in actual and contiual practice finds much favor on the Continent. The idea expressed in its arrangement is based on the principle that the yarn should be first evenly impregnated with the sizing liquor, and at once nipped by passing between two rubber-covered rollers, and later by a series of four similarly covered rollers. For this purpose a couple of elliptical-shaped rollers are in position directly over the sizing trough; the uppermost of these two, lifted high, carries the yarn. The top roller, when lowered, admits of the yarn engaging with the second roller, and the two draw the yarn evenly through the liquor in the size trough, simultaneously pressing the size closely into the threads. This arrangement naturally lends itself to different ways of working. Instead of the yarn being continually in motion during impregnation with the size, it may be allowed to steep for a few minutes before squeezing. Any way, after sizing the top roller is raised, the wet yarn lifted from the undermost roller, and spread out flat by hand, and caused to pass through the other rollers carrying suitable pressure, from whence the yarn falls out behind into a suitable receptacle. Here it may lie for about half an hour. The yarn is then taken and placed on a wooden arm and well shaken with sticks by hand, and arranged for drying.

The yarn prepared in this manner does not require brushing out as by the older methods. There are, of course, some classes of yarns which may be none the worse for brushing out before drying. The provision of a suitable brushing machine for this purpose is a simple matter.

A circular brush is found to give very satisfactory results, indeed greatly relied upon by many firms producing specialties in the way of yarns and threads. The advantages of this form of sizing and brushing apply in degree to yarns intended for the warp of cloths, especially for fine satins, brocades, and delicately constructed blouse cloths.

Waste in Cotton Mills

By M. A. Cooper in Textile World Record.

Some time ago the writer noticed in your paper an article on waste, wherein it stated that the average percentage of waste in the cotton mills of this country, where a fair grade of cotton is being used for medium numbers, would be about 15 per cent.

As this is considerably in excess of what would be tolerated in a well managed mill in the old country, it may be interesting to your readers to give a few particulars as to how and where waste is made, and how extremely large percentages in any particular process can be avoided.

The first point to receive attention is to see that every bale of cotton is carefully weighed, and the weight recorded in a book. Next weigh the tares and bands from each bale used, and entered in the same book. These weights all require comparing with the invoices to see they are correct, as it may cause a percentage of loss to be charged against the working in the mill, whereas it has arisen in the tares, bands, or deficient weight.

Being satisfied that all is right so far, the next point is to examine for excess damp and though this trouble cannot be altogether avoided, it is not a difficult matter to store 100 pounds of cotton from the bales, and re-weigh after it has been exposed to the atmosphere a reasonable time.

We will begin with the opener as being the first machine where there is any serious amount of loss; it requires great attention to see that it is doing its work in an efficient manner, and not allowing any fibre to go into the dust flue, or good cotton among the droppings. These droppings should be closely examined regularly to see that they are free from cotton, as "fat droppings" are a source of great loss, and can be prevented with care.

It is most important that the right sort of grids are being used, in order to make as little loss as possible in these machines, and yet remove as many of the heavy impurities as possible.

The pickers or scutchers require the lap to be set very accurately, to prevent any excess loss. The distance between the lattice blade and the nip of the rollers should be very carefully arranged to the best advan-

tage, as a great deal of waste may be made at this point. Each stroke of the beater blade should take the cotton off clear and straight. If it is "dragged" off by the blade the staple of the cotton is being injured, and broken staple causes waste. Also see that the fibre is not being drawn into the dust flue by the fans, which should not be run at an excessive speed. Periodical visits to the dust chamber to examine the quality of the flue dust should be made. Particular attention should be bestowed on the way the cotton is blown on the cages of these machines, and if it is not evenly distributed all across the cage there is something wrong; possibly there is an accumulation of cotton causing an obstruction, or the casing at the ends of the cages may be defective, causing the cotton to "drag" and the draught to get diverted, which will make an uneven lap.

The more perfect the laps from these machines, the less waste there will be in the succeeding processes, as unevenness in the laps is never entirely eliminated, causing more or less waste all the time, owing to breakages in the sliver, roving and yarn.

Close attention to the proper setting of the feed plates, mote knife, and licker-in of card will prevent waste. Also see that the teeth of licker-in are in good condition. Light carding and systematic stripping will assist in reducing the quantity of waste on these machines.

The amount of waste made up to this point —the carding engine head—on cotton grading strict good middling averages 8 per cent. As the loss on the next three processes—drawing, slubbing, and roving—is infinitesimal, owing to the class of waste made being suitable for re-working, a percentage of 1 per cent. amply covers the loss, with a further 1 per cent. made in spinning, winding, reeling and making-up. The sweepings off the floor must be carefully picked and no clean cotton allowed to pass, and the winders' reelers,' and beamers' waste should be weighed and examined every day, to keep it down to the lowest possible point, without hampering the help.

The difference in loss in waste between 10 and 15 per cent. does not appear a very serious drawback, but looked at from another standpoint it is 50 per cent. in excess of what it can be reduced to. Calculated on this basis the loss becomes startling. Take for example a mill using 100,000 pounds of cotton per week.

100,000 lbs. cotton, less 10 % waste—	
90,000 lbs. yarn at 25c per lb.—	$22,500
100,000 lbs. cotton, less 15% waste—	
85,000 lbs. yarn at 25c per lb.—	21,250
Per year, $65,000; or weekly	$ 1,250

Nothing should be allowed from this calculation for the value of the extra amount of waste made, namely, 5,000 pounds weekly, as this is more than balanced by the loss of 8 per cent. cellarage on this 5,000 pounds, and the decreased value of the yarn produced. Where there is excess of waste there is irregularity in the yarn, consequently deterioration in quality. A reduction in the price of the yarn of one-fourth of a cent along with the aforementioned loss, amounts to considerably more than the value received for the extra 5,000 pounds waste made weekly.

From this statement the importance of particular attention to prevent excess waste (in whatever proportion) in cotton mills is apparent, and it is well worth due consideration. In times of "close margins" such attention will convert what would otherwise be a loss into a profit, which is the goal to be aimed at.

Foundry Floors of Brick.

By G. Krause.

Brick is frequently used as a foundry floor, especially in light work iron foundries or in brass and bronze foundries. For this purpose a good high grade vitrified brick should be selected.

The ordinary paving brick is not satisfactory on account of its round corners, as when intended for foundry floors it must have square corners and be of uniform size. The brick should be laid on a two-inch bed of sand, a floor laid in this way being sufficiently elastic under the feet so that it does not affect the men as in the case with concrete floors.

For melting rooms where the casting is done, the semi-vitrified bricks are said to be better than the vitrified.

Inattention.

From Machinery.

The writer has just returned from an auction sale of tickets where large signs were displayed stating that, in every case, bids were a premium to be paid in addition to the basic price of tickets. To make assurance doubly sure, the fact was announced and explained from the platform. In the face of all this, no less than three persons bid in seats, and prepared to pay for them only the specified amount of the premium. Such experiences are repeated everywhere and every day, in the shop, the office, the school. They seem to be almost chronic. It is hard to define the cause. Is it due to mere inattention, or heedlessness, or to real lack of comprehension, or what? At all events, its results are disastrous to the prospects of many a young man whose mind is not upon his work.

Attention to business is the first sound law of success. The boy who does not have to be told twice, who carries "the message to Garcia," and brings back what he was sent to get, is the one who counts. It would be interesting, though saddening, to discover the aggregate annual loss in the average shop through inattention: The things done over because the first attempt was wrong; the things done wrong because the workman was not attentive enough to learn how to do them right; the piece spoiled because the feed was jammed in too deep; the drawings ruined because of miscalculation or error in layout. It would be a sorry exhibit. We are all looking for the boy who thinks; for him there is a prospect, but he is scarce in these days of the multitude who seem to think that the world owes them a living. If our education is to accomplish anything of which we can boast, it must create a feeling of personal responsibility and an attitude of careful attention.

The Ingersoll Foundry Co. will enlarge and extend their plant.

The Man and His Job.

By Herbert J. Hapgood

Initiative coupled with judgment is a requisite truly necessary to personal success. A man with the one and without the other is like an automobile with a good four-cylinder engine and a deficient steering gear. It can make lots of headway, but is very apt to knock down some one or run into an iron fence. Seldom we find a man possessing both the disposition to go ahead and the ability to decide in matters of importance.

It is easy enough to do any old thing at the right time, but the man who can do the right thing at the right time is most useful to his employer. *Some people can see* what is to be done and have the power to do it. But when it comes to an expression of opinion their judgment is worse than that of a country baseball umpire.

On the other hand, good judgment without the ability to go ahead is worse than useless.

A jackass was once stationed at a point equally distant between two bundles of hay. There was all he wanted to eat on one side, and all he wanted to eat on the other. Ordinarily, even a jackass would have possessed reason enough to take the bundle lying nearest to him. What could he do, however, when one was as far off as the other? That question was too tremendous for the jackass. He tried to use his judgment, and stood there with *hay piled* up on both sides of him. He lacked initiative, however, and as the story goes, starved to death before he could come to a decision.

Some one advises *young men* "Take time to consider, but decide definitely." It always pays to take time, but it never pays to take all the time in forming a suitable judgment. The man who is all day making up his mind, *is no better than the jackass* between two bundles of hay.

Sum up the facts in the case, formulate your opinion with dispatch, and then go ahead. Say to yourself, "Fiat!" which in ordinary parlance means, "Let 'er rip!"

Employ judgment in your every-day affairs, but take initiative as its inevitable co-worker.

E. M. Ellicott & Co., Montreal, are installing a Parkin elevator for the Imperial Syrup Co., in their new premises, 29 Vitre St., Montreal.

The L. E. Waterman Co. of Canada, Limited, will build a three story factory 40x150 feet, at St. Lamberts, P.Q. Work will commence at once. Hutchison & Wood are the architects.

Building permits at Edmonton since the first of 1908 have totalled $1,482,350, compared with about $700,000 in the same period last year.

W. P. Tierney & Co., Nelson, B.C., have been awarded the contract by the Canadian Pacific Railway for filling and replacing several large bridges on the line between Castlegar and Cascade; also a new spur and change of grade at the Mother Lode mine near Greenwood, B.C.

The Galetta Electric Light & Milling Co. of Ottawa, have ordered a 7-ton hand power travelling crane from the Smart-Turner Machine Co., Hamilton.

DO you realize how difficult it often is for your salesman to get an interview with the heads of manufacturing firms—with the men who buy? This paper is an ever-welcome salesman. Why not get the benefit of its influence?

INDEX TO ADVERTISEMENTS.

ifc ..... inside front cover. ibc.....Inside back cover obc.....outside back cover.

INDEX TO ADVERTISEMENTS (Continued).

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